CHAPTER - 6

HAZARD POTENTIAL OF SAREE AND SUPPORTING GARMENTS

6.1 INTRODUCTION

The in-depth analysis of burns statistics, as discussed in Chapter 5, which could be representative of the population, it can be concluded that females wearing saree are at highest risk in clothing related fire incidences. In order to investigate the hazard of this category of clothing items in particular, various fabric samples have been prepared matching the specifications to the commercial range of saree and its supporting garment fabrics. The supporting garments such as petticoat, blouse, brassiere (bra) and underwear have been considered for the experiment. The methodology used for determining the flammability hazard of these fabrics is explained in section 5.2.

The 17 fabric materials have been selected comprising of various fibre type and blend proportion. Each type of saree fabric is subjected to flammability testing with different combinations of blouse, petticoat, bra and panties. Altogether, each saree along with the supporting garments makes six different combinations. Total of 31 specimen types have been made using the various number of saree layers and/or supporting garments depending on wearing pattern of saree and the garments. According to their burning hazard potentiality, each saree along with its supporting garments was analysed in terms of time for ignition (T_{ig}), and Average Incident Heat Fluxes (AIHF). Using the Stoll and Chinata chart, incident heat fluxes are correlated to burn injury to predict the burn injuries depending upon the absorbed heat fluxes for a given time.

This extensive study can be useful for the selection of saree material by the research workers and manufacturers. It can also help the consumer for selection of saree and supporting garments. Depending on the ignition time of saree fabrics and the average incident heat fluxes, saree rank is given to help the consumer in selection of saree.

6.2 MATERIALS AND METHODS

6.2.1 Specification of Sample Fabrics

Ten different woven saree fabrics of different fibre type and blend proportion were selected viz. cotton, cotton:polyester blend (50:50), cotton:polyester blend (67:33), cotton:polyester blend (33:67), polyester, silk, viscose, nylon, polyester:viscose blend (67:33) and polyester:viscose blend (33:67). Five different woven garment fabrics i.e. two types of petticoat fabrics of cotton, three types of blouse fabrics of cotton, polyester:cotton (67:33) blend and polyester fabric were also selected. Two knitted fabrics of cotton for bra and underwear were also selected. In all 17 sample fabrics have been selected. Each fabric is given sample code i.e. ten saree fabrics (SA1-SA10), Two petticoat fabrics: light (PL) and heavy (PH), bra fabric (B) and underwear fabric (UV).

Each fabric varies in its fibre content, blend ratio, area density and air permeability. The specifications of fabric materials such as fibre type and blend proportion, fabric physical properties such as mass of fabric (grams per square metre), thread count (ends per inch, picks per inch) and air permeability has been measured. Area density was measured by weighing 100 mm x 100 mm specimen on a microbalance with an accuracy of 0.001g. Fabric thread counts i.e. ends per inch and picks per inch were measured by Prolific made microscopic traverse thread counter. Air permeability of each specimen was measured by standard method on Prolific made, Air Permeability Tester. The average values of ten replicates for each of these parameters viz. gsm, ends per inch, picks per inch and air permeability of each sample is given in Table 6.1.

6.2.2 Experimental Techniques

a) Zone wise Selection of Specimens

Specimens are selected from different locations of body depending upon the normal wearing pattern as shown in Fig.6.1 and Table 6.1a.The samples are collected from different zones of body, like trunk, chest, upper arms, buttocks,

thighs, lower legs etc. which covers almost all the combinations of saree along with the supporting garments. In the normal wearing pattern of saree with its supporting garment wraps almost 70% of the Total Body Surface Area (TBSA). Altogether 14 zones are marked and samples are planned, which represents all such 14 zones as mentioned. Zone wise combinations of sandwich of various fabrics of supporting garments and number of saree layers have been made and the various specimen sandwiches in sequence and their specimen codes are given in Table 6.2b

b) Combinations depending on Fibre Type and Fabrics

Each saree fabric is tested along with three different types of blouse fabrics and two different types of petticoat fabrics using the combinations representing different zones of body as mentioned in Table 6.2a. The various fabric combinations of supporting garments and/or saree layers were considered as listed in Table 6.2 c.

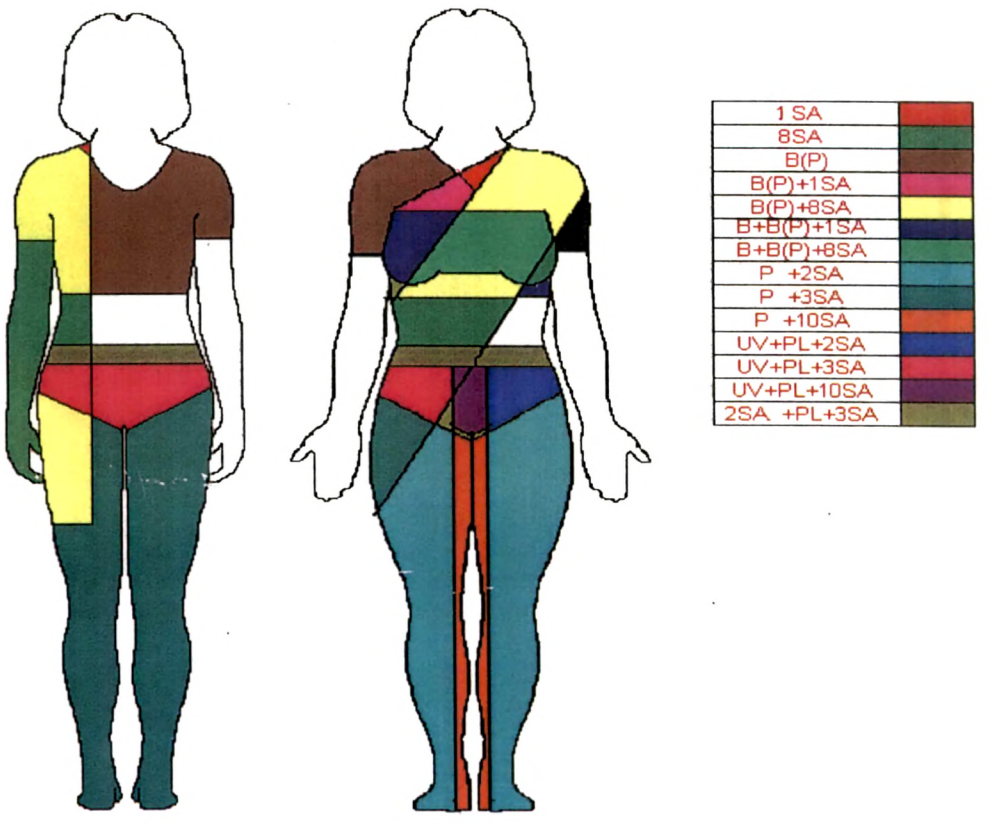

Fig. 6.1 Normal wearing pattern of garments with various zones

Table 6.1 Specifications of Fabrics used for the Burning Behaviour Study

Sr. No.	Sample Fabric	Fibre Type (Blend Ratio)	Fabric Mass	Thread count		Air Permeability	Sample Code
			gsm	Ends/ inch	Picks/ inch	cc/cm^2 /s	
1	Saree	Nylon	60	99	70	95.21	SA1
2	Saree	Polyester:cotton (33:67)	60	80	65	283.13	SA2
3	Saree	Polyester:cotton (67:33)	56	90	70	273.13	SA5
4	Saree	Polyester:cotton (50:50)	75	100	70	302.13	SA8
5	Saree	Polyester	55.3	89	60	101.21	SA6
6	Saree	Polyester: viscose (33:67)	60	85	60	242.1	SA4
7	Saree	Polyester:viscose (67:33)	69	80	75	187.1	SA3
8	Saree	Polyester:viscose (50:50)	71	95	65	142.1	SA9
9	Saree	Cotton	53.1	72	60	363.21	SA7
10	Saree	Silk	56.6	86.4	77.3	163.84	SA10
11	Blouse	Cotton	65	70	843	211	B(C)
12	Blouse	Polyester:cotton (67:33)	65	95.7	86.4	106.7	B(PC)
13	Blouse	Polyester	63	63	106	140	B(P)
14	Petticoat	Cotton	98	98	90	97.97	PL
15	Petticoat	Cotton	120	75	45	45.64	PH
16	Bra *	Cotton	130	-	-	60	B
17	Under Wear*	Cotton	130	-	-	60	UV

* Knitted fabric

Table 6.2a Percentage of TBSA Covered by Saree Normal Pattern

Sr. No.	Code of Zones	Specifications Fabrics and number of layers	Body Parts Covered	Percent TBSA
1	1SA	Saree fabric single layer	Neck	1%
2	8SA	Saree fabric 8 layers	Belly, posterior trunk	8 %
3	B(*)	Blouse fabric single layer.	Upper arms, posterior trunk and chest	8%
4	B(*)+1SA	Blouse fabric single layer + saree fabric single layer	Chest	2 %
5	B(*)+8SA	Blouse fabric single layer + saree fabric 8 layers	Upper arms, posterior trunk and chest	8%
6	B+B(*)+1SA	Bra fabric single layer + Blouse fabric single layer + saree fabric single layer	Breasts	3%
7	B+B(*)+8SA	Bra fabric single layer+ Blouse fabric single layer +saree fabric 8 layer	Breasts	4%
8	P(@)+2SA	Petticoat fabric single layer +saree fabric 2 layers	Anterior Outer thighs and anterior outer lower legs	6%
9	P(@)+3SA	Petticoat fabric single layer + saree fabric 3 layers	Posterior thighs, posterior lower legs	12%
10	P(@)+10SA	Petticoat fabric single layer + saree fabric 10 layers	Interior thighs, lower legs	6%
11	UV+P(@)+2SA	Underwear fabric single layer+ Petticoat fabric single layer + saree fabric 2 layers	Side Upper thigh	3%
12	UV+P(@)+3SA	Underwear fabric single layer +Petticoat fabric single layer + saree 3 fabric layers	Side upper thighs, buttocks	6%
13	UV+P(@)+10SA	Underwear fabric single layer +petticoat fabric single layer + saree fabric 10 layers	Perineum	1%
14	2SA+P(@)+3SA	Saree fabric 2 layers+ petticoat fabric 2 layers + saree fabric 3 layers	Waist	3%
Total				71%

*Fabric Type (Polyester, cotton, polyester:cotton), @ Fabric Mass (light, heavy)

Table 6.2b Combinations of Fabrics for Normal Saree Wearing Pattern

Sr. No	Specimen	Sandwich Patterns of supporting garments and saree layers	Specimen code
1	Specimen 1	Blouse fabric single layer (without saree fabric)	B (*)
2	Specimen 2	Blouse fabric single layer +saree fabric single layer	B (*) +1SA
3	Specimen 3	Blouse fabric single layer + saree fabric 8 layers	B (*) + 8 SA
4	Specimen 4	Bra fabric single layer + Blouse fabric single layer +saree fabric single layer	B + B (*)+1SA
5	Specimen 5	Bra fabric single layer+ Blouse fabric single layer +saree fabric 8 layers	B+ B (*) 1+8 SA
6	Specimen 6	Saree fabric single layer (without supporting garments)	SA
7	Specimen 7	Saree fabric 8 layers	8 SA
8	Specimen 8	Petticoat fabric single layer +saree fabric 2 layers	P(@)+2 SA
9	Specimen 9	Petticoat fabric single layer + saree fabric 3 layers	P(@)+3 SA
10	Specimen 10	Petticoat fabric single layer + saree fabric 10 layers	P(@)+10 SA
11	Specimen 11	Underwear fabric single layer+ Petticoat fabric single layer + saree fabric 2 layers	UV+P(@)+2 SA
12	Specimen 12	Underwear fabric single layer +Petticoat fabric single layer + saree fabric 3 layers	UV+P(@)+3 SA
13	Specimen 13	Underwear fabric single layer +petticoat fabric single layer + saree fabric 10 layers	UV+P+(@)10 SA
14	Specimen 14	Saree fabric 2 layers+ petticoat fabric single layer + saree fabric 3 layers	2 SA1+P(@)+3 SA

*Fabric Type (Polyester, cotton, polyester:cotton),

@ Fabric Mass (light, heavy)

Table 6.2c Specimens of Saree/ Supporting Garments depending on Wearing Pattern

Sr. No.	Specimen code	Sandwich Pattern of Supporting Garment and/or number of Saree Layers
1	B (P)	Blouse (Polyester)
2	B (P) + SA	Blouse (Polyester) + Saree single layer
3	B (P) + 8SA	Blouse (Polyester) + Saree 8 layers
4	B + B (P)+SA	Bra + Blouse (Polyester) + Saree single layer
5	B+ B (P) 1+8SA	Bra + Blouse (Polyester) + Saree 8 layers
6	SA	Saree single layer
7	8 SA	Saree 8 layers
8	PL+2SA	Petticoat (Light) + Saree 2 layers
9	PL+3SA	Petticoat (Light) + Saree 3 layers
10	PL+10SA	Petticoat (Light) + Saree 10 layers
11	UV+PL+2SA	Under wear + Petticoat (Light) + Saree 2 layers
12	UV+PL+3SA	Under wear + Petticoat (Light) + Saree 3 layers
13	UV+PL+10SA	Under wear + Petticoat (Light) + Saree 10 layers
14	2 SA1+PL+3SA	Saree 2 layers + Petticoat (Light) + Saree 3 layers
15	B(C)	Blouse (Cotton)
16	B(C)+SA	Blouse (Cotton) + Saree single layer
17	B(C)+ 8SA	Blouse (Cotton) + Saree 8 layers
18	B+B(C)+SA	Bra + Blouse (Cotton) + Saree single layer
19	B+B (C)+8SA	Bra + Blouse (Cotton) + Saree 8 layers
20	PH+2SA	Petticoat (Heavy) + Saree 2 layers
21	PH+3SA	Petticoat (Heavy) + Saree 3 layers
22	PH+10SA	Petticoat (Heavy) + Saree 10 layers
23	UV+PH+2SA	Under wear + Petticoat (Heavy) + Saree 2 layers
24	UV+PH+3SA	Under wear + Petticoat (Heavy) + Saree 3 layers
25	UV+PH+10SA	Under wear + Petticoat (Heavy) + Saree 10 layers
26	2SA+PH+2SA	Saree 2 layers + Petticoat (Heavy) + Saree 2 layers
27	B (PC)	Blouse (Poly:cot)
28	B (PC) + SA	Blouse (Poly:cot) single layer + Saree single layer
29	B (PC) + 8SA	Blouse (Poly:cot) + Saree 8 layers
30	B + B (PC) + SA	Bra + Blouse (Poly:cot) + Saree single layer
31	B+ B (PC) + 8SA	Bra + Blouse (Poly:cot) + Saree 8 layers

Table 6.2d Various Combinations of Supporting Garments with Saree

Combination Name	Combination Code	Supporting garments used with each Saree Fabric
1st combination	B (P) & PL	Polyester blouse and light petticoat
2nd combination	B (P/C) & PL	Polyester:cotton blended blouse and light petticoat
3rd combination	B (C) & PL	Cotton blouse and light petticoat
4th combination	B (P) & PH	Polyester blouse and heavy petticoat
5thcombination	B (P/C) & PH	Polyester: cotton blend blouse and heavy petticoat
6thcombination	B (C) & PH	Cotton blouse and heavy petticoat

c) Combinations depending on Supporting Garment with Saree

Each type of saree makes six combinations along with supporting garments as defined in the Table 6.2d. All these six combinations are tested along with cotton bra and cotton underwear

6.3 IGNITION BEHAVIOUR OF SAREE AT DIFFERENT COMBINATIONS

The time required to ignite a particular specimen shows the ease of ignition of a particular specimen. Accidentally, if the fabric encounters the flame within few seconds the fabric will ignite, depending upon the energy for reaching its flash point and ignition temperature. The major objective of the fabric ignition studies is to determine the time duration required by any particular zone of saree to reach its flash point and ignition. This period shows the ease of ignition of particular zone of saree, when it is exposed to a flame. Depending upon the span of time, the safety of zone would be considered for instant rescue from the fire. Thus, the ignition time is used as a tool to rank the saree fabrics for their ignitability in most of the flammability tests. Table 6.3 to Table 6.12 shows the average values of 10 replicates of the samples tested at 90° test and it is expressed as T_{ig} in seconds, (time duration for ignition) for all saree combinations.

The time for ignition (T_{ig}) indicates that, single layer nylon saree takes longest time to ignite at 2.8 s, where as cotton takes 1.0 s to ignite. Among the other

Table 6.3 Time for Ignition (s) for Saree along with Supporting Garments

Sr. No.	Saree Code	SA1	SA2	SA3	SA4	SA5	SA6	SA7	SA8	SA9
	Fabric Combination Code	N 100	P:C 33:67	P:V 67:33	P:V 33:67	P:C 67:33	P 100	C 100	P:C 50:50	P:V 50:50
1	B (P) *	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8
2	B (P) + SA	3.4	1.4	2.8	1.8	2.6	3.2	1.3	2.0	2.1
3	B (P) + 8SA	4.3	2.3	3.8	2.5	3.5	4.0	2	2.8	3.0
4	B + B (P) + SA	3.7	2.1	3.2	2.4	2.9	3.4	1.8	2.7	2.9
5	B + B (P) + 8SA	4.5	2.4	4.0	2.5	3.7	4.2	2.3	2.9	3.2
6	SA	2.8	1.2	2.1	1.4	1.9	2.2	1.0	1.5	1.7
7	8SA	4.4	2.4	3.9	2.7	3.6	4.1	2.0	3.0	3.1
8	PL+ 2SA	3.5	1.6	3.1	1.9	3.8	3.3	1.4	2.2	2.3
9	PL + 3SA	4.0	2.0	3.5	2.3	3.2	3.7	1.6	2.7	2.8
10	PL + 10SA	4.5	2.7	3.9	2.9	3.8	4.1	2.4	3.2	3.1
11	UV + PL+ 2SA	4.1	1.7	3.4	1.9	3.2	3.8	1.4	2.7	2.8
12	UV + PL+ 3SA	4.2	2.2	3.5	2.3	3.3	3.9	1.7	2.8	2.9
13	UV + PL+ 10SA	4.5	2.8	3.9	3.1	3.7	4.1	2.5	3.3	3.4
14	2SA1 + PL + 3SA	3.8	1.9	3.4	2.1	3.2	3.6	1.6	2.4	2.5
15	B(C) *	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2
16	B(C) + SA	3.1	1.3	2.6	1.7	2.3	3.0	1.2	1.8	2.0
17	B(C) + 8SA	3.7	2	3.2	2.2	2.9	3.4	1.6	2.4	2.5
18	B + B(C) + SA	3.3	1.6	2.8	1.8	2.5	3.0	1.2	1.9	2.2
19	B + B (C) + 8SA	4.1	2.2	3.5	2.4	3.2	3.8	1.8	2.6	2.7
20	PH + 2SA	3.6	1.9	3.3	2.1	2.9	3.4	1.5	2.2	2.7
21	PH + 3SA	3.7	2.0	3.4	2.2	3.0	3.5	1.6	2.7	2.8
22	PH + 10SA	4.4	2.9	4.0	3.2	3.9	4.1	2.5	3.5	3.6
23	UV + PH + 2SA	3.8	1.9	3.3	2.2	3.0	3.5	1.5	2.5	2.6
24	UV + PH + 3SA	3.9	2.2	3.4	2.5	3.2	3.7	1.9	2.8	2.9
25	UV + PH + 10SA	4.2	2.4	3.8	2.6	3.5	4.0	2	2.9	3.0
26	2 SA1 + PH+3SA	3.9	2.2	3.5	2.4	3.4	3.8	1.9	2.7	2.8
27	B (PC) *	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2
28	B (PC) + SA	3.3	1.4	2.8	1.7	2.5	3.0	1.2	1.9	2.0
29	B (PC) + 8SA	4.3	2.4	3.8	2.6	3.5	4.1	2	3.2	3.1
30	B + B (PC) + SA	3.5	1.7	3.1	1.9	2.7	3.2	1.4	2.2	2.2
31	B +B (PC) + 8SA	4.5	2.6	4.1	2.9	3.8	4.3	2.2	3.3	3.3
Saree Rank (Ignition)		9	2	7	3	4	8	1	5	6

* Tested without saree fabric

saree, polyester:cotton 33:67 blend takes 1.2 s, polyester:viscose 33:67 blend takes 1.4 s and polyester:cotton 50:50 blend takes 1.5 s. Polyester:viscose 50:50 blend takes 1.7 s, polyester:cotton 67:33 blend takes 1.9 s, polyeste-:viscose 67:33 blend takes 2.1 s and polyester takes 2.2 s. The results revels that time for ignition depends upon the time required by fibres to reach its ignition temperature at a constant heat flux, as cotton ignites at 400°C it is first to ignite and as nylon ignites at 532° C it is lastly ignited among all the samples. The ignition temperature of polyester is 450°C, which requires more time to reach the ignition temperature than cotton with lower ignition temperature. Thus, the time for ignition of polyester:cotton blended fabric need more time to ignite than cotton fabric. Similarly the ignition temperature of viscose is 420° C and polyester is 450° C, which delays the time for ignition for polyester:viscose blend as compared to viscose fabric. Hence the time for ignition for blended fabric depends upon the ignition temperature of the individual component of blend and proportion of that component in the blend, more the proportion of higher ignition temperature fibres, more will be time required by the blend to reach the ignition temperature.

It can also be seen that time for ignition of a particular zone of saree, depends on the mass and proportion of material in sandwich layers. When cotton saree in two layers, three layers and ten layers is tested along with light and heavy petticoat, the T_{ig} values of saree increase as the layers increases showing difficulty to reach the ignition temperature due to increase in layers and there by increase in mass at a given area. The same trend is observed for all saree material as seen from Table 6.3 and Table 6.4 to Table 6.12.

6.3.1 Nylon Saree (SA1) along with Supporting Garments

The analysis of ignition studies on nylon saree along with supporting garments reveals that, the saree can be easily ignited from its various zones at minimum 2.8 s and maximum at 4.5 s. The results show an ease of ignition at single layer and difficulty at multiple layers at waist, interior thighs, lower legs, upper arms, posterior trunk, chest and perineum of the female body. The studies also reveal that time for ignition of nylon saree depends not only upon

the material but also on the number of layers to be ignited. Nylon saree single layer easily ignites at 2.8 s where as with eight layers it ignites at 4.4 s.

The ignition time of saree changes depending upon the type of blouse material, when it is burnt with cotton blouse fabric it is ignited at 3.1 s, polyester:cotton blended blouse fabric at 3.3 s and polyester blouse fabric at 3.4 s. The ignition time of nylon saree increases from 3.3 s to 3.4 s, when it is burned with heavy cotton petticoat fabric compared to light cotton petticoat fabric and this trend is true in all combinations of heavy and light petticoat fabrics as seen in Fig.6.1a to Fig.6.1f.

i) 1st Combination:

It was found from Table 6.4 that, when nylon saree is tested with its 1st combination (polyester blouse, light petticoat, cotton bra and cotton underwear) the AIHF is maximum 7.20 and 8.16 cal/cm^{2}s at 45° and 90° test respectively, for the UV+PL+10SA1 zone, where the total gsm is 828. Whereas for the B+ B(P) +8SA1 zone with 673 gsm, the AIHF is 6.40 and 7.80 cal/cm^{2}s at 45° and 90° test respectively. The minimum AIHF value is at SA1 and is 0.86-1.12 cal/cm^{2}s. The number of hydrogen and carbon atoms available in 828 gsm sample is more than that at 673 gsm sample, the nylon material have 34 carbon hydrogen atoms and 20 Carbon hydrogen bonds in a single unit, possessing bond energy of around 413 kJ/mol per C-H bond. Due to addition of nylon layers with cotton layers more amount of hydrocarbons are available for oxidation as compared to the other zone. More the proportion of strong bonds more will be the energy required for formation and dissociation of these bonds and more will be the energy liberated during their burning exothermic reaction.

It can be seen from the Fig.6.2a that the AIHF increases, when polyester blouse is burnt with single layer saree and eight layer saree along with cotton bra. The AIHF values increases from 0.86-1.12 cal/cm^{2}s at single saree zone to 1.41-1.86 cal/cm^{2}s at B(P)+SA1 zone. The AIHF values also increases from 2.92-3.82 cal/cm^{2}s at 8SA1 to 5.04-5.60 cal/cm^{2}s at B(P)+8SA1 zone. This rise in AIHF values signifies that polyester blouse significantly increases

the AIHF values. It is found that polyester blouse combination incidents least AIHF compared to polyester:cotton and cotton blouse. This can be attributed to the fact that the number of hydrogen and carbon atoms available in a single unit of polyester molecule is 34, cotton is 32 and polyester:cotton blend it is average of the two. Moreover, the flame propagation rate and burning rate is low in case of polyester as compared with cotton and polyester:cotton blended blouse combination.

It is found that as the number of fabric layers increases, gsm increases which in turn increases the number of hydrogen and carbon atoms. The energy liberated due to breaking of the bond between the atoms is an exothermic reaction, which takes place during burning, there by increasing heat emission, incident heat flux and thus the AIHF value, depending upon the molecular structure, hydrogen and carbon content and type and length of bonding existing between the molecules.

From the above observations, it is seen that in all the cases of nylon saree combinations, the maximum AIHF occurred at 90° test as compared to 45°. AIHF depends upon the heat emitted by the material, flame propagation rate and burning rate of the sample, which is controlled by the molecular structure and the angle of burning samples, as it can be seen that FPR at 90° is faster than in case of 45° in all cases.

ii) 2nd Combination:

It was found that, when nylon saree is tested with 2nd combination (cotton blouse, light petticoat, cotton bra and cotton underwear) the AIHF is maximum for the B+B(C)+8SA6 zone. The gsm for the zone is 675 and the AIHF is 5.74 and 6.94 cal/cm^{2}s at 45° and 90° tests respectively. The average heat incident heat flux is least in the range of 0.86-1.12 cal/cm^{2}s at zone 1SA1.

It can be seen from the Fig.6.2b that cotton blouse increases the AIHF values, when it is burnt with single layer and eight layer saree along with cotton bra. The AIHF values increases from 0.86-1.12 cal/cm^{2}s at single saree zone to 1.53-2.78 cal/cm^{2}s at B(C)+SA1 zone, which is less than polyester:cotton

blend blouse as the number of hydrocarbons added due to use of cotton blouse is less than polyester:cotton blouse.

The AIHF values also increases from 2.92-3.92 cal/cm^{2}s at 8SA1 saree zone to 5.00-6.05 cal/cm^{2}s at B(C)+8SA1 zone. This rise in AIHF values signifies that cotton blouse significantly increases the AIHF values. The moderate AIHF was found in case of cotton blouse combination, as 32 number of carbon and hydrogen atoms are available in single unit of cotton and 14 C-H bonds are available as compared to polyester with 20 C-H bonds and 34 number of carbon and hydrogen atoms in a single unit.

iii) 3rd Combination:

It was found that, when Nylon saree is tested with 3rd combination (polyester:cotton blend blouse, light petticoat, cotton bra and cotton underwear) the AIHF is maximum for B+B(PC)+8SA1 zone, the gsm of the zone is 675 and the AIHF is 5.70 and 7.50 cal/cm^{2}s at 45° and 90° test respectively.

It can be seen from the Fig. 6.2c that polyester:cotton blend blouse increases the AIHF values, when it is burnt with single layer and eight layer saree along with cotton bra. The AIHF values increases from 0.86-1.12 cal/cm^{2}s at single saree zone to 1.73-2.69 cal/cm^{2}s at B(PC)+SA1 zone, which is more than polyester and cotton blouses.

The AIHF values also increases from 2.92-3.82 cal/cm^{2}s at 8SA1 saree zone to 5.31-7.60 cal/cm^{2}s at B (PC)+8SA1 zone. This rise in AIHF values signifies that polyester:cotton blended blouse significantly increases the AIHF values. The maximum AIHF was found in case of the polyester:cotton blouse combination. The polyester has 34 carbon hydrogen atoms and 20 C-H bonds and cotton with 32 atoms and 14 C-H bonds and their blend have proportionate number of hydrocarbons depending upon the proportion of the blend. When proportion of polyester and cotton is increased in sample, more energy will be liberated during burning, in turn increasing heat flux and AIHF values as compared to other blouse material.

iv) 4 th, 5 th and 6th Combination:

It was found that, when nylon saree is tested with light and heavy petticoat, cotton bra and cotton underwear, the AIHF is maximum 7.20 and 8.16 cal/cm^{2}s at 45° and 90° test respectively for the UV+PH+10SA1 zone, where the total gsm is 850. Where as for the zone PH+2SA1 with 240 gsm the AIHF is 2.40 and 3.50 cal/cm^{2}s at 45° and 90° tests respectively. The AIHF value for 2SA1+PH+3SA1 zone is 4.48-4.68 cal/cm^{2}s as seen in the Fig. 6.2 d to Fig.6.2f.

For light petticoat combinations, the similar trend is observed as seen in Fig.6.2a to Fig. 6.2c the AIHF is maximum 7.00 and 7.76 cal/cm^{2}s at 45° and 90° test respectively for the UV+PL+10SA1 zone, where the total gsm is 828. Where as for the PL+2SA1 zone with 218 gsm, the AIHF is 2.21 and 3.32 cal/cm^{2}s at 45° and 90° tests respectively. The AIHF value for 2SA1+PL+3SA1 zone is 4.30-4.35 cal/cm^{2}s. From the observations it is seen than heavy petticoat incidents maximum AIHF and light petticoat incidents significantly less AIHF due to presence of more mass in heavy petticoat.

Nylon saree when burnt with polyester blouse incidents total 19.87-26.27 cal/cm^{2}s. Whereas when it is burnt with polyester:cotton blouse it incidents 19.82-28.04 cal/cm^{2}s and when it is burnt with cotton blouse it incidents 20.08-25.28 cal/cm^{2}s. These heat fluxes are incident on major portion of breasts there by damaging 4% of TBSA by 2nd degree burn injuries. Which clearly indicates that cotton blouse is suitable option for nylon saree among polyester:cotton and polyester blouses.

Nylon saree when burnt with light cotton petticoat incidents total 30.26-34.14 cal/cm^{2}s. Where as when it is burnt with heavy cotton petticoat incident 31.44-35.79 cal/cm^{2}s. These heat fluxes are incident on perineum there by damaging 1% of TBSA by 2nd degree burn injuries. Which clearly indicates that light cotton petticoat is suitable to use along with the Nylon saree as compared to heavy petticoat.

Single saree layer which incidents heat on 1% of TBSA as it on major neck area. Cotton incident minimum 0.51-0.57 cal/cm^{2}s and ranks top in safety. Nylon incidents 0.86-1.12 cal/cm^{2}s, polyester:cotton 67:33 incidents 1.38-1.78 cal/cm^{2}s, polyester:cotton 33:67 incidents 1.16-1.66 cal/cm^{2}s and polyester:viscose 50:50 incidents 1.20-1.69 cal/cm^{2}s, polyester:viscose 33:67 incidents 1.29-1.42 cal/cm^{2}s, polyester:viscose 67:33 incidents 1.45-1.87 cal/cm^{2}s, polyester incidents 1.47-2.04 cal/cm^{2}s and polyester:cotton 50:50 incidents 1.32-2.03 cal/cm^{2}s.

But when the same saree is burnt in 8 layers, polyester:cotton 33:67 incidents least 3.20-3.79 cal/cm^{2}s, nylon saree incidents 2.92-3.82 cal/cm^{2}s, Cotton incidents 5.08-5.31 cal/cm^{2}s, polyester:cotton 67:33 incidents 4.10-4.56 cal/cm^{2}s and polyester:viscose 33:67 incidents 3.36-4.20 cal/cm^{2}s. Polyester incidents 4.24-4.69 cal/cm^{2}s, polyester:viscose 67:33 incidents 4.30-4.9 cal/cm^{2}s, polyester:cotton 50:50 incidents 4.12-4.95 cal/cm^{2}s and polyester:viscose 50:50 incidents 5.23-5.8 cal/cm^{2}s, are indicating different trend and ranking of saree on single and eight layers, this can be attributed to the fact that the emission of heat during burning of various saree depends upon the molecular structure, the hydrocarbon and bonding between the particular atoms but the average incident heat flux 60 measures only the flux incident only for the initial 60 s, depending upon the molecular structure the fabric will emit heat but the rate of reaction, which is responsible for this emission depends upon the flame propagation rate and the burning rate of the samples. More the FPR and BR more will be the AIHF values.

6.3.2 Polyester:Cotton (33:67) Saree (SA2) along with Supporting Garments

The analysis of ignition studies on Polyester:cotton 33:67 blended saree reveals that, the saree can be easily ignited from its various zones at maximum 2.9 s and minimum 1.2 s, showing ease of ignition at single layer and difficulty at multiple layers at interior thighs and lower legs, similar to nylon saree results.

The ignition studies also reveals that time for ignition depends upon the material and the number of layers to be ignited. Polyester:cotton saree single layer easily ignites at 1.2 s where as with its 8 layers it ignites at 2.4 s. Even the ignition time of saree changes depending upon the type of blouse material, when it is burnt with cotton blouse fabric it is ignited at 2.0 s, polyester:cotton blend fabric blouse at 1.4 s and polyester blouse at 1.4 s as cotton can be easily ignited at lower temperature than polyester and its blended fabric with cotton.

The ignition time of polyester:cotton 33:67 saree increases from 1.6 s to 1.9 s, when it is burned with heavy cotton petticoat fabric as compared to light cotton petticoat fabric and this trend is true in all combinations of heavy and light petticoat fabrics. The burning of cotton along with polyester is seems to be decided by the proportion of the individual component in the blend. As heavy cotton petticoat increases the proportion of cotton in the combination as compared to the light cotton petticoat, there by taking more time to reach the temperature equal to the ignition temperature of the individual component and the blended sample.

i) 1st Combination:

It was found from Table 6.5 that, when polyester:cotton (33:67) saree is tested with 1stcombination (polyester blouse, light petticoat, cotton bra and cotton underwear) the AIHF is maximum 6.90 and 7.01 cal/cm^{2}s at 45° and 90° test respectively for the UV+PL+10SA2 zone, where the total gsm is 828. Whereas, for the B+B(P)+8SA2 zone with 673 gsm the AIHF is 5.28 and 5.45 cal/cm^{2}s at 45° and 90° test respectively. The minimum AIHF value is at combination 1SA2 is 1.16-1.66 cal/cm^{2}s. The number of hydrogen and carbon atoms available in 828 gsm is more than that at 673 gsm. The polyester material have 34 carbon hydrogen atoms and 20 C-H bonds in a single unit and cotton have 32 carbon hydrogen atoms and 14 C-H bonds, possessing bond energy of around 413 kJ/mol per C-H bond as compared to other zone of saree with 673 gsm. More the proportion of strong bonds more will be the energy required for formation and dissociation of these bonds and more will be the energy liberated during this exothermic reaction.

It can be seen from the Fig.6.3a that polyester blouse increases the AIHF values, when it is burnt with single layer and eight layer saree along with cotton bra. The AIHF values increase from 1.16-1.66 cal/cm^{2}s at single saree zone to 1.98-2.54 cal/cm^{2}s at B(P)+SA2 zone. The AIHF values also increases from 3.20-3.79 cal/cm^{2}s at 8SA2 zone to 4.50-4.80 cal/cm^{2}s at B(P)+8SA2 zone. This significant rise in mass, due to addition of layers of saree and polyester blouse, increases number of hydrocarbons for oxidation, librating more energy during the burning process.

It is found that as the number of polyester layers increases, gsm increases which in turn increases the number of hydrogen and carbon atoms and AIHF value, depending upon the molecules, their hydrogen and carbon content and type of bonding existing between the molecules.

From the above observations it is observed that in all the cases of polyester saree combinations the maximum AIHF occurred at 90° tests as compared to 45° due to high flame propagation and burning rate at 90° angle of burning as compared to 45° burning as seen in other saree cases too.

ii) 2nd Combination:

It was found that, when polyester:cotton 33:67 saree is tested with 2nd Combination (cotton blouse, light petticoat, cotton bra and cotton underwear) the AIHF is maximum for the B+B(C)+8SA2 zone with 675 gsm, the AIHF is 5.45 and 5.75 cal/cm^{2}s at 45° and 90° test respectively. This maximum incident of heat flux is due to more amount of mass of cotton at this zone as blouse and bra is of cotton material, resulting in more amounts for hydrocarbons available for burning process, emitting more amount of energy.

It can be seen from the Fig.6.3b that cotton blouse increases the AIHF values, when it is burnt with single layer, three layer and eight layer saree along with cotton bra. The AIHF values increases from 1.16-1.66 cal/cm^{2}s at single saree zone to 1.70-1.90 cal/cm^{2}s at B(C)+SA2 zone, which is less than polyester:cotton blended blouse.

The AIHF value also increases from 3.20-3.79 cal/cm^{2}s at 8SA2 zone to 3.35-4.20 cal/cm^{2}s at B(C)+8SA2 zone. This rise in AIHF values signifies that cotton blouse significantly increases the AIHF values. The least AIHF was found in case of cotton blouse combination as compared to other blouses as least amount of hydrocarbons are present in cotton molecule as compared to polyester and its blend with cotton.

iii) 3rd Combination:

It was found that, when polyester:cotton 33:67 saree is tested with 3rd Combination (polyester:cotton blend blouse, light petticoat, cotton bra and cotton underwear) the AIHF is maximum at the B+B(PC)+8SA2 zone with 675 gsm and is 4.15 and 4.35 cal/cm^{2}s at 45° and 90° test respectively.

It can be seen from the Fig. 6.3c that polyester:cotton blend blouse increases the AIHF values, when it is burnt with single layer saree, and eight layer saree along with cotton bra. The AIHF values increases from 0.86-1.12 cal/cm^{2}s at single saree zone to 1.73-2.69 cal/cm^{2}s at B(PC)+SA2 zone, which is more than polyester and cotton blouses.

The AIHF values also increases from 2.92-3.82 cal/cm^{2}s at 8SA2 zone to 5.31-7.60 cal/cm^{2}s at B(PC)+8SA2 zone. This rise in mass significantly increases the AIHF values. The maximum AIHF was found in case of the polyester:cotton blouse combination.

iv) 4th, 5th and 6th Combination:

It was found that, when polyester:cotton 33:67 saree is tested with light petticoat and heavy petticoat, cotton bra and cotton underwear, the AIHF is maximum at UV+PH+10SA2 zone. The AIHF is 6.90 and 7.01 cal/cm^{2}s at 45° and 90° tests respectively, where the total gsm is 850. Where as for the zone PH+2SA2 with 240 gsm the AIHF is 2.54 and 2.68 cal/cm^{2}s at 45° and 90° test respectively. The AIHF value for 2SA2+PH+3SA2 zone is 4.59-4.87 cal/cm^{2}s as seen in the Fig.6.3a to Fig.6.3f.

For light petticoat combinations, the similar trend is observed as seen in Fig.6.3a to Fig.6.3c the AIHF is maximum 6.54 and 6.86 cal/cm^{2}s at 45° and 90° test respectively for the UV+PL+10SA2 zone, where the total gsm is 828. Where as for the zone PL+2SA2 with 218 gsm the AIHF is 1.90 and 2.11 cal/cm^{2}s at 45° and 90° tests respectively. The AIHF value for 2SA2+PL+3SA2 zone is 3.90-4.13cal/cm^{2}s.

From the observations it is seen than heavy petticoat incidents maximum AIHF and light petticoat incidents significantly less AIHF. Polyester:cotton 33:67 saree when burnt with polyester blouse incidents around 19.47-23.50 cal/cm^{2}s. Whereas when it is burnt with polyester:cotton blouse it incidents 18.95-21.75 cal/cm^{2}s and when it is burnt with cotton blouse it incidents 17.73-21.61 cal/cm^{2}s. These Heat fluxes are incident on major portion of breasts there by damaging 4% of TBSA by 2nd degree burn injuries. Which clearly indicates that cotton blouse is suitable option for polyester:cotton saree among polyester and cotton:polyester blouses.

Polyester:cotton 33:67 saree when burnt with light cotton petticoat incidents 26.16-29.22 cal/cm^{2}s. Where, as when it is burnt with heavy cotton petticoat incident maximum 30.73-33.17 cal/cm^{2}s. These heat fluxes are incident on interior thighs and lower legs there by damaging 6% of TBSA by 2nd degree burn injuries. Which clearly indicates that light cotton petticoat is suitable to use along with the polyester:cotton 33:67 saree as compared to heavy petticoat.

6.3.3 Polyester:Viscose (67:33) Saree (SA3) along with Supporting Garments

The analyses of ignition studies on polyester:viscose 67:33 saree reveals that, polyester:viscose 67:33 saree can be easily ignited from its various zones at maximum 4.1 s and minimum 2.1 s, showing ease of ignition at single layer and difficulty at multiple layers at chest zone.

The ignition studies also reveals that time for ignition depends upon not only the material but also the number of layers to be ignited. Polyester:viscose

67:33 saree single layer easily ignites at 2.1 s where as with 8 layers it ignites at 3.9 s. Even the ignition time of saree changes when it is burnt with cotton blouse fabric 3.2 s and polyester:cotton blended fabric 2.8 s as compared to polyester blouse, taking 2.8 s to ignite.

The ignition time of polyester:viscose 67:33 increases from 3.1 s to 3.3 s, when it is burned with heavy cotton petticoat fabric compared to light cotton petticoat fabric and this trend is true in all combinations of heavy and light petticoat fabrics.

i) 1st Combination:

It was found from Table 6.6 that, when polyester:viscose 67:33 saree is tested with 1st Combination (polyester blouse, light petticoat, cotton bra and cotton underwear) the AIHF is maximum 7.30 and 7.71 cal/cm^{2}s at 45° and 90° test respectively for the UV+PL+10SA3 zone, where the total gsm is 918. Where as for the B+B(P)+8SA3 zone with 745 gsm the AIHF is 7.20 and 7.90 cal/cm^{2}s at 45° and 90° test respectively. The minimum AIHF value is at combination 1SA3 is 1.45-1.87 cal/cm^{2}s. The number of hydrogen and carbon atoms available in 918 gsm is more than that at 745 gsm. The polyester material have 34 carbon hydrogen atoms and 20 C-H bonds in a single unit and viscose have 45 carbon hydrogen atoms and 27 C-H bonds, possessing bond energy of around 413 kJ/mol per C-H bond as compared to other zone of saree with 745 gsm. More the proportion of strong bonds more will be the energy required for formation and dissociation of these bonds and more will be the energy liberated during this exothermic reaction.

It can be seen from the Fig.6.4a that polyester blouse increases the AIHF values, when it is burnt with single layer and eight layer saree along with cotton bra. The AIHF values increase from 1.45-1.87 cal/cm^{2}s at single saree zone to 2.10-3.20 cal/cm^{2}s at B(P)+SA3 zone. The AIHF values also increase from 4.30-4.90 cal/cm^{2}s at 8SA3 zone to 4.98-5.20 cal/cm^{2}s at B(P)+8SA3 zone. This rise in AIHF values signifies that polyester blouse significantly increases the AIHF values due to addition of more mass in the combination.

It is found that as the number of layers of polyester:viscose 67:33 saree increases, gsm increases which in turn increases the AIHF value, depending upon the composition of the material, more the amount of hydrogen and carbon more will be the AIHF. From the above observations it is observed that in all the cases of polyester:viscose 67:33 saree combinations maximum AIHF occurs at 90° test as compared to 45°.

ii) 2nd Combination:

It was found that, when polyester:viscose 67:33 saree is tested with 2nd Combination (cotton blouse, light petticoat, cotton bra and cotton underwear) the AIHF is maximum for the B+B(C)+8SA3 zone. The gsm for the zone is 747 and the AIHF is 5.36 and 5.90 cal/cm^{2}s at 45° and 90° tests respectively.

It can be seen from the Fig.6.4b that cotton blouse increases the AIHF values, when it is burnt with single layer and eight layer saree along with cotton bra. The AIHF values increases from 1.45-1.87 cal/cm^{2}s at single saree zone to 1.57-2.45 cal/cm^{2}s at B(C)+SA3 zone, which is less than polyester:cotton blend and polyester blouse.

The AIHF values also increase from 4.30-4.90 cal/cm^{2}s at 8SA3 saree zone to 5.20-5.40 cal/cm^{2}s at B(C)+8SA3 zone. This rise in AIHF values signifies that cotton blouse significantly increases the AIHF values due to addition of more mass lead to more hydrocarbons in the combination. The least AIHF was found in case of cotton blouse combination as cotton have least number of hydrocarbons in its single unit as compared to polyester and its blend with cotton.

iii) 3rd Combination:

It was found that, when polyester:viscose 67:33 saree is tested with 3rd combination (polyester:cotton blend blouse, light petticoat, cotton bra and cotton underwear) the B+B(PC)+8SA3 zone with 747 gsm gives maximum AIHF of 4.23 and 4.35 cal/cm^{2}s at 45° and 90° test respectively, as seen even in other saree cases.

It can be seen from the Fig. 6.4c that polyester:cotton blend blouse increases the AIHF values, when it is burnt with single layer and eight layer saree along with cotton bra. The AIHF value increases from 1.45-1.87 cal/cm^{2}s at single saree zone to 2.25-2.36 cal/cm^{2}s at B(PC)+SA1 zone, which is more than cotton blouse.

The AIHF values also increases from 4.30-4.90 cal/cm^{2}s at 8SA3 zone to 4.00-6.38 cal/cm^{2}s at B(PC)+8SA3 zone. This rise in AIHF values signifies that polyester:cotton blend blouse significantly increases the AIHF values. The maximum AIHF was found in case of the polyester:cotton blouse combination due to addition of more polyester and cotton mass in the combination.

iv) 4th, 5th and 6th Combination:

It was found that, when polyester:viscose 67:33 saree is tested with light and heavy petticoat, cotton bra and cotton underwear, the AIHF is maximum at UV+PH+10SA3 zone. The AIHF is 7.30 and 7.71 cal/cm^{2}s at 45° and 90° tests respectively, where the total gsm is 940. Where as for the zone PH+2SA3 with 258 gsm the AIHF is 3.14 and 3.22 cal/cm^{2}s at 45° and 90° test respectively. The minimum AIHF value at 2SA3+PH+3SA3 zone is 4.85-5.10 cal/cm^{2}s as seen in the Fig.6.4 d to Fig.6.4 f showing increase in values of AIHF in relation to the mass and proportion of the materials.

For light petticoat combinations, the similar trend is observed as seen in Fig.6.4a to Fig.6.4c, the AIHF is maximum 6.21 and 6.35 cal/cm^{2}s at 45° and 90° test respectively for the UV+PL+10SA3 zone, where the total gsm is 918. Where as for the zone PL+2SA3 with 236 gsm the AIHF is 3.00 and 3.26 cal/cm^{2}s at 45° and 90° tests respectively. The AIHF value for 2SA3+PL+3SA3 zone is 4.37-4.66 cal/cm^{2}s.

From the observations it is seen than heavy petticoat incidents maximum AIHF and light petticoat incidents significantly less AIHF. Polyester:viscose 67:33 saree when burnt with polyester blouse incidents 24.21-28.73 cal/cm^{2}s. Whereas when it is burnt with polyester:cotton blouse it incidents 21.33-26.47

cal/cm^{2}s and when it is burnt with cotton blouse it incidents 23.11-26.19 cal/cm^{2}s. These Heat fluxes are incident on major portion of breasts there by damaging 4% of TBSA by 2nd degree burn injuries. Which clearly indicates that cotton blouse is suitable option for polyester:cotton saree among 100 % polyester and cotton:polyester blend blouses.

Polyester:viscose 67:33 saree when burnt with light cotton petticoat incidents 31.81-35.53 cal/cm^{2}s. Whereas when it is burnt with 100 % heavy cotton petticoat incidents 33.81-36.54 cal/cm^{2}s. These heat fluxes are incident on interior thighs and lower legs there by damaging 6% of TBSA by 2nd degree burn injuries. Which clearly indicates that light cotton petticoat is suitable to use along with the polyester:viscose 67:33 saree as compared to heavy petticoat.

6.3.4 Polyester:Viscose (33:67) Saree (SA4) along with Supporting Garments

The analyses of ignition studies on polyester:viscose 33:67 saree reveals that, polyester:viscose 33:67 saree can be easily ignited from its various zones. It takes maximum 3.2 s and minimum 1.4 s to ignite, showing ease of ignition at single layer and difficulty at multiple layers on interior thighs and lower legs.

The ignition studies also reveals that time for ignition depends upon not only the material but also the number of layers to be ignited. Polyester:viscose 33:67 saree single layer easily ignites at 1.4 s, where as with its 8 layers it ignites at 2.7 s. Even the ignition time of saree changes when it is burnt with cotton blouse fabric at 1.7 s and polyester:cotton blended fabric at 1.7 s as compared to polyester blouse taking 1.8 s to ignite.

The ignition time of polyester:viscose 33:67 increases from 1.9 s to 2.1 s, when it is burned with heavy cotton petticoat fabric compared to light cotton petticoat fabric and this trend is true in all combinations of heavy and light petticoat fabrics.

i) 1st Combination:

It was found from Table 6.7 that, when polyester:viscose 33:67 saree is tested with 1st combination (polyester blouse, light petticoat, cotton bra and cotton underwear) the AIHF is maximum 5.90 and 6.20 cal/cm^{2}s at 45° and 90° test respectively. For the UV+PL+10SA4 zone the total gsm is 828. Where as for the B+B (P)+8SA4 zone with 673 gsm the AIHF is 5.60 and 5.70 cal/cm^{2}s at 45° and 90° tests respectively. The minimum AIHF value is 1.38-1.78 cal/cm^{2}s at combination 1SA4. The number of hydrogen and carbon atoms available in 828 gsm is more than that at 673 gsm. The polyester material have 34 carbon hydrogen atoms and 20 C-H bonds in a single unit and viscose with 45 carbon hydrogen atoms and 27 C-H bonds, possessing bond energy of around 413 kJ/mol per C-H bond as compared to other zones of saree with 673 gsm.

It can be seen from the Fig.6.5a that polyester blouse increases the AIHF values, when it is burnt with single layer saree and eight layer saree along with cotton bra. The AIHF values increase from 1.38-1.78 cal/cm^{2}s at single saree zone to 2.79-3.10 cal/cm^{2}s at B(P)+SA4 zone. The AIHF values also increases from 4.10-4.56 cal/cm^{2}s at 8SA4 zone to 4.26-4.60 cal/cm^{2}s at B(P)+8SA4 zone. This rise in AIHF values signifies that polyester blouse significantly increases the AIHF values due to addition of polyester mass in the combination.

It is found that as the number of polyester:viscose (33:67) saree layers increases, gsm increases which in turn increases the AIHF value, depending upon the composition of the material, more the amount of hydrogen and carbon atoms, more will be the AIHF . From the above observations it is observed that in all the cases of polyester:viscose 33:67 saree combinations the maximum AIHF occurs at 90° test as compared to 45° due to high FPR and BR at 90° than at 45°.

ii) 2nd Combination:

It was found that, when polyester:viscose 33:67 saree is tested with 2nd combination (cotton blouse, light petticoat, cotton bra and cotton underwear)

the AIHF is maximum for the B+B(C)+8SA4 zone. The gsm at the zone is 675 and the AIHF is 5.34 and 5.80 cal/cm^{2}s at 45° and 90° test respectively.

It can be seen from the Fig.6.5b that cotton blouse increases the AIHF values, when it is burnt with single layer saree and eight layer saree along with cotton bra. The AIHF values increases from 1.38-1.78 cal/cm^{2}s at single saree zone to 1.90-2.40 cal/cm^{2}s at B(C)+SA4 zone, which is less than polyester:cotton blend and polyester blouse.

The AIHF values also increase from 4.10-4.56 cal/cm^{2}s at 8SA4 zone to 4.06-4.60 cal/cm^{2}s at B(C)+8SA4 zone. This rise in AIHF values signifies that cotton blouse significantly increases the AIHF values. The least AIHF was found in case of cotton blouse combination compared to other blouses, as cotton add least number of hydrocarbons compared to polyester and its blend with cotton.

iii) 3rd Combination:

It was found that, when polyester:viscose 33:67 saree is tested with 3rd combination (polyester:cotton blend blouse, light petticoat, cotton bra and cotton underwear) the AIHF is maximum for the B+B(PC)+8SA4 zone with 675 gsm the AIHF is 4.30 and 4.60 cal/cm^{2}s at 45° and 90° test respectively.

It can be seen from the Fig.6.5c that polyester:cotton blended blouse increases the AIHF values, when it is burnt with single layer saree and eight layer saree along with cotton bra. The AIHF value increases from 1.38-1.78 cal/cm^{2}s at single saree zone to 1.67-2.26 cal/cm^{2}s at B (PC)+SA4 zone, which is more than cotton blouse. The AIHF values also increases from 4.10-4.56 cal/cm^{2}s at 8SA4 zone to 5.62-5.90 cal/cm^{2}s at B (PC)+8SA4 zone. This rise in AIHF values signifies that polyester:cotton blended blouse significantly increases the AIHF values. The maximum AIHF was found in case of the polyester:cotton blouse combination.

iv) 4th, 5th and 6th Combination:

It was found that, when polyester:viscose 33:67saree is tested with light and heavy petticoat, cotton bra and cotton underwear, the AIHF is maximum at UV+PH+10SA4 zone. The AIHF is 6.73 and 7.60 cal/cm^{2}s at 45° and 90° test respectively, where the total gsm is 850. Where as for the zone PH+2SA4 with 240 gsm the AIHF is 3.10 and 3.98 cal/cm^{2}s at 45° and 90° tests respectively. The AIHF value for 2SA4+PH+3SA4 zone is 4.40-4.60 cal/cm^{2}s as seen in the Fig.6.5 d to Fig.6.5f.

For light petticoat combinations, the similar trend is observed as seen in Fig.6.5a to Fig.6.5c the AIHF is maximum 5.90 and 6.20 cal/cm^{2}s at 45° and 90° test respectively for the UV+PL+10SA3 zone, where the total gsm is 828. Where as for the zone PL+2SA4 with 218 gsm the AIHF is 2.97 and 3.35 cal/cm^{2}s at 45° and 90° tests respectively. The AIHF value at 2SA4+PL+3SA4 zone is 4.26-4.39 cal/cm^{2}s.from the observations it is seen that AIHF increases with mass and composition of material.

Polyester:viscose 33:67 saree when burnt with polyester blouse incidents 22.40-25.40 cal/cm^{2}s. Whereas when it is burnt with polyester:cotton blouse it incidents 21.89-25.01 cal/cm^{2}s and when it is burnt with cotton blouse it incidents 21.96-24.71 cal/cm^{2}s. These heat fluxes are incident on major portion of breasts there by damaging 4% of TBSA by 2nd degree burn injuries. Which clearly indicates that cotton blouse is suitable option for polyester:viscose saree among polyester and cotton:polyester blend blouses.

Polyester:viscose 67:33 saree when burnt with light cotton petticoat incidents 29.10-31.17 cal/cm^{2}s. Where as when it is burnt with light cotton petticoat incidents maximum 31.07-34.09 cal/cm^{2}s. These heat fluxes are incident on interior thighs and lower legs there by damaging 6% of TBSA by 2nd degree burn injuries. Which clearly indicates that light cotton petticoat is suitable to use along with the polyester:viscose 33:67 saree as compared to heavy petticoat.

6.3.5 Polyester:Cotton (67:33) Saree (SA5) along with Supporting Garments

The analyses of ignition studies on polyester:cotton 67:33 saree reveals that, polyester:cotton 67:33 saree can be easily ignited from its various zones at maximum 3.9 s and minimum 1.9 s, showing ease of ignition at single layer and difficulty at multiple layers at interior thighs and lower legs.

The ignition studies also reveals that time for ignition depends upon not only the material but also the number of layers to be ignited. polyester:cotton 67:33 saree single layer easily ignites at 1.9 s where as with its 8 layers it ignites at 3.6 s. Even the ignition time of saree changes when it is burnt with cotton blouse at 2.3 s and polyester cotton blouse at 2.5 s as compared to polyester blouse taking 2.6 s to ignite.

The ignition time of polyester:cotton 67:33 increases from 2.8 s to 2.9 s, when it is burned with heavy cotton petticoat fabric compared to light cotton petticoat fabric and this trend is true in all combinations of heavy and light petticoat fabrics

i) 1st Combination:

It was found from Table 6.8 that, when polyester:cotton 67:33 saree is tested with 1st combination (polyester blouse, light petticoat, cotton bra and cotton underwear) the AIHF is maximum 5.80 and 6.10 cal/cm^{2}s at 45° and 90° test respectively. For the UV+PL+10SA5 zone the total gsm is 788. Where as for the B+B(P)+8SA5 zone with 641 gsm the AIHF is 5.32 and 5.50 cal/cm^{2}s at 45° and 90° test respectively. The minimum AIHF value is 1.29-1.42 cal/cm^{2}s at combination 1SA5. The number of hydrogen and carbon atoms available in 788 gsm is more than that at 541 gsm. The of polyester material having 34 carbon hydrogen atoms and 20 C-H bonds in a single unit and cotton with 32 carbon hydrogen atoms and 14 C-H bonds, possessing bond energy of around 413 kJ/mol per C-H bond as compared to other zones of saree with 641 gsm. More the proportion of strong bonds more will be the energy required for formation and dissociation of these bonds and more will be the energy liberated during this exothermic reaction.

It can be seen from the Fig.6.6a that polyester blouse increases the AIHF values, when it is burnt with single layer and eight layer saree along with cotton bra. The AIHF values increase from1.29-1.42 cal/cm^{2}s at single saree zone to 2.34-2.90 cal/cm^{2}s at B(P)+SA5 zone. The AIHF values also increases from 3.36-4.20cal/cm^{2}s at 8SA4 saree zone to 3.35-4.23 cal/cm^{2}s at B(P)+8SA5 zone. This rise in AIHF values signifies that polyester blouse significantly increases the AIHF values, due to addition of more mass of polyester in the combination.

It is found that as the number of polyester:cotton 67:33 layers increases, gsm increases which in turn increases the AIHF value, depending upon the composition of the material, more the amount of hydrogen and carbon more will be the AIHF. From the above observations it is observed that in all the cases of polyester:cotton 67:33 combinations the maximum AIHF occurs at 90° test as compared to 45° as seen in all cases of saree tested.

ii) 2nd Combination:

It was found that, when polyester:cotton 67:33 saree is tested with 2nd combination (cotton blouse, light petticoat, cotton bra and cotton under wear) the AIHF is maximum at the B+B(C)+8SA5 zone. The gsm for the zone is 643 and the AIHF is 5.80 and 6.53 cal/cm^{2}s at 45° and 90° test respectively.

It can be seen from the Fig. 6.6b that cotton blouse increases the AIHF values, when it is burnt with single layer and eight layer saree along with cotton bra. The AIHF values increases from 1.29-1.42 cal/cm^{2}s at single saree zone to 2.21-2.46 cal/cm^{2}s at B(C)+SA5 zone, which is less than polyester:cotton blend and polyester blouse.

The AIHF value also increases from 3.36-4.20 cal/cm^{2}s at 8SA5 zone to 3.65-3.97 cal/cm^{2}s at B(C)+8SA5 zone. This significant rise in AIHF values signifies that cotton blouse significantly increases the AIHF values. The least AIHF was found in case of cotton blouse combination as seen even in earlier saree cases.

iii) 3rd Combination:

It was found that, when polyester:cotton 67:33 saree is tested with 3rd combination (polyester:cotton blend blouse, light petticoat, cotton bra and cotton underwear) the AIHF is maximum for the B+B (PC)+8SA5 zone with 643 gsm the AIHF is 3.90 and 4.50 cal/cm^2 s at 45°and 90° test respectively.

It can be seen from the Fig.6.6c that polyester:cotton blended blouse increases the AIHF values, when it is burnt with single layer and eight layer saree along with cotton bra. The AIHF values increases from 1.29-1.42 cal/cm^{2}s at single saree zone to 1.68-2.38 cal/cm^{2}s at B(PC)+SA5 zone, which is more than cotton blouse.

The AIHF values also increases from 3.36-4.20 cal/cm^{2}s at 8SA5 saree zone to 4.84-5.44 cal/cm^{2}s at B(PC)+8SA5 zone. This rise in AIHF values signifies that polyester:cotton blend blouse significantly increases the AIHF values. The maximum AIHF was found in case of the polyester:cotton blouse combination.

iv) 4th, 5th and 6th Combination :

It was found that, when polyester:cotton 67:33 saree is tested with light and heavy petticoat, cotton bra and cotton underwear, the AIHF is maximum at UV+PH+10SA5 zone. The AIHF is 7.20 and 7.40 cal/cm^{2}s at 45° and 90° tests respectively, where the total gsm is 810 where as for the zone PH+2SA5 with 232 gsm the AIHF is 3.01 and 3.20 cal/cm^{2}s at 45° and 90° test respectively. The AIHF value for 2SA5+PH+3SA5 zone is 4.28-4.47 cal/cm^{2}s as seen in the Fig.6.6d to Fig.6.6f

For light petticoat combinations, the similar trend is observed as seen in Fig. 6.6a to Fig.6.6c the AIHF is maximum 5.80 and 6.10 cal/cm^{2}s at 45° and 90° test respectively for the UV+PL+10SA5 zone, where the total gsm is 788. Where as for the zone PL+2SA5 with 210 gsm the AIHF is 2.30 and 2.97 cal/cm^{2}s at 45° and 90° tests respectively. The AIHF value for 2SA5+PL+3SA5 zone is 4.00-4.15 cal/cm^{2}s. From the observations it is seen that heavy

petticoat incidents more AIHF than light petticoat as seen in all cases of saree combinations.

Polyester:cotton 67:33 saree when burnt with polyester blouse incidents 19.66-23.80 cal/cm^{2}s. Whereas when it is burnt with polyester:cotton blouse it incidents 18.88-23.10 cal/cm^{2}s and when it is burnt with cotton blouse it incidents 21.24-23.95 cal/cm^{2}s. These heat fluxes are incident on major portion of breasts there by damaging 4% of TBSA by 2nd degree burn injuries. Which clearly indicates that cotton:polyester blouse is suitable option for polyester:cotton saree among polyester and cotton blouses.

Polyester:cotton 67:33 saree when burnt with light cotton petticoat incidents 27.74-29.75 cal/cm^{2}s. Where as when it is burnt with heavy cotton petticoat incidents 32.19-33.87 cal/cm^{2}s. These heat fluxes are incident on interior thighs and lower legs there by damaging 6% of TBSA by 2nd degree burn injuries. Which clearly indicates that light cotton petticoat is suitable to use along with the polyester: cotton 67:33 saree as compared to heavy petticoat.

6.3.6 Polyester Saree (SA6) along with Supporting Garments

The analyses of ignition studies on polyester saree reveals that, the saree can be easily ignited from its various zones at maximum 4.3 s and minimum 1.4 s, showing ease of ignition at single layer and difficulty at multiple layers at waist zone.

The ignition studies also reveal that time for ignition depends upon not only the material but also on the number of layers to be ignited. Polyester saree single layer easily ignites at 2.2 s where as with its 8 layers ignites at 4.1 s. Even the ignition time of polyester saree changes when it is burnt with cotton blouse fabric at 3.4 s and polyester:cotton blended fabric at 3.1 s as compared to polyester blouse taking 3.2 s to ignite.

The ignition time of polyester increases from 3.1 s to 3.3 s, when it is burned with heavy cotton petticoat fabric as compared to light cotton petticoat fabric

and this trend is true in all combinations of heavy and light petticoat fabrics as seen.

i) 1st Combination:

It was found from Table 6.9 that, when polyester saree is tested with 1st combination (polyester blouse, light petticoat, cotton bra and cotton underwear) the AIHF is maximum at B+B(P)+8SA6 zone. The AIHF is 9.06 and 9.44 cal/cm^{2}s at 45° and 90° tests respectively and the gsm is 633. Where as for the UV+PL+10SA6 zone with maximum 778 gsm, the AIHF is 7.62 and 8.09 cal/cm^{2}s at 45° and 90° tests respectively. The minimum AIHF value is at combination S(P) is 2.04 cal/cm^{2}s. The number of hydrogen and carbon atoms available in 633 gsm is more due to presence of polyester than that at 778 gsm, even though the mass of the sample is less. More the proportion of strong hydrocarbon bonds more will be the energy required for formation and dissociation of these bonds and more will be the energy liberated during this burning exothermic reaction.

It can be seen from the Fig.6.7a that polyester blouse increases the AIHF values, when it is burnt with single layer and eight layer saree along with cotton bra. The AIHF values increases from 1.47-2.04 cal/cm^{2}s at single saree zone to 1.87-3.19 cal/cm^{2}s at B(P)+SA6 zone. The AIHF values also increases from 4.24-4.69 cal/cm^{2}s at 8SA6 zone to 4.58-4.89 cal/cm^{2}s at B(P)+8SA6 zone. This rise in AIHF values signifies that polyester blouse significantly increases the AIHF values. The maximum AIHF was found in polyester blouse combination showing increase compared to other blouse material, there by incident this heat flux on around 25 % of TBSA.

It is found that as the number of polyester saree layers increases, gsm increases which in turn increases the AIHF value. From the above observations it is seen that even in all the cases of polyester saree combinations the maximum AIHF occurred at 90° test as compared to 45°.

ii) 2nd Combination:

It was found that, when Polyester saree is tested with 2nd Combination (cotton blouse, light petticoat, cotton bra and cotton underwear) the AIHF is maximum 7.62 and 8.09 cal/cm^{2}s at 45° and 90° test respectively for the UV+PL+10SA6 zone, where the total gsm is 778. Where as for the B+B(C)+8SA6 zone with 640 gsm, the AIHF is 5.65 and 6.04 cal/cm^{2}s at 45° and 90° tests respectively. The minimum AIHF value at combination S(P) is 1.47-2.04 cal/cm^{2}s.

It can be seen from the Fig.6.7b that cotton blouse increases the AIHF values, when it is burnt with single layer and eight layer saree along with cotton bra. The AIHF values increases from 1.47-2.04 cal/cm^{2}s at single saree zone to 1.76-2.80 cal/cm^{2}s at B(C)+SA6 zone. This is less than polyester blouse.

The AIHF values also increases from 4.24-4.69 cal/cm^{2}s at 8SA6 zone to 5.12-5.28 cal/cm^{2}s at B(C)+8SA6 zone. This rise in AIHF values signifies that polyester blouse significantly increases the AIHF values. The minimum AIHF was found in case of cotton blouse combination due to less number of hydrocarbons.

iii) 3rd Combination:

It was found that, when Polyester saree is tested with 3rd combination (polyester: cotton blend blouse, light petticoat, cotton bra and cotton underwear) the AIHF is maximum 7.62 and 8.09 cal/cm^{2}s at 45° and 90° test respectively for the UV+PL+10SA6 zone, where the total gsm is 778. Where as for the B+B (PC)+ 8SA6 zone with 635 gsm the AIHF is 4.44 and 4.94 cal/cm^{2}s at 45° and 90° test respectively. The minimum AIHF value is 1.47-2.04 cal/cm^{2}s at combination S(P) as mass of material and hydrocarbons influences the heat flux.

It can be seen from the Fig.6.7c that polyester:cotton blended blouse increases the AIHF values, when it is burnt with single layer and eight layer saree along with cotton bra. The AIHF values increases from 1.47-2.04 cal/cm^{2}s at single saree zone to 2.70-3.13 cal/cm^{2}s at B(PC)+SA6 zone, which is less than polyester blouse.

The AIHF values also increases from 4.24-4.69 cal/cm^{2}s at 8SA6 zone to 4.44-4.94 cal/cm^{2}s at B(PC)+8SA6 zone. This rise in AIHF values signifies that polyester blouse significantly increases the AIHF values. The moderate AIHF was found in case of the polyester:cotton blouse combination as compared to other blouse material and incidenting on around 25 % of TBSA.

iv) 4th, 5th and 6th Combination:

It was found that, when polyester saree is tested with light and heavy petticoat, cotton bra and cotton underwear, the AIHF is maximum 7.62 and 8.09 cal/cm^{2}s at 45° and 90° test respectively for the UV+PH+10SA6 zone, where the total gsm is 803. Where as for the zone PH+2SA6 with 230 gsm, the AIHF is 4.84 and 5.12 cal/cm^{2}s at 45° and 90° tests respectively. The minimum AIHF value for 2SA6+PH+3SA6 zone is 3.84-5.17 cal/cm^{2}s as seen in the Fig.6.7d to Fig.6.7f.

For light petticoat combinations, the similar trend is observed as seen in Fig.6.7a to Fig.6.7c the AIHF is maximum 6.16 and 6.78 cal/cm^{2}s at 45° and 90° test respectively for the UV+PL+10SA6 zone, where the total gsm is 778. Where as for the zone PL+2SA6 with 208 gsm, the AIHF is 2.70 and 3.94 cal/cm^{2}s at 45° and 90° tests respectively. The minimum AIHF value is 3.59-4.10cal/cm^{2}s at 2SA6+PL+3SA6 zone.

polyester saree when burnt with polyester blouse incidents 22.33-27.13 cal/cm^{2}s, Where as when it is burnt with polyester:cotton blouse it incidents 22.75-28.01cal/cm^{2}s. When it is burnt with cotton blouse it incidents 23.27-26.74cal/cm^{2}s. These heat fluxes are incident on major portion of breasts, upper arm, posterior trunk and chest, there by damaging 4% of TBSA by maximum heat incidence and 8% by minimum heat incidence by 2nd degree burn injuries. Due to blouse fabric, altogether 25% of TBSA is affected and thus selection of blouse fabric plays a major role in safety decisions. Which clearly indicates that polyester cotton blouse is suitable option for polyester saree among 100 % polyester and 100 % cotton blouses.

100 % polyester saree when burnt with light cotton petticoat incidents 31.00-35.04 cal/cm^{2}s and when it is burnt with heavy cotton petticoat incidents 36.99-39.25 cal/cm^{2}s. The maximum heat fluxes are incident on perineum there by damaging 1% of TBSA by 2nd degree burn injuries. Which clearly indicates that light cotton petticoat is suitable to use along with the 100 % polyester saree as compared to heavy petticoat.

6.3.7 Cotton Saree (SA7) along with Supporting Garments

The analyses of ignition studies on cotton saree reveals that, cotton saree can be easily ignited from its various zones at maximum 2.3 s and minimum 1 s, showing ease of ignition at single layer and difficulty at multiple layers at breasts and chest zone.

The ignition studies also reveals that time for ignition depends upon not only the material but also the number of layers to be ignited. Cotton saree single layer easily ignites at 1 s where as with its 8 layers it ignites at 2 s. Even the ignition time of cotton saree changes when it is burnt with cotton blouse fabric at 1.2 s and polyester cotton blend fabric at 2.2 as compared to polyester blouse taking 1.3 s to ignite.

The ignition time of polyester increases from 1.4 s to 1.5 s, when it is burned with heavy cotton petticoat fabric compared to light cotton petticoat fabric and this trend is true in all combinations of heavy and light petticoat fabrics.

i) 1st Combination:

It was found from Table 6.10 that, when cotton saree is tested with 1st combination (polyester blouse, light petticoat, cotton bra and cotton underwear) the AIHF is maximum 6.25 and 6.38 cal/cm^{2}s at 45° and 90° test respectively for the UV+PL+10SA7 zone, where the total gsm is 758. Where as for the B+B(P) +8SA7 zone with 617 gsm the AIHF is 6.42 and 6.83 cal/cm^{2}s at 45° and 90° test respectively. The minimum AIHF value is 0.51-0.57 cal/cm^{2}s at combination 1SA7. The number of hydrogen and carbon atoms available in 758 gsm is more than that at 617 gsm.

It can be seen from the Fig.6.8a that polyester blouse increases the AIHF values, when it is burnt with single layer and eight layer saree along with cotton bra. The AIHF values increase from 0.51-0.57 cal/cm^{2}s at single saree zone to 3.20-4.40 cal/cm^{2}s at B(P)+SA7 zone. The AIHF values also increases from 5.08-5.31 cal/cm^{2}s at 8SA7 zone to 5.23-5.56 cal/cm^{2}s at B(P)+8SA7 zone. This rise in AIHF values signifies that polyester blouse also significantly increases the AIHF values.

It is found that in this case that as the number of cotton saree layers increases, gsm increases which in turn increases the AIHF value, depending upon the composition of the material, more the amount of hydrogen and carbon more will be the AIHF. From the above observations it is observed that in all the cases of cotton saree combinations the maximum AIHF occurred at 90° tests as compared to 45°.

ii) 2nd Combination

It was found that, when cotton saree is tested with 2nd combination (cotton blouse, light petticoat, cotton bra and cotton underwear) the AIHF is maximum for the B+B(C)+8SA7 zone the gsm for the zone is 619 and the AIHF is 4.05 and 4.84 cal/cm^{2}s at 45° and 90° test respectively.

It can be seen from the Fig.6.8b that cotton blouse increases the AIHF values, when it is burnt with single layer and eight layer saree along with cotton bra. The AIHF values increases from 0.51-0.57 cal/cm^{2}s at single saree zone to 2.90-3.80 cal/cm^{2}s at B(C)+SA7 zone, which is less than polyester:cotton blend and polyester blouse.

The AIHF values also increase from 5.08-5.31 cal/cm^{2}s at 8SA7 saree zone to 4.92-5.16 cal/cm^{2}s at B(C)+8SA7 zone. This rise in AIHF values signifies that cotton blouse significantly increases the AIHF values. The least AIHF was found in case of cotton blouse combination.

iii) 3rd Combination:

It was found that, when cotton saree is tested with 3rd combination (polyester:cotton blend blouse, light petticoat, cotton bra and cotton underwear) the AIHF is maximum for the B+B(PC)+8SA7 zone with 635 gsm, the AIHF is 4.44 and 4.94 cal/cm^{2}s at 45° and 90° test respectively.

It can be seen from the Fig.6.8c that polyester:cotton blend blouse increases the AIHF values, when it is burnt with single layer and eight layer saree along with cotton bra. The AIHF values increases from 0.51-0.57 cal/cm^{2}s at single saree zone to 2.90-3.16 cal/cm^{2}s at B(PC)+SA7 zone, which is more than cotton blouse.

The AIHF values also increases from 5.08-5.31 cal/cm^{2}s at 8SA7 zone to 5.76-5.98 cal/cm^{2}s at B(PC)+8SA7 zone. This rise in AIHF values shows that polyester:cotton blended blouse significantly increases the AIHF values. The maximum AIHF was found in case of the polyester:cotton blouse combination.

iv) 4th, 5th and 6th Combination :

It was found that, when cotton saree is tested with light and heavy petticoat, cotton bra and cotton underwear, the AIHF is maximum at UV+PH+10SA7 zone. The AIHF is 6.25 and 6.38 cal/cm^{2}s at 45° and 90° tests respectively where the total gsm is 758. Where as for the zone PH+2SA7 with 204 gsm, the AIHF is 3.00 and 3.22 cal/cm^{2}s at 45° and 90° tests respectively. The AIHF value for 2SA7+PH+3SA7 zone is 4.42-4.65 cal/cm^{2}s as seen in the Fig.6.8 d to Fig.6.8 f

For light petticoat combinations, the similar trend is observed as seen in Fig.6.8 a to Fig.6.8c the AIHF is maximum 6.33 and 6.84 cal/cm^{2}s at 45° and 90° test respectively for the UV+PL+10SA7 zone, where the total gsm is 780. Where as for the zone PL+2SA6 with 226 gsm, the AIHF is 3.23 and 3.39 cal/cm^{2}s at 45° and 90° tests respectively. The AIHF value for 2SA7+PL+3SA7 zone is 4.72- 4.83 cal/cm^{2}s. From the observations it is seen that heavy petticoat incidents more AIHF than light petticoat.

cotton saree when burnt with polyester blouse incidents total 25.15-28.97 cal/cm^{2}s. Whereas when it is burnt with polyester:cotton blouse it incidents 25.13-27.53 cal/cm^{2}s and when it is burnt with cotton blouse it incidents 22.86-25.15 cal/cm^{2}s. These heat fluxes are incident on major portion of breasts there by damaging 4 % of TBSA by 2nd degree burn injuries. Which clearly indicates that cotton blouse is suitable option for cotton saree among 100 % polyester and polyester:cotton blend blouses.

cotton saree when burnt with light cotton petticoat incidents maximum 32.36-34.79 cal/cm^{2}s. Where as when it is burnt with heavy cotton petticoat incidents maximum 33.77-35.97 cal/cm^{2}s these heat fluxes are incident on perineum there by damaging 1 % of TBSA by 2nd degree burn injuries. Which clearly indicates that light cotton petticoat is suitable to use along with the 100 % cotton saree as compared to heavy petticoat.

6.3.8 Polyester:Cotton (50:50) Saree (SA8) along with Supporting Garments

The analyses of ignition studies on Polyester:cotton 50:50 saree reveals that, the saree can be easily ignited from its various zones at maximum 3.5 s and minimum 1.5 s, showing ease of ignition at single layer and difficulty at multiple layers at interior thighs and lower legs .

The ignition studies also reveals that time for ignition depends upon not only the material but also the number of layers to be ignited. Polyester:cotton 50:50 saree single layer easily ignites at 1.5 s, where as with eight layers it ignites at 2 s. Even the ignition time of cotton saree changes when it is burnt with cotton blouse fabric at 2.4 s and polyester cotton blend fabric at 1.9 s as compared to polyester blouse taking 2.8 s to ignite.

The ignition time of polyester:cotton 50:50 increases from 3.2 to 3.5 s, when it is burned with heavy cotton petticoat fabric 8 layers of saree compared to light cotton petticoat fabric, but the ignition time remains unaltered for 2 and 3 layers combination.

i) 1st Combination:

It was found from Table 6.11 that, when polyester:cotton saree is tested with 1st combination (polyester blouse, light petticoat, cotton bra and cotton underwear) the AIHF is 6.20 and 6.51 cal/cm^{2}s at 45° and 90° test respectively for the UV+PL+10SA8 zone, where the total gsm is 978 . Where as for the B+B (P)+8SA8 zone with 641 gsm the AIHF is 6.21 and 7.20 cal/cm^{2}s at 45° and 90° tests respectively. The minimum AIHF value is 1.32-2.03 cal/cm^{2}s at combination 1SA8. The number of hydrogen and carbon atoms available in 978 gsm is more than that at 641 gsm. More the mass more will be the proportion of strong bonds and more will be the energy required for formation and dissociation of these bonds liberating more heat during this burning exothermic reaction.

It can be seen from the Fig.6.9a that polyester blouse increases the AIHF values, when it is burnt with single layer saree and eight layer saree along with cotton bra. The AIHF values increase from1.32-2.30 cal/cm^{2}s at single saree zone to 3.80-4.23 cal/cm^{2}s at B(P)+SA8 zone. The AIHF values also changes from 4.12-4.95 cal/cm^{2}s at 8SA7 saree zone to 5.08-5.56 cal/cm^{2}s at B(P)+8SA8 zone. This rise in AIHF values signifies that polyester blouse significantly increases the AIHF values.

It is found that as the number of polyester:cotton saree layers increases, gsm increases which in turn increases the AIHF value, depending upon the composition of the material, more the amount of hydrogen and carbon more will be the AIHF. From the above observations it is seen that in all the cases of polyester:cotton saree combinations the maximum AIHF occurred at 90° test as compared to 45° as similar to other saree cases.

ii) 2nd Combination:

It was found that, when polyester:cotton saree is tested with 2nd combination (cotton blouse, light petticoat, cotton bra and cotton underwear) the AIHF is maximum for the B+B(C)+8SA8 zone. The gsm for the zone is 795 and the AIHF is 3.85 and 5.96 cal/cm^{2}s at 45° and 90° tests respectively.

It can be seen from the Fig.6.9b that cotton blouse increases the AIHF values, when it is burnt with single layer saree and eight layer saree along with cotton bra. The AIHF values increases from 1.32-2.03 cal/cm^{2}s at single saree zone to 2.23-3.75 cal/cm^{2}s at B(C)+SA8 zone, which is less than polyester:cotton blend and polyester blouse.

The AIHF values also increase from 3.12-3.95 cal/cm^{2}s at 8SA8 zone to 3.71-4.99 cal/cm^{2}s at B(C)+8SA8 zone. This rise in AIHF values signifies that cotton blouse significantly increases the AIHF values. The least AIHF was found in case of cotton blouse combination.

iii) 3rd Combination:

It was found that, when polyester:cotton saree is tested with 3rd combination (polyester:cotton blend blouse, light petticoat, cotton bra and cotton underwear) the AIHF is maximum for the B+B(PC)+8SA8 zone with 795 gsm and the AIHF is 5.66 and 5.86 cal/cm^{2}s at 45° and 90° test respectively.

It can be seen from the Fig.6.9c that polyester:cotton blended blouse increases the AIHF values, when it is burnt with single layer saree and eight layer saree along with cotton bra. The AIHF values increases from 1.32-2.03 cal/cm^{2}s at single saree zone to 1.92-2.52 cal/cm^{2}s at B (PC)+SA8 zone, which is more than cotton blouse.

The AIHF values also increases from 4.12-4.95 cal/cm^{2}s at 8SA8 saree zone to 4.77-4.87 cal/cm^{2}s at B (PC)+8SA8 zone. This rise in AIHF values signifies that polyester cotton blend blouse significantly increases the AIHF values. The maximum AIHF was found in case of the polyester cotton blouse combination.

iv) 4th, 5th and 6th Combination:

It was found that, when polyester:cotton saree is tested with light and heavy petticoat, cotton bra and cotton underwear, the AIHF is maximum at UV+PH+10SA8 zone. The AIHF is 7.35 and 7.80 cal/cm^{2}s at 45° and 90° tests respectively, where the total gsm is 1000. Where as for the zone PH+2SA8

with 270 gsm, the AIHF is 3.35 and 4.20 cal/cm^{2}s at 45° and 90° test respectively. The AIHF value for 2SA8+PH+3SA8 zone is 4.63-5.44 cal/cm^{2}s as seen in the Fig.6.9d to Fig.6.9f.

For light petticoat combinations, the similar trend is observed as seen in Fig. 6.9a to Fig.6.9c the AIHF is maximum 6.20 and 6.51 cal/cm^{2}s at 45° and 90° test respectively for the UV+PL+10SA8 zone, where the total gsm is 978. Where as for the zone PL+2SA8 with 248 gsm, the AIHF is 2.83 and 3.48 cal/cm^{2}s at 45° and 90° tests respectively. The AIHF value for 2SA8+PL+3SA8 zone is 3.90-4.65 cal/cm^{2}s.

Polyester:cotton 50:50 saree when burnt with polyester blouse incidents maximum 24.29-29.88 cal/cm^{2}s. Where as when it is burnt with polyester:cotton blouse it incidents 22.24-26.19 cal/cm^{2}s and when it is burnt with cotton blouse it incidents 18.31-25.69 cal/cm^{2}s. These heat fluxes are incident on major portion of breasts there by damaging 4% of TBSA by 2nd degree burn injuries. Which clearly indicates that cotton blouse is suitable option for polyester:cotton saree among polyester and cotton:polyester blended blouses.

Polyester:cotton 50:50 saree when burnt with light cotton petticoat incidents 30.04-33.49 cal/cm^{2}s. Where as when it is burnt with light cotton petticoat incidents 33.87-39.14 cal/cm^{2}s. These incident heat fluxes are incident on interior thighs and lower legs there by damaging 6 % of TBSA by 2nd degree burn injuries. Which clearly indicates that light cotton petticoat is suitable to use along with the polyester:cotton 50:50 saree as compared to heavy petticoat.

6.3.9 Polyester:Viscose (50:50) Saree (SA9) with Supporting Garments

The analyses of ignition studies on polyester:viscose 50: 50 saree reveals that, the saree can be easily ignited from its various zones. It takes maximum 3.6 s and minimum 1.7 s to ignite, showing ease of ignition at single layer and difficulty at multiple layers at interior thighs and lower legs.

The ignition studies also reveals that time for ignition depends upon not only the material but also the number of layers to be ignited. Polyester:viscose 50:50 saree single layer easily ignites at 1.7 s where as with its 8 layers ignites at 3.1 s. Even the ignition time of saree changes when it is burnt with cotton blouse fabric 3.4 s and polyester:cotton blend fabric 3.1 s as compared to polyester blouse taking 3.2 s to ignite.

The ignition time of polyester:viscose 50:50 increases from 3.1 s to 3.3 s, when it is burned with heavy cotton petticoat fabric compared to light cotton petticoat fabric and this trend is true in all combinations of heavy and light petticoat fabrics.

i) 1st Combination:

It was found from Table 6.12 that, when polyester:viscose saree is tested with polyester blouse, light petticoat, cotton bra and cotton underwear, the AIHF is 8.06 and 9.16 cal/cm^{2}s at 45° and 90° test respectively for the UV+PL+10SA9 zone, where the total gsm is 938. Where as for the B+B (P)+8SA9 zone with 761 gsm the AIHF is 7.19 and 7.60 cal/cm^{2}s at 45° and 90° tests respectively. The minimum AIHF value is at combination 1SA9 is 1.20-1.69 cal/cm^{2}s. The number of hydrogen and carbon atoms available in 938 gsm is more than that at 761 gsm.

It can be seen from the Fig.6.10a that polyester blouse increases the AIHF values, when it is burnt with single layer saree and eight layer saree along with cotton bra. The AIHF values increase from1.20-1.69 cal/cm^{2}s at single saree zone to 1.72-2.15 cal/cm^{2}s at B(P)+SA9 zone. The AIHF values also changes from 4.12-4.95 cal/cm^{2}s at 8SA9 saree zone to 5.23-5.80 cal/cm^{2}s at B(P)+8SA9 zone. This rise in AIHF values signifies that polyester blouse significantly increases the AIHF values as seen even in other cases of saree combination.

It is found that as the number of polyester:viscose saree layers increases, gsm increases which in turn increases the AIHF value, depending upon the composition of the material, more the amount of hydrogen and carbon more

will be the AIHF. From the above observations it is observed that in all the cases of polyester:viscose saree combinations the maximum AIHF occurs at 90° test as compared to 45° as seen in all cases of saree.

ii) 2nd Combination:

It was found that, when polyester:viscose saree is tested with 2nd combination (cotton blouse, light petticoat, cotton bra and cotton underwear) the AIHF is maximum for the B+B(C)+8SA9 zone the gsm for the zone is 795 and the AIHF is 3.85 and 5.96 cal/cm^{2}s at 45° and 90° test respectively.

It can be seen from the Fig.6.10b that cotton blouse increases the AIHF values, when it is burnt with single layer saree and eight layer saree along with cotton bra. The AIHF values increases from 1.20-1.69 cal/cm^{2}s at single saree zone to 3.07-3.63 cal/cm^{2}s at B(C)+SA9 zone, which is less than polyester:cotton blend and polyester blouse.

The AIHF values also increases from 5.23-5.80 cal/cm^{2}s at 8SA9 zone to 6.05-6.26 cal/cm^{2}s at B(C)+8SA9 zone. This rise in AIHF values signifies that cotton blouse also significantly increases the AIHF values. The least AIHF was found in case of cotton blouse combination as compared to other blouses.

iii) 3rd Combination:

It was found that, when polyester:viscose saree is tested with 3rd combination (polyester:cotton blend blouse, light petticoat, cotton bra and cotton underwear) the AIHF is maximum for the B+B(PC)+8SA9 zone with 763 gsm the AIHF is 7.52 and 7.80 cal/cm^{2}s at 45° and 90° test respectively.

It can be seen from the Fig.6.10c that polyester:cotton blended blouse increases the AIHF values, when it is burnt with single layer saree and eight layers saree along with cotton bra. The AIHF values increases from 1.20-1.69-cal/cm^{2}s at single saree zone to 2.18-3.10 cal/cm^{2}s at B (PC)+SA9 zone, which is more than cotton blouse.

The AIHF values also increases from 5.32-5.80 cal/cm^{2}s at 8SA9 saree zone to 5.80-6.60 cal/cm^{2}s at B(PC)+8SA9 zone. This rise in AIHF values signifies that polyester:cotton blended blouse significantly increases the AIHF values. The maximum AIHF was found in case of the polyester:cotton blouse combination.

iv) 4th, 5th and 6th Combination:

It was found that, when polyester:viscose saree is tested with light and heavy petticoat, cotton bra and cotton underwear, the AIHF is maximum at UV+PH+10SA9 zone. The AIHF is 9.01 and 9.61cal/cm^{2}s at 45° and 90° tests respectively, where the total gsm is 960. Where as for the zone PH+2SA9 with 262 gsm the AIHF is 2.89 and 3.89 cal/cm^{2}s at 45° and 90° test respectively. The incident heat flux value for 2SA9+PH+3SA9 zone is 4.81-5.27 cal/cm^{2}s as seen in the Fig.6.10d to Fig.6.10f.

For light petticoat combinations, the similar trend is observed as seen in Fig. 6.10a to Fig.6.10c the AIHF is maximum 8.06 and 9.16 cal/cm^{2}s at 45° and 90° test respectively for the UV+PL+10SA9 zone, where the total gsm is 938. Where as for the zone PL+2SA9 with 240 gsm, the AIHF is 2.47 and 2.98 cal/cm^{2}s at 45° and 90° tests respectively. The AIHF value for 2SA9+PL+3SA9 zone is 4.21-5.06 cal/cm^{2}s. From the observations it is seen that heavy petticoat incidents maximum AIHF and light petticoat incidents significantly less.

Polyester:viscose 50:50 saree when burnt with polyester blouse incidents maximum 26.41-30.55 cal/cm^{2}s. Where as when it is burnt with polyester:cotton blouse it incidents 25.73-30.95 cal/cm^{2}s and when it is burnt with cotton blouse it incidents 26.99-32.01cal/cm^{2}s. These heat fluxes are incident on major portion of breasts; there by damaging 4 % of TBSA by 2nd degree burn injuries. Which clearly indicates that polyester blouse is suitable option for polyester:viscose saree among polyester:cotton and cotton blouses this can be due to the fact that even the number of hydrocarbons are more in this combination as compared to other combinations, but the heat emission

should be in a given time of 60 s, and thus combination shows less heat flux in a given time of 60 s.

Polyester:viscose 50:50 saree when burnt with light cotton petticoat incidents 33.07-37.77 cal/cm^{2}s. Where as when it is burnt with 100 % heavy cotton petticoat incidents 36.84-41.97 cal/cm^{2}s. These heat fluxes are incident on interior thighs and lower legs there by damaging 6% of TBSA by 2nd degree burn injuries. Which clearly indicates that light cotton petticoat is suitable to use along with the polyester:viscose 50:50 saree as compared to heavy petticoat.

6.3.10 Silk Saree (SA10) along with Supporting Garments

From the ten different saree material, silk saree ignited but does not supported combustion after the flame is removed from the fabric. Silk being a protein fibre requires external source of energy for burning and stops burning as soon as the external source is removed. As in this method it was attempted to study the burning behaviour of saree when accidentally it is caught fire and thus all the specimens were provided external heat up to the time they ignite and external source was removed thereafter. As silk material stops burning, when the external source is removed, the silk saree combinations does not supported tests and further study on silk saree along with its supporting fabrics were not possible to analyse. Hence silk saree was dropped form studies.

6.4 PREDICTION OF THERMAL PARAMETERS USING ARTIFICIAL NEURAL NETWORK (ANN)

Analysis of huge data needs a scientific tool, so that the obtained results can be studied properly and more scientifically for better understanding of the facts. For analysis of various results shown in earlier sections, an Artificial Neural Network is used to understand the influence of various factors influencing flammability and predict the correlation between them, without the use of such tool the results cannot be understand more clearly and scientifically. The data obtained from experimentation as seen in Table 6.4 to Table 6.12 is used to train the software for prediction of the required values,

and study the correlation and trend of parameters. The data from Table 6.4 to Table 6.12 is used for building a model from pre-specified architecture in such a fashion that the composition of each sample in terms of material is expressed in percentage of material in each sample. This data is used as input parameters and the results obtained like flame propagation rate, burning rate, and AIHF values are used as output parameters. Around one-lac iterations were performed to achieve the accurate results from the ANN.

6.4.1 Prediction of Time for Ignition

The study of combination revels that for all combination, gsm influences the time for ignition. In all of the cases, T_{ig} values are directly proportional to the gsm. As the gsm increases, the time to ignite also increases. Indicating that time for ignition depends upon mass of material as seen in the Fig.6.11a.

Also it is seen that cotton is readily ignited. Viscose takes more time than cotton. Polyester and nylon takes longer time than cotton and viscose. Nylon takes highest time to ignite as compared to all other fibres like cotton, polyester and viscose depending upon their ignition temperature and thermal decomposition behaviour as seen in the Fig.6.11a.

The study on cotton polyester combinations revels that, as the proportion of polyester is increased in polyester and cotton combination, the T_{ig} values also increase as the proportion of polyester increases, as the polyester take around 450°C to ignite and cotton ignites at around 400°C, more the amount of polyester in the blend of polyester:cotton , more will be time required to achieve the required temperature for ignition, as seen from the Fig.6.11b and Fig.6.11e. T_{ig} values is least for cotton sample, the T_{ig} values are higher for 25% increase of polyester. The T_{ig} values are still higher for 50% and highest for 75% proportion of polyester in the combination and vice versa.

In cotton:nylon combination as the proportion of nylon is increased, the T_{ig} values also increases as the proportion of nylon increases as seen from the Fig.6.11c. T_{ig} values is least for cotton sample, the T_{ig} values are higher for 25% increase of nylon. The T_{ig} values are still higher for 50% and highest for

75% proportion of nylon in the combination and vice versa, as the nylon takes around 532°C to ignite and cotton ignites at around 400°C, more the amount of nylon in the blend/ combination of cotton:nylon, more will be time required to achieve the required temperature for ignition.

For cotton:viscose combination as the proportion of viscose is increased, the T_{ig} values also increase as the proportion of viscose increases as seen from the Fig. 6.11d. T_{ig} values is least for cotton sample, the T_{ig} values are higher for 25% increase of viscose. The T_{ig} values are still higher for 50% and highest for 75% proportion of viscose in the combination and vice versa. Similarly, viscose take around 425°C to ignite and cotton ignites at around 400°C, more the amount of polyester in the blend of cotton:viscose, more will be time required to achieve the required temperature for ignition.

In combination of polyester:nylon, increase in 25% proportion of nylon raise the T_{ig} values. 50% increase shows further increase in T_{ig} values. Finally, 75% increase shows highest increase in T_{ig} values. Thus, the proportion of material influences the T_{ig} values, more the proportion of higher ignition temperature of the material more will be the time required to reach the ignition temperature of the material and its blend, as seen in the Fig.6.11e.

When 25% viscose is increased in nylon:viscose combination, the T_{ig} values drops as the proportion of viscose is increased, the T_{ig} values further drops at 50% and 75% proportion of viscose in the combination. This can be seen from the Fig.6.11g. and can be attributed to the fact that ignition temperatures of both the components in the blend is responsible, viscose ignites at 425° C and nylon at 532° C.

In combination of polyester:viscose, increase in 25% proportion of polyester raise the T_{ig} values. 50% increase shows further increase in T_{ig} values. Finally, 75% increase shows highest increase in T_{ig} values as seen in the Fig.6.11h as ignition temperature of polyester is higher than that of viscose.

6.4.2 AIHF Values and Flame Propagation Rate

The study shows that, there exists correlation between the flame propagation rate (FPR) and the AIHF value. The flame propagation rate depends upon the type of material, the mass of material and the angle of burning as seen from Fig. 6.12 and Fig.6.13

For cotton fabric, as the FPR increases the AIHF values also increases. It is found that there exist polynomial correlation between the AIHF and FPR values of cotton fabric and the coefficient of correlation is 0.9743 as seen in the Fig.6.12a and it is express in equation 1 at 45° burning test. Where, y is AIHF and x is FPR.

$$y = -5E\text{-}06x^6 + 0.0004x^5 - 0.0102x^4 + 0.1395x^3 - 0.9218x^2 + 2.9112^x - 0.9719$$
$$R^2=0.9746 \quad (1)$$

Equation 2 expresses the correlation for 90° tests. The equation shows that there exist polynomial correlation between the AIHF and FPR values of cotton fabric and the coefficient of correlation is 0.9993 as seen in the Fig.6.13a. However, comparatively the expression at 90° tests holds strong correlation between FPR and gsm.

$$y = -2E\text{-}06x^6 + 0.0001x^5 - 0.0025x4 + 0.025x3 - 0.1328x2 + 0.8576x + 0.9657$$
$$R^2=0.9993 \quad (2)$$

For polyester fabric, the FPR increases as the gsm increases and accordingly the AIHF values also increases, but for low gsm and low FPR values up to 1.89 cm/s, the AIHF seems constant and there after it increases as FPR increases. It is found that there exist polynomial correlation between the AIHF and FPR of polyester fabric and the coefficient of correlation is 0.9976 as seen in the Fig. 6.12b and it is express in equation 3 for 45° burning test.

$$y = 7E\text{-}07x^6 + 2E\text{-}05x^5 - 0.0022x^4 + 0.0445x^3 - 0.291x^2 + 0.7262x + 0.4825$$
$$R^2=0.9976 \quad (3)$$

Where as for 90° tests the correlation is expressed in equation 4 stating that there exists polynomial correlation between the AIHF and FPR values of polyester fabric and the coefficient of correlation is 0.9998 as seen in the Fig.6.13b. However, comparatively the expression at 90° tests holds strong correlation between FPR and gsm.

$$y = -6E\text{-}06x^6 + 0.0003x^5 - 0.0074x^4 + 0.0749x^3 - 0.3342x^2 + 0.6745x + 1.2945$$
$$R^2=0.9998 \quad (4)$$

For Nylon fabric, the FPR increases as the gsm increases and accordingly the AIHF values also increases. It is found that there exist polynomial correlation between the AIHF and FPR values of nylon fabric and the coefficient of correlation is 0.9963 as seen in the Fig.6.12c and it is express in equation 5 at 45° burning test.

$$y = 8E\text{-}06x^6 - 0.0005x^5 + 0.0101x^4 - 0.0903x^3 + 0.2812x^2 + 0.3616x + 0.3841$$
$$R^2=0.9963 \quad (5)$$

Where as for 90° the correlation is expressed in equation 6 stating that there exists polynomial correlation between the AIHF and FPR values of nylon fabric and the coefficient of correlation is 0.9988 as seen in the Fig.6.13c. However, comparatively the expression at 45° holds strong correlation between FPR and gsm.

$$y = 5E\text{-}06x6 - 0.0002x5 + 0.0029x4 - 0.0019x3 - 0.1252x2 + 0.6778x + 1.1399$$
$$R^2=0.988 \quad (6)$$

For Viscose fabric, the FPR increases as the gsm increases and accordingly the AIHF values also increases. It is found that there exist polynomial correlation between the AIHF and FPR values of Viscose fabric and the coefficient of correlation is 0.9994 as seen in the Fig.6.12d and it is express in equation 7 at 45° burning test.

$y = 4E\text{-}06x^6 - 0.0002x^5 + 0.0049x^4 - 0.0503x^3 + 0.2551x^2 - 0.3561x + 1.7163$

$R^2=0.9994$ (7)

Where as for 90° the correlation is expressed in equation 8 stating that there exists polynomial correlation between the AIHF and FPR values of viscose fabric and the coefficient of correlation is 0.9119 as seen in the Fig.6.13d.

$y = -9E\text{-}06x^6 + 0.0005x^5 - 0.0106x^4 + 0.0885x^3 - 0.1615x^2 - 0.8913x + 6.381$

$R^2=0.9119$ (8)

For cotton:polyester 50:50 combination fabric, the FPR increases as the gsm increases and accordingly the AIHF values also increases. It is found that there exist polynomial correlation between the AIHF and FPR values of cotton polyester fabric and the coefficient of correlation is 0.9908 as seen in the Fig. 6.12e and it is express in equation 9 at 45° burning test

$y = 7E\text{-}06x^6 - 0.0005x^5 + 0.0126x^4 - 0.1567x^3 + 0.9183x^2 - 1.8648x + 2.224$

$R^2=0.9908$ (9)

Where as for 90° tests the correlation is expressed in equation 10 stating that there exist polynomial correlation between the AIHF and FPR values of cotton polyester fabric and the coefficient of correlation is 0.9742 as seen in the Fig.6.13e. However, comparatively the expression at 45° tests holds strong correlation between FPR and gsm. However, comparatively the expression at 45° holds strong correlation between FPR and gsm.

$y = -5E\text{-}06x^6 + 0.0003x^5 - 0.0055x^4 + 0.0549x^3 - 0.2694x^2 + 1.0039x + 0.8872$

$R^2=0.9742$ (10)

For cotton:nylon 50:50 combination, the FPR increases as the increases and accordingly the AIHF values also increases. It is found that there exist polynomial correlation between the AIHF and FPR values of cotton nylon 50:50 combination and the coefficient of correlation is 0.9972 as seen in the Fig. 6.12f and it is express in equation 11 at 45° burning test.

$$y = 7E\text{-}06x^6 - 0.0004x^5 + 0.0079x^4 - 0.0679x^3 + 0.2393x^2 - 0.0415x + 0.9946$$
$$R^2=0.9972 \quad (11)$$

Where as for 90° test the correlation is expressed in equation 12 stating that there exist polynomial correlation between the AIHF and FPR values of cotton nylon 50:50 combination and the coefficient of correlation is 0.9492 as seen in the Fig. 6.13f.

$$y = 1E\text{-}05x^6 - 0.0008x^5 + 0.0226x^4 - 0.2791x^3 + 1.5977x^2 - 3.4546x + 3.9151$$
$$R^2=0.9492 \quad (12)$$

For cotton viscose 50:50 combination, the FPR increases as the gsm increases and accordingly the AIHF values also increases. It is found that there exist polynomial correlation between the AIHF and FPR values of cotton: viscose 50:50 combination and the coefficient of correlation is 0.9957 as seen in the Fig. 6.12g and it is express in equation 13 at 45° burning test.

$$y = 2E\text{-}06x^6 - 1E\text{-}04x^5 + 0.0012x^4 - 0.0029x^3 - 0.0292x^2 + 0.6387x + 0.3044$$
$$R^2=0.9958 \quad (13)$$

Where as for 90° test the correlation is expressed in equation 14 stating that there exist polynomial correlation between the AIHF and FPR values of cotton: viscose 50:50 combination and the coefficient of correlation is 0.9993 as seen in the Fig. 6.13g. However, comparatively the expression at 45° tests holds strong correlation between FPR and gsm.

$$y = 7E\text{-}06x^6 - 0.0004x^5 + 0.0094x^4 - 0.0963x^3 + 0.4479x^2 - 0.4829x + 1.9457$$
$$R^2=0.9957 \quad (14)$$

For cotton:polyester 75:25 combinations, the FPR increases as the gsm increases and accordingly the AIHF values also increases. It is found that there exist polynomial correlation between the AIHF and FPR values of cotton: polyester 75:25 combination and the coefficient of correlation is 0.9757 as seen in the Fig. 6.12h and it is express in equation 15 at 45° burning test

$$y = 4E\text{-}07x^6 - 4E\text{-}05x^5 + 0.0011x^4 - 0.0095x^3 + 0.0121x^2 + 0.439x + 0.505$$
$$R^2=0.9757 \quad (15)$$

Where as for 90° tests the correlation is expressed in equation 16 stating that there exist polynomial correlation between the AIHF and FPR values of cotton polyester 75:25 combination and the coefficient of correlation is 0.934 as seen in the Fig. 6.13h.

$$y = -2E\text{-}05x^6 + 0.0009x^5 - 0.022x^4 + 0.2312x^3 - 1.1308x^2 + 2.6774x + 0.2041$$
$$R^2=0.934 \quad (16)$$

For cotton:nylon 75:25 combinations, the FPR increases as the gsm increases and accordingly the AIHF values also increases. It is found that there exist polynomial correlation between the AIHF and FPR values of cotton nylon 75:25 combination and the coefficient of correlation is 0.9899 as seen in the Fig. 6.12i and it is express in equation 17 at 45° burning test.

$$y = -2E\text{-}06x^6 + 0.0002x^5 - 0.0047x^4 + 0.0682x^3 - 0.4866x^2 + 1.7912x - 0.2795$$
$$R^2=0.9899 \quad (17)$$

Where as for 90° test the correlation is expressed in equation 18 stating that there exist polynomial correlation between the AIHF and FPR values of cotton: nylon 75:25 combination and the coefficient of correlation is 0.9932 as seen in the Fig.6.13i.

$$y = -2E\text{-}06x^6 + 0.0002x^5 - 0.0042x^4 + 0.0487x^3 - 0.226x^2 + 0.6291x + 0.9878$$
$$R^2=0.9932 \quad (18)$$

For cotton:viscose 75:25 combinations, the FPR increases as the gsm increases and accordingly the AIHF values increases. It is found that there exist polynomial correlation between the AIHF and FPR values of cotton:viscose 75:25 combination and the coefficient of correlation is 0.9899 as seen in the Fig. 6.12j and it is express in equation 19 at 45° burning test.

However, comparatively the expression at 90° tests holds strong correlation between FPR and gsm.

$$y = 4E\text{-}06x6 - 0.0003x^5 + 0.0061x^4 - 0.0704x^3 + 0.3832x^2 - 0.5981x + 1.9563$$
$$R^2=0.9957 \quad (19)$$

Where as for 90° test the correlation is expressed in equation 20,stating that there exist polynomial correlation between the AIHF and FPR values of cotton: viscose 75:25 combination and the coefficient of correlation is 0.9932 as seen in the Fig. 6.13j.

$$y = 2E\text{-}06x^6 - 1E\text{-}04x^5 + 0.0012x^4 - 0.0028x^3 - 0.0301x^2 + 0.6337x + 0.3703$$
$$R^2=0.9957 \quad (20)$$

6.4.3 GSM and AIHF Values

The Fig.6.14a and Fig.6.14b show the correlation between gsm of fabric and AIHF values. It is seen that for all the fabric samples like cotton, nylon, polyester and viscose as the gsm of the fabric increases, the AIHF values also increases, but not linearly, all the fabric samples show polynomial correlation. It can be seen from the Fig.6.14a that, Nylon shows less AIHF values for around 500 gsm fabrics but for heavy gsm, the AIHF values are higher compared with cotton, polyester and viscose.

The correlation between gsm and AIHF for cotton sample is expressed as shown in equation 21 for 45° test and their coefficient of correlation is 0.9746, the equation reveals that the correlation is of polynomial and no linear correlation exits between them due to the complexity of burning process.

$$y = -5E\text{-}06x^6 + 0.0004x^5 - 0.0102x^4 + 0.1395x^3 - 0.9218x^2 + 2.9112x - 0.9719$$
$$R^2 = 0.9746 \quad (21)$$

Where as for 90° tests the correlation is expressed in equation 22 and their coefficient of correlation is 0.9993.

$$y = -2E\text{-}06x^6 + 0.0001x^5 - 0.0025x^4 + 0.025x^3 - 0.1328x^2 + 0.8576x + 0.9657$$
$$R^2 = 0.9993 \quad (22)$$

The correlation between gsm and AIHF for Nylon sample is expressed as shown in equation 23 for 45° test and their coefficient of correlation is 0.9976, the equation reveals that the correlation is of polynomial and no linear correlation exits between them due to the complexity of burning process.

$$y = 7E\text{-}07x^6 + 2E\text{-}05x^5 - 0.0022x^4 + 0.0445x^3 - 0.291x^2 + 0.7262x + 0.4825$$
$$R^2 = 0.9976 \quad (23)$$

Where as for 90° tests the correlation is expressed in equation 24 and their coefficient of correlation is 0.988.

$$y = 5E\text{-}06x^6 - 0.0002x^5 + 0.0029x^4 - 0.0019x^3 - 0.1252x^2 + 0.6778x + 1.1399$$
$$R^2 = 0.988 \quad (24)$$

The Correction between gsm and AIHF for polyester sample is expressed as shown in equation 25 for 45° tests and their coefficient of correlation is 0.9963, the equation reveals that the correlation is of polynomial and no linear correlation exits between them due to the complexity of burning process.

$$y = 8E\text{-}06x6 - 0.0005x5 + 0.0101x4 - 0.0903x3 + 0.2812x2 + 0.3616x + 0.3841$$
$$R_2 = 0.9963 \quad (25)$$

Where as for 90° is correlation is expressed in equation 26 and their coefficient of correlation is 0.9998.

$$y = -6E\text{-}06x^6 + 0.0003x^5 - 0.0074x^4 + 0.0749x^3 - 0.3342x^2 + 0.6745x + 1.2945$$
$$R^2 = 0.9998 \quad (26)$$

The correlation between gsm and AIHF for Viscose sample is expressed as shown in equation 27 for 45° tests and their coefficient of correlation is 0.9994, the equation reveals that the correlation is of polynomial and no linear correlation exits between them due to the complexity of burning process.

$$y = 4E\text{-}06x^6 - 0.0002x^5 + 0.0049x^4 - 0.0503x^3 + 0.2551x^2 - 0.3561x + 1.7163$$
$$R^2 = 0.9994 \quad (27)$$

Where as for 90° tests is correlation is expressed in equation 28 and their coefficient of correlation is 0.9119.

$$y = -9E\text{-}06x^6 + 0.0005x^5 - 0.0106x^4 + 0.0885x^3 - 0.1615x^2 - 0.8913x + 6.381$$
$$R^2=0.9119 \quad (28)$$

6.4.4 Relation between GSM and Flame Propagation Rate

Investigation from the Fig.6.15a shows that up to around 300 gsm fabrics the Flame Propagation Rates (FPR) remain constant for cotton, polyester and nylon fabrics except viscose where the FPR increases after 150 gsm. For gsm above 300 for cotton, polyester, and nylon fabrics, the FPR increases there after, and shows a linear correlation between gsm and FPR for cotton, polyester, nylon, and viscose fabrics.

The study of combination of cotton, polyester, nylon, and viscose fabrics shows that for all the combinations, gsm influences the Flame propagation rate (FPR). In most of the cases it is found that for low gsm fabrics the rate is not influenced as it is with high gsm fabric above 250 gsm at 45° tests. For low gsm Fabrics the FPR shows constant values and for high gsm fabrics the FPR shows rise as the gsm increases.

All combination such as cotton:polyester, cotton:nylon, cotton:viscose, polyester:nylon, polyester:viscose, nylon:viscose for 90° Test shows similar trend, as seen from the Fig.6.15b.

6.4.5 Prediction burning rate from gsm

From the predicted plots it can be seen that rate of burning does not show any strong correlation between BR and gsm as seen from the Fig.6.16a and Fig.6.16b.

6.5 FABRIC SAMPLES OF ACTUAL FIRE VICTIMS

One of the major objectives of this research project is to collect fabric samples from the real fire victims and to analyse them for type of fibre material and flammability parameters. Initially ten fabric samples from the fire victims have been obtained and analysed for their textile properties. The samples were received from the burn units. In most of the cases the fabric sample remnants obtained were not sufficient to carry out all required tests and thus replicate saree and supporting garments with similar fabric specifications have been procured and from appropriate retailers in some cases or newly manufactured.

From the study of sample fabrics of actual fire victims it can be seen from the Table 6.17 usually the nylon saree, even the gsm is less as compared to polyester:cotton blends and polyester fabric, it creates more or less similar injuries on the TBSA of female. Nylon saree when burnt creates 40-45 % of burn injuries, similar to that created by polyester:cotton blends. Where as cotton saree seems to be less harmful and creates around minimum 20-25 % of burn injuries and maximum 35-40 % burn injuries with heavy gsm fabric.

Silk also shows 40-45% of burn injuries for light gsm and polyester seems to create burn injuries depending upon the gsm, more gsm of Polyester more is the injuries up to 40-45%.

It is seen from the study that trunk is maximum injured in all the cases of saree followed by buttocks, thighs, arms and feet. It is also seen that neck and head area also received major percentage of injuries even the saree is not wrapped on these parts; these injuries may be due to length of flames and burning of long hairs of females when it is in contact with flames.

Analysis of real burn victims, burn injury status matches with the experimental results of various saree materials along with the supporting garments. The heat flux, incident by various saree materials is studied for initial 60 seconds after ignition. The time of exposure is the key factors in deciding the degree of burn injuries and in case of real victims; we do not know the real time of heat flux incident and human response. In case of real victims the samples of supporting garments were not found, where as the experimental results give an idea of incident AIHF of saree along with its supporting garments.

The saree wearing pattern covers around 72% of total TBSA and as per the experimental analysis around all the 72% TBSA will receive at least 2^{nd} degree burn injuries when exposed to initial 60 seconds after ignition at that specific zone. But the real burn victim's show less burn injuries than predicted from experiments; this is due to the fact that, when accidentally the saree caught fire, the catching of fire is at a specific spot and not at all the zone of saree. Propagation of flame and burning process depends on rate of flame propagation and rate of burning of specific saree.

Table 6.17: Specifications of saree Fabrics Collected and Percentage of Burn Injury/ Depth from Actual Fire Victims

Case No.	1	2	3	4	5	6	7	8	9	10
Sex/Age	F24	F 28	F 48	F 32	F 33	F 21	F 25	F 27	26	F 36
Cause of burn	Stove	Gas	Gas	Gas	Stove	Stove	Gas	Stove	Gas	Stove
Clothing worn	Nylon	Cotton	P:C 67:33	Cotton	P:C 50:50	P:V 50:50	Silk	Polyester	Polyester	Cotton
Mass (gsm)	30	66.95	75.40	53.64	54.56	62.43	36.00	50.70	40.43	43.09
Head/neck	3.0	4.5	3.0	2.5	4.0	3.0	4.0	3.0	5.0	4.0
Upper arm	2.0	1.0	2.0	1.0	3.0	1.0	3.0	2.0	1.0	3.0
Forearms	2.5	2.0	2.5	2.0	3.0	2.0	3.0	2.5	1.0	1.0
Hands	2.0	1.0	2.0	1.0	2.0	1.0	2.0	2.0	1.0	1.0
Trunk	11.0	7.0	11.0	9.0	12.0	9.0	12.0	11.0	8.0	6.0
Buttocks	9.0	11.0	9.0	5.0	8.5	4.0	8.5	9.0	4.0	4.0
Perineum	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Thighs	6.0	6.0	6.0	3.5	7.0	3.5	7.0	6.0	7.0	2.0
Lower legs	2.0	4.0	2.0	2.0	3.0	2.0	3.0	2.0	3.0	1.0
Feet	2.0	1.0	2.0	1.0	0.0	1.0	0.0	2.0	2.0	1.5
Total	40.5	38.5	40.5	28.0	44.0	27.5	44.0	40.5	33.0	24.5
Burn depth	40-45	35-40	40-45	25-30	40-45	25-30	40-45	40-45	30-35	20-25

* All the values for body parts are expressed in percentage

Table 6.4 : Thermal Parameters Measured at BHPT for Nylon Saree (SA1) along with Supporting Garments

TEST	45			45			45			45			45			45		
Combination	B(P)			B(P)+1SA1			B(P)+8SA1			B+B(P)+1SA1			B+B(P)+8SA1			1SA1		
GSM	63			123			543			253			673			60		
	Avg	SD	CV%	Avg	SD	CV%	Avg	SD	CV%	Avg	SD	CV%	Avg	SD	CV%	Avg	SD	CV%
Time of Ignition	2			3.4			4.3			3.7			4.50			2.80		
Time of Flame Propagation	15.9	0.55	3.5	18	0.32	1.8	120	0.37	3.1	21	0.73	3.5	136	3.67	2.7	16	0.25	1.8
Rate of Flame Propagation	1.06			1.20			8.00			1.40			9.07			1.07		
Time of Burning	20	0.62	3.1	31.6	0.47	1.5	155	5.11	3.3	48	2.11	4.4	173	3.63	2.1	24	0.31	1.3
Rate of burning	1.33			2.11			10.33			3.20			11.53			1.60		
AIHF-60	1.21	0.02	1.8	1.41	0.02	2	5.04	0.17	3.4	2.03	0.03	1.40	6.40	0.02	3.70	0.86	0.01	1.70

TEST	90			90			90			90			90			90		
Combination	B(P)			B(P)+1SA1			B(P)+8SA1			B+B(P)+1SA1			B+B(P)+8SA1			1SA1		
GSM	63			123			543			253			673			60		
	Avg	SD	CV%	Avg	SD	CV%	Avg	SD	CV%	Avg	SD	CV%	Avg	SD	CV%	Avg	SD	CV%
Time of Ignition	1.8			3.4			4.3			3.7			4.50			2.80		
Time of Flame Propagation	93.6	1.68	1.8	13.4	0.20	1.5	70.3	2.03	2.9	34.8	1.25	3.6	79.5	1.92	2.4	6.5	0.91	1.4
Rate of Flame Propagation	6.24			0.89			4.69			2.32			5.30			0.43		
Time of Burning	118	4.3	3.7	17.2	0.24	1.44	90.7	3.36	3.71	46.0	1.97	4.3	102.6	1.34	1.31	14	0.4	2.9
Rate of burning	7.87			1.15			6.05			3.07			6.84			0.93		
AIHF-60	2.46	0.05	2.1	1.86	0.26	1.4	5.60	0.20	3.6	2.57	0.08	3.30	7.80	0.32	4.20	1.12	0.02	2.60

TEST	45			45			45			45			45			45		
Combination	8SA1			PL+2SA1			PL+3SA1			PL+10SA1			UV+PL+2SA1			UV+PL+3SA1		
GSM	480			218			278			698			348			408		
	Avg	SD	CV%	Avg	SD	CV%	Avg	SD	CV%	Avg	SD	CV%	Avg	SD	CV%	Avg	SD	CV%
Time of Ignition	4.4			3.5			4.0			4.5			4.10			4.20		
Time of Flame Propagation	34	1.46	4.3	33	1.05	3.2	32	1.47	3.5	136.8	3.28	2.4	52	1.87	3.6	53.9	1.34	2.5
Rate of Flame Propagation	2.27			2.20			2.13			9.12			3.47			3.59		
Time of Burning	46	1.88	4.1	38	1.14	3	51	1.68	3.3	182	2.18	1.2	70	2.38	3.4	75	2.85	3.8
Rate of burning	3.07			2.53			3.40			12.13			4.67			5.00		
AIHF-60	2.92	.058	1.71	2.21	.027	0.90	2.52	.012	0.39	6.21	0.29	4.70	3.70	0.15	4.15	4.32	0.14	3.30

TEST	90			90			90			90			90			90		
Combination	8SA1			PL+2SA1			PL+3SA1			PL+10SA1			UV+PL+2SA1			UV+PL+3SA1		
GSM	480			218			278			698			348			408		
1.8	Avg	SD	CV%	Avg	SD	CV%	Avg	SD	CV%	Avg	SD	CV%	Avg	SD	CV%	Avg	SD	CV%
Time of Ignition	4.4			3.5			4.0			4.5			4.10			4.20		
Time of Flame Propagation	60.6	1.69	2.8	16.1	0.54	3.4	23.6	0.77	3.3	83.6	3.26	3.9	31.5	1.16	3.7	28.9	1.04	3.6
Rate of Flame Propagation	4.04			1.07			1.57			5.57			2.10			1.93		
Time of Burning	75.4	2.41	3.2	21.7	0.54	2.5	30.0	1.08	3.6	107.2	1.28	1.20	41.3	1.56	3.8	40.5	0.76	1.90
Rate of burning	5.03			1.45			2.00			7.15			2.75			2.70		
AIHF 60	3.82	0.14	3.8	3.32	.032	0.90	3.54	0.15	4.50	6.87	0.32	4.70	3.87	0.15	4.02	4.43	0.15	3.40

TEST	45			45			45			45			45			45		
Combination	UV+PL+10SA1			2SA1+PL+3SA1			B(C)			SA1+B(C)			8SA1+B(C)			B+B(C)+SA1		
GSM	828			398			65			125			545			255		
	Avg	SD	CV%	Avg	SD	CV%	Avg	SD	CV%	Avg	SD	CV%	Avg	SD	CV%	Avg	SD	CV%
Time of Ignition	4.5			3.8			1.2			3.1			3.70			3.30		
Time of Flame Propagation	194	4.26	2.2	56.7	2.26	4	13.7	0.39	2.9	32.8	1.14	3.5	123	4.67	3.8	51.3	2	3.9
Rate of Flame Propagation	12.93			3.78			0.91			2.19			8.20			3.42		
Time of Burning	240	0.43	1.8	72	3,02	4.2	19.5	0.46	2.4	44.0	1.4	3.2	150	5.55	3.7	68	2.1	3.1
Rate of burning	16			4.8			1.3			2.9			10.00			4.53		
AIHF 60	7.00	0.09	1.3	4.30	0.10	2.5	1.73	0.10	2.3	1.53	0.04	2.70	5.00	0.21	4.20	2.30	0.06	2.80

TEST	90			90			90			90			90			90		
Combination	UV+PL+10SA1			2SA1+PL+3SA1			B(C)			SA1+B(C)			8SA1+B(C)			B+B(C)+SA1		
GSM	828			398			65			125			545			255		
	Avg	SD	CV%	Avg	SD	CV%	Avg	SD	CV%	Avg	SD	CV%	Avg	SD	CV%	Avg	SD	CV%
Time of Ignition	4.5			3.8			1.2			3.1			3.70			3.30		
Time of Flame Propagation	124	2.97	2.4	34.6	1.28	3.7	24.4	.91	3.7	26.4	0.31	1.2	98.2	4.02	4.1	37.6	1.01	2.7
Rate of Flame Propagation	8.27			2.31			1.63			1.76			6.55			2.51		
Time of Burning	141	.80	1.9	42	1.51	3.6	35	1.15	3.3	31	0.68	2.2	122	0.36	3	40.8	1.02	2.5
Rate of burning	9.40			2.80			2.33			2.07			8.13			2.72		
AIHF 60	7.66	0.27	3.4	4.35	0.09	2.49	1.77	.022	0.10	2.78	0.12	4.5	6.05	0.22	3.8	2.80	0.2	1.07

TEST	45			45			45			45			45			45		
Combination	B+B(C)+8SA1			PH+2SA1			PH+3SA1			PH+10SA1			UV+PH+2SA1			UV+PH+3SA1		
GSM	675			240			300			720			370			430		
	Avg	SD	CV%	Avg	SD	CV%	Avg	SD	CV%	Avg	SD	CV%	Avg	SD	CV%	Avg	SD	CV%
Time of Ignition	4.1			3.6			3.7			4.4			3.80			3.90		
Time of Flame Propagation	132	3.56	2.7	33	1.18	3.6	51	1.12	2.2	149	2.68	1.8	43	1.37	3.2	69	2.89	4.2
Rate of Flame Propagation	8.81			2.20			3.40			9.93			2.87			4.60		
Time of Burning	173	3.97	2.3	42	1.76	4.2	63	1.57	2.50	183	5.12	2.8	52	1.45	2.8	80	2.4	3
Rate of burning	11.53			2.80			4.20			12.20			3.47			5.33		
AIHF-60	5.74	0.21	3.7	2.40	0.03	1.5	2.65	0.09	3.7	6.4	0.14	2.3	3.76	0.17	4.6	4.55	0.06	1.36

TEST	90			90			90			90			90			90		
Combination	B+B(C)+8SA1			PH+2SA1			PH+3SA1			PH+10SA1			UV+PH+2SA1			UV+PH+3SA1		
GSM	675			240			300			720			370			430		
	Avg	SD	CV%	Avg	SD	CV%	Avg	SD	CV%	Avg	SD	CV%	Avg	SD	CV%	Avg	SD	CV%
Time of Ignition	4.1			3.6			3.7			4.4			3.80			3.90		
Time of Flame Propagation	83.7	3.68	4.4	17.9	0.78	4.4	22.6	0.65	2.9	88	1.58	1.8	23.7	1.01	4.3	35.4	1.18	3.34
Rate of Flame Propagation	5.58			1.19			1.51			5.87			1.58			2.36		
Time of Burning	103	1.21	2.3	24.3	1.1	2.6	35	1.26	3.6	107.7	1.74	2.4	30.6	1.2	2.4	47.1	1.13	3.9
Rate of burning	6.85			1.62			2.33			7.18			2.04			3.14		
AIHF-60	6.94	0.09	1.3	3.5	0.02	3.1	3.64	0.16	4.40	7.05	0.3	3.8	4	0.14	4.9	4.76	0.17	3.6

TEST	45			45			45			45			45			45		
Combination	UV+PH+10SA1			2SA1+PH+3SA1			B(PC)+SA1			B(PC)+8SA1			B+B(PC)+SA1			B+B(PC)+8SA1		
GSM	850			420			125			545			255			675		
	Avg	SD	CV%	Avg	SD	CV%	Avg	SD	CV%	Avg	SD	CV%	Avg	SD	CV%	Avg	SD	CV%
Time of Ignition	4.2			3.9			3.3			4.3			3.5			4.5		
Time of Flame Propagation	177	7.43	4.2	63	1.44	2.3	16	0.62	3.90	133	6.38	4.8	31	0.96	3.1	21	1.6	7.4
Rate of Flame Propagation	11.8			4.2			1.07			8.87			2.07			1.40		
Time of Burning	233	6.9	3.0	78	3.1	4	26	0.8	3.10	145	5.36	3.7	55	1.98	3.6	58	0.20	3.5
Rate of burning	15.53			5.20			1.73			9.67			3.67			3.87		
AIHF-60	7.20	0.25	3.5	4.48	0.21	4.9	1.73	0.06	3.70	5.31	0.22	4.2	2.10	0.07	3.5	2.40	0.12	5.1

TEST	90			90			90			90			90			90		
Combination	UV+PH+10SA1			2SA2+PH+3SA1			B(PC)+SA1			B(PC)+8SA1			B+B(PC)+SA1			B+B(PC)+8SA1		
GSM	850			420			125			545			255			675		
	Avg	SD	CV%	Avg	SD	CV%	Avg	SD	CV%	Avg	SD	CV%	Avg	SD	CV%	Avg	SD	CV%
Time of Ignition	4.2			3.9			3.3			4.3			3.5			4.5		
Time of Flame Propagation	108	4.53	4.2	35.4	1.20	3.4	13.4	0.3	2.30	62.7	2.25	3.6	31.4	1.03	3.3	21.9	1.6	7.4
Rate of Flame Propagation	7.2			2.36			0.89			4.18			2.09			1.46		
Time of Burning	138	4.69	3.4	46.3	1.71	3.7	18.3	0.65	3.60	85	1.78	2.1	35.1	1.33	3.8	40	1.52	3.8
Rate of burning	9.21			3.09			1.22			5.67			2.34			2.67		
AIHF-60	8.16	0.28	3.5	4.68	0.21	4.5	2.69	0.03	1.40	7.60	0.15	2.1	3.30	0.11	3.5	3.50	0.15	4.4

Table 6.5 Thermal Parameters Measured at BHPT for P/C 33/67 Saree (SA2) along with Supporting Garments

TEST	45			45			45			45			45			45		
Combination	B(P)+1SA2			B(P)+8SA2			B+B(P)+1SA2			B+B(P)+8SA2			1SA2			8SA2		
GSM	123			543			253			673			60			480		
	Avg	SD	CV%	Avg	SD	CV%	Avg	SD	CV%	Avg	SD	CV%	Avg	SD	CV%	Avg	SD	CV%
Time of Ignition	1.4			2.3			2.1			2.40			1.20			2.4		
Time of Flame Propagation	22.2	0.91	4.1	51.4	1.51	2.9	32.2	1.23	3.80	39	1.05	2.6	17.9	0.68	3.8	15	2	3
Rate of Flame Propagation	1.48			3.43			2.15			2.60			1.19			1		
Time of Burning	30.3	1.27	4.2	62.4	2.24	3.6	33	0.85	2.60	69	1.26	1.8	22.9	0.59	2.6	60	2.1	3.5
Rate of burning	2.02			4.16			2.20			4.60			1.53			4.00		
AIHF-60	1.98	0.08	4.4	4.50	0.22	4.9	2.14	0.06	3.20	5.28	0.2	3.8	1.16	0.05	4.6	3.20	0.10	3.2

TEST	90			90			90			90			90			90		
Combination	B(P)+1SA2			B(P)+8SA2			B+B(P)+1SA2			B+B(P)+8SA2			1SA2			8SA2		
GSM	123			543			253			673			60			480		
	Avg	SD	CV%	Avg	SD	CV%	Avg	SD	CV%	Avg	SD	CV%	Avg	SD	CV%	Avg	SD	CV%
Time of Ignition	1.4			2.3			2.1			2.40			1.20			2.4		
Time of Flame Propagation	11.2	.310	2.7	26.4	.516	1.9	9.6	0.14	1.40	21.7	1.3	5.9	7.11	0.38	5.4	12.2	0.46	3.8
Rate of Flame Propagation	0.75			1.76			0.64			1.45			0.5			0.81		
Time of Burning	18.8	0.35	1.9	36.8	1.58	4.3	19	0.47	2.50	41	0.41	1	13	0.42	3.3	41	1.4	3.6
Rate of burning	1.25			2.45			1.27			2.73			0.87			2.73		
AIHF-60	2.54	0.03	1.36	4.80	0.15	3.19	2.80	0.08	3.00	5.45	0.1	1.9	1.66	0.07	4.4	3.79	0.14	3.7

TEST	45			45			45			45			45			45		
Combination	PL+2SA2			PL+3SA2			PL+10SA2			UV+PL+2SA2			UV+PL+3SA2			UV+PL+10SA2		
GSM	218			278			698			348			408			828		
	Avg	SD	CV%	Avg	SD	CV%	Avg	SD	CV%	Avg	SD	CV%	Avg	SD	CV%	Avg	SD	CV%
Time of Ignition	1.6			2.0			2.7			1.70			2.20			2.8		
Time of Flame Propagation	37.9	.99	2.6	43	2.5	5.8	85	1.7	2.10	55	1.9	3.4	58	1.6	2.7	74	2.9	4.
Rate of Flame Propagation	2.53			2.87			5.67			3.67			3.87			4.93		
Time of Burning	34	1.5	4.25	45	1.8	3.9	187	0.93	0.45	52	1.8	3.7	56.5	2.1	3.6	215	2.01	0.8
Rate of burning	2.27			3.00			12.47			3.47			3.77			14.33		
AIHF-60	1.90	0.04	2.4	3.09	0.13	4.4	5.60	0.2	3.70	3.20	0.04	1.45	3.97	0.09	2.5	6.45	0.23	3.7

TEST	90			90			90			90			90			90		
Combination	PL+2SA2			PL+3SA2			PL+10SA2			UV+PL+2SA2			UV+PL+3SA2			UV+PL+10SA2		
GSM	218			278			698			348			408			828		
	Avg	SD	CV%	Avg	SD	CV%	Avg	SD	CV%	Avg	SD	CV%	Avg	SD	CV%	Avg	SD	CV%
Time of Ignition	1.6			2.0			2.7			1.70			2.20			2.8		
Time of Flame Propagation	10.6	1.1	11	10.9	1.02	9.3	18	1.06	5.60	7.5	0.34	4.6	8.1	0.36	4.4	15.1	.51	3.4
Rate of Flame Propagation	0.71			0.73			1.20			0.50			0.54			1.01		
Time of Burning	20	.86	4.2	28	1.19	3.9	203	1.9	0.80	32	1.2	4.1	37	1.5	3.5	215	5.59	2.6
Rate of burning	1.33			1.87			13.53			2.13			2.47			14.33		
AIHF-60	2.11	.004	1.9	3.20	0.15	4.7	5.70	0.1	1.90	3.50	0.15	4.5	4.20	0.12	2.9	6.86	0.19	2.8

TEST	45			45			45			45			45			45		
Combination	2SA2+PL+3SA2			SA2+B(C)			8SA2+B(C)			B+B(C)+SA2			B+B(C)+8SA2			PH+2SA2		
GSM	398			125			545			255			675			240		
	Avg	SD	CV%	Avg	SD	CV%	Avg	SD	CV%	Avg	SD	CV%	Avg	SD	CV%	Avg	SD	CV%
Time of Ignition	1.9			1.30			2.00			1.60			2.2			1.9		
Time of Flame Propagation	41.2	.91	2.2	19.8	1.3	6.6	68.4	2.4	3.50	53.5	1.72	3.2	75.3	2.6	2.7	46	2.1	4.5
Rate of Flame Propagation	2.75			1.32			4.56			3.57			5.02			3.07		
Time of Burning	57	2.3	3.7	27.5	1.3	4.25	115	3.23	2.80	34.5	1.38	3.8	170	3.4	1.9	37	1.2	3.1
Rate of burning	3.80			1.83			7.67			2.30			11.33			2.47		
AIHF-60	3.90	0.16	4.3	1.70	0.04	2.4	3.35	0.08	2.40	2.36	0.11	4.8	5.45	0.25	4.6	2.54	0.07	2.8

TEST	90			90			90			90			90			90		
Combination	2SA2+PL+3SA2			SA2+B(C)			8SA2+B(C)			B+B(C)+SA2			B+B(C)+8SA2			PH+2SA2		
GSM	398			125			545			255			675			240		
	Avg	SD	CV%	Avg	SD	CV%	Avg	SD	CV%	Avg	SD	CV%	Avg	SD	CV%	Avg	SD	CV%
Time of Ignition	1.9			1.30			2.00			1.60			2.2			1.9		
Time of Flame Propagation	16.2	1.28	7.9	11.8	1.4	12	14.3	0.91	6.30	9.4	0.8	9	13.1	.55	1.2	13.6	1.01	7.4
Rate of Flame Propagation	1.08			0.79			0.95			0.63			0.87			0.91		
Time of Burning	67	2.3	3.57	26.4	1.26	4.68	125	3.7	2.90	42.5	1.58	3.7	140	1.9	1.5	38	1.28	2.9
Rate of burning	4.47			1.76			8.33			2.83			9.33			2.53		
AIHF-60	4.13	0.16	4.0	1.90	0.05	3.1	4.20	0.13	3.10	2.68	0.08	3.2	5.75	0.27	4.7	2.68	0.06	2.6

TEST	45			45			45			45			45			45		
Combination	PH+3SA2			PH+10SA2			UV+PH+2SA2			UV+PH+3SA2			UV+PH+10SA2			2SA2+PH+3SA2		
GSM	300			720			370			430			850			420		
	Avg	SD	CV%	Avg	SD	CV%	Avg	SD	CV%	Avg	SD	CV%	Avg	SD	CV%	Avg	SD	CV%
Time of Ignition	2.0			2.90			1.90			2.20			2.4			2.2		
Time of Flame Propagation	51.4	1.17	2.2	82	1.7	2.1	81	1.9	2.40	95	2.54	2.6	63.4	1.51	2.3	91	1.4	1.5
Rate of Flame Propagation	3.43			5.47			5.40			6.33			4.23			6.07		
Time of Burning	43	1.3	2.8	196	2.98	1.5	49	1.5	2.60	56.5	1.67	2.8	213	1.30	.46	55	1.8	3.6
Rate of burning	2.87			13.07			3.27			3.77			14.20			3.67		
AIHF-60	3.18	0.03	1.07	5.86	0.22	3.8	4.10	0.18	4.60	4.70	0.21	4.6	6.90	0.08	1.3	4.59	0.14	3.2

TEST	90			90			90			90			90			90		
Combination	PH+3SA2			PH+10SA2			UV+PH+2SA2			UV+PH+3SA2			UV+PH+10SA2			2SA2+PH+3SA2		
GSM	300			720			370			430			850			420		
	Avg	SD	CV%	Avg	SD	CV%	Avg	SD	CV%	Avg	SD	CV%	Avg	SD	CV%	Avg	SD	CV%
Time of Ignition	2.0			2.90			1.90			2.20			2.4			2.2		
Time of Flame Propagation	11.3	1.03	9.3	21	1.1	5.4	9.4	0.96	10.00	15	0.87	8.4	21	1.5	7.3	21	1.07	5
Rate of Flame Propagation	0.75			1.40			0.63			1.00			1.40			1.40		
Time of Burning	45	1.38	2.9	180	2.78	1.23	48	1.53	2.70	57	1.67	2.8	195	1.2	.56	52.6	1.75	3.4
Rate of burning	3.00			12.00			3.20			3.80			13.00			3.51		
AIHF-60	3.56	0.05	1.6	6.32	0.3	4.8	4.30	0.2	4.70	4.98	0.21	4.4	7.01	0.29	4.2	4.87	0.15	3.1

TEST	45			45			45			45			45		
Combination	B(PC)			B(PC)+SA2			B(PC)+8SA2			B+B(PC)+SA2			B+B(PC)+8SA2		
GSM	65			125			545			255			675		
	Avg	SD	CV%	Avg	SD	CV%	Avg	SD	CV%	Avg	SD	CV%	Avg	SD	CV%
Time of Ignition	1.2			1.4			2.40			1.70			2.60		
Time of Flame Propagation	14.6	0.26	1.8	44.1	1.63	3.7	42	2.78	6.30	38	1	2.6	75	2.06	2.7
Rate of Flame Propagation	0.97			2.94			2.80			2.53			5.00		
Time of Burning	1.81			35	1.48	4.5	64	1.3	2.20	45	1.59	3.9	170	2.84	1.8
Rate of burning	27.1	0.65	2.4	2.33			4.27			3.00			11.33		
AIHF-60	1.2	6.6	13.2	1.68	0.08	4.9	3.54	0.18	5.10	2.89	0.06	2.1	4.15	0.17	4.2

TEST	90			90			90			90			90		
Combination	B(PC)			B(PC)+SA2			B(PC)+8SA2			B+B(PC)+SA2			B+B(PC)+8SA2		
GSM	65			125			545			255			675		
	Avg	SD	CV%	Avg	SD	CV%	Avg	SD	CV%	Avg	SD	CV%	Avg	SD	CV%
Time of Ignition	1.2			1.4			2.4			1.7			2.6		
Time of Flame Propagation	10.2	0.12	1.2	8.9	1.1	12	22	1.6	7.30	12	0.9	7.3	16.7	.94	5.6
Rate of Flame Propagation	0.68			0.59			1.47			0.80			1.11		
Time of Burning	13.7	0.19	1.4	34	1.59	4.44	62	1.5	2.43	42	1.62	3.8	143	2.75	1.7
Rate of burning	0.91			2.27			4.13			2.80			9.53		
AIHF-60	2.11	0.06	3.2	2.10	0.11	5.4	4.30	0.22	5.20	3.30	0.1	3.2	4.35	0.20	4.7

Table 6.6 Thermal Parameters Measured at BHPT for P/V 67/33 Saree (SA3) along with Supporting Garments

TEST P/V 67/33	45			45			45			45			45			45		
Combination	B(P)+SA3			B(P)+8SA3			B+B(P)+1SA3			B+B(P)+8SA3			1SA3			8SA3		
GSM	132			615			262			745			69			552		
	Avg	SD	CV%	Avg	SD	CV%	Avg	SD	CV%	Avg	SD	CV%	Avg	SD	CV%	Avg	SD	CV%
Time of Ignition	2.8			3.8			3.2			4.00			2.10			3.90		
Time of Flame Propagation	16.3	1.1	6.7	109	2.78	2.55	24	1.8	7.5	103	1.83	1.77	11.6	0.42	3.5	50	1.88	3.76
Rate of Flame Propagation	1.09			7.27			1.60			6.87			0.77			3.33		
Time of Burning	32	1.84	4.4	124	2.1	1.68	64	2.49	3.89	165	1.56	0.9	29	1.49	4.9	100	2.87	2.87
Rate of burning	2.13			8.27			4.27			11.00			1.93			6.67		
AIHF-60	2.10	0.04	2.3	4.98	0.19	3.84	2.97	0.12	4.2	7.20	0.36	5.1	1.45	0.03	2.37	4.30	0.12	2.88

TEST	90			90			90			90			90			90		
Combination	B(P)+SA3			B(P)+8SA3			B+B(P)+1SA3			B+B(P)+8SA3			1SA3			8SA3		
GSM	132			615			262			745			69			552		
	Avg	SD	CV%	Avg	SD	CV%	Avg	SD	CV%	Avg	SD	CV%	Avg	SD	CV%	Avg	SD	CV%
Time of Ignition	2.8			3.8			3.2			4.00			2.10			3.90		
Time of Flame Propagation	11.9	2.11	1.7	28	1.42	5	25.2	1.32	5.2	81	2.48	2.9	12	0.64	5.3	52.4	1.28	2.4
Rate of Flame Propagation	0.79			1.87			1.68			5.40			0.80			3.49		
Time of Burning	38	1.71	4.2	123	1.89	1.65	62	2.5	3.85	156	1.43	0.89	24	1.23	4.6	97	2.78	2.89
Rate of burning	2.53			8.20			4.13			10.40			1.60			6.47		
AIHF-60	3.20	.03	2.2	5.20	.009	4.03	3.20	.050	5.2	7.90	0.34	5.7	1.87	0.022	1.8	4.90	0.08	3.7

TEST	45			45			45			45			45			45		
Combination	PL+2SA3			PL+3SA3			PL+10SA3			UV+PL+2SA3			UV+PL+3SA3			UV+PL+10SA3		
GSM	236			305			788			366			435			918		
	Avg	SD	CV%	Avg	SD	CV%	Avg	SD	CV%	Avg	SD	CV%	Avg	SD	CV%	Avg	SD	CV%
Time of Ignition	3.1			3.5			3.9			3.40			3.50			3.90		
Time of Flame Propagation	32	.7	2.1	41.2	1.24	3.2	78	1.85	2.37	37	0.6	1.62	43	1.2	2.7	93	0.91	0.97
Rate of Flame Propagation	2.13			2.75			5.20			2.47			2.87			6.20		
Time of Burning	59	1.92	3.27	70	2.2	3.17	189	1.6	.79	77	2.34	2.7	84	3.04	3.6	225	0.81	0.36
Rate of burning	3.93			4.67			12.60			5.13			5.60			15.00		
AIHF-60	3.00	.07	.184	3.20	0.13	4.3	5.23	0.19	3.7	3.58	0.12	3.5	4.20	0.18	4.3	6.21	0.12	2.08

TEST	90			90			90			90			90			90		
Combination	PL+2SA3			PL+3SA3			PL+10SA3			UV+PL+2SA3			UV+PL+3SA3			UV+PL+10SA3		
GSM	236			305			788			366			435			918		
	Avg	SD	CV%	Avg	SD	CV%	Avg	SD	CV%	Avg	SD	CV%	Avg	SD	CV%	Avg	SD	CV%
Time of Ignition	3.1			3.5			3.9			3.40			3.50			3.90		
Time of Flame Propagation	18	2	1.1	18	1.6	8.8	31	2.1	6.7	25	1.02	4	23	1.62	7	29	1	3.4
Rate of Flame Propagation	1.20			1.20			2.07			1.67			1.53			1.93		
Time of Burning	48	2.01	3.9	54	1.5	3	201	2.31	1.1	81	2.56	2.86	88.5	2.9	3.26	232	6.72	2.9
Rate of burning	3.20			3.60			13.40			5.40			5.90			15.47		
AIHF-60	3.26	0.15	4.80	3.47	0.15	4.4	5.46	0.15	2.8	3.78	0.08	2.14	4.36	0.13	3.2	6.35	0.2	3.2

TEST	45			45			45			45			45			45		
Combination	2SA3+PL+3SA3			B(C)+SA3			B(C)+8SA3			B+B(C)+SA3			B+B(C)+8SA3			PH+2SA3		
GSM	443			134			617			264			747			258		
	Avg	SD	CV%	Avg	SD	CV%	Avg	SD	CV%	Avg	SD	CV%	Avg	SD	CV%	Avg	SD	CV%
Time of Ignition	3.4			2.6			3.2			2.80			3.5			3.30		
Time of Flame Propagation	61	1.26	2.06	29	1.34	4.62	65	2.1	3.2	3.1	2.77	8.1	105	1.8	1.7	26	1.54	5.9
Rate of Flame Propagation	4.07			1.93			4.33			0.21			7.00			1.73		
Time of Burning	90	2.65	2.68	39	1.79	4.5	128	1.45	2.5	64	2.4	3.92	185	1.92	0.9	45	1.98	4.2
Rate of burning	6.00			2.60			8.53			4.27			12.33			3.00		
AIHF-60	4.37	0.17	4	1.57	0.03	2.3	5.20	0.17	3.42	3.50	0.07	2.13	5.36	0.15	2.8	3.14	0.04	1.5

TEST	90			90			90			90			90			90		
Combination	2SA3+PL+3SA3			B(C)+SA3			B(C)+8SA3			B+B(C)+SA3			B+B(C)+8SA3			PH+2SA3		
GSM	443			134			617			264			747			258		
	Avg	SD	CV%	Avg	SD	CV%	Avg	SD	CV%	Avg	SD	CV%	Avg	SD	CV%	Avg	SD	CV%
Time of Ignition	3.4			2.6			3.2			2.80			3.5			3.30		
Time of Flame Propagation	23	1.16	5	12	2.1	1.7	27	1.5	5.5	24	1.2	5	81	2.6	3.2	17	1.41	8.2
Rate of Flame Propagation	1.53			0.80			1.80			1.60			5.40			1.13		
Time of Burning	85	2.41	2.5	38	1.57	4.1	125	1.44	2.3	63	2.68	3.7	185	1.98	0.8	39	1.58	4.1
Rate of burning	5.67			2.53			8.33			4.20			12.33			2.60		
AIHF-60	4.66	0.13	2.94	2.45	0.08	3.24	5.40	0.25	4.77	3.90	0.13	3.42	5.90	0.26	4.5	3.22	0.14	4.56

TEST	45			45			45			45			45			45		
Combination	PH+3SA3			PH+10SA3			UV+PH+2SA3			UV+PH+3SA3			UV+PH+10SA3			2S3+PH+3SA3		
GSM	327			810			388			457			940			465		
	Avg	SD	CV%	Avg	SD	CV%	Avg	SD	CV%	Avg	SD	CV%	Avg	SD	CV%	Avg	SD	CV%
Time of Ignition	3.4			4			3.3			3.40			3.8			3.50		
Time of Flame Propagation	31	1.86	5.8	94	1.04	1.1	48.6	1.62	3.23	50.3	1.64	3.3	52	1.5	2.8	108	4.4	3.9
Rate of Flame Propagation	2.07			6.27			3.24			3.35			3.47			7.20		
Time of Burning	74	1.58	2.2	195	1.78	0.6	82	2.99	3.6	96	2.67	2.3	210	1.86	0.45	92	2.56	2.6
Rate of burning	4.93			13.00			5.47			6.40			14.00			6.13		
AIHF-60	3.36	0.12	3.64	5.30	0.21	4.1	3.60	.02	2.6	4.60	0.11	2.6	7.30	0.21	3	4.85	0.21	4.34

TEST	90			90			90			90			90			90		
Combination	PH+3SA3			PH+10SA3			UV+PH+3SA3			UV+PH+3SA3			UV+PH+10SA3			2S3+PH+3SA3		
GSM	327			810			457			457			940			465		
	Avg	SD	CV%	Avg	SD	CV%	Avg	SD	CV%	Avg	SD	CV%	Avg	SD	CV%	Avg	SD	CV%
Time of Ignition	3.4			4			3.3			3.40			3.8			3.50		
Time of Flame Propagation	16.5	.02	6.1	31.2	2.35	7.5	22	1.8	8.1	22	1.8	8.1	74	1.55	2	32	1.8	5.6
Rate of Flame Propagation	1.10			2.08			1.47			1.47			4.93			2.13		
Time of Burning	72	1.54	2.1	192	1.73	.57	78	2.79	3.4	88	2.56	2.2	205	1.85	0.46	88	2.54	2.54
Rate of burning	4.80			12.80			5.20			5.87			13.67			5.87		
AIHF-60	3.67	0.16	4.62	5.87	0.28	4.9	3.90	.15	4.10	4.90	0.21	4.32	7.71	0.29	3.87	5.10	0.21	4.23

TEST	45			45			45			45		
Combination	B(PC)+SA3			B(PC)+8SA3			B+B(PC)+1SA3			B+B(PC)+8SA3		
GSM	134			617			264			747		
	Avg	SD	CV%	Avg	SD	CV%	Avg	SD	CV%	Avg	SD	CV%
Time of Ignition	3.8			3.8			3.1			4.1		
Time of Flame Propagation	23	0.96	4.2	123	1.08	4.2	35	1.08	4.70	107	.03	2.3
Rate of Flame Propagation	1.53			8.20			2.33			7.13		
Time of Burning	29	2.04	.75	176	2.04	.75	65	1.78	2.5	135	2.36	1.08
Rate of burning	1.93			11.73			4.33			9.00		
AIHF-60	2.25	0.07	3.46	4.00	0.04	1.20	3.90	0.04	1.20	4.23	0.19	4.6

TEST	90			90			90			90		
Combination	B(PC)+8SA3			B(PC)+8SA3			B+B(PC)+1SA3			B+B(PC)+8SA3		
GSM	134			617			264			747		
	Avg	SD	CV%	Avg	SD	CV%	Avg	SD	CV%	Avg	SD	CV%
Time of Ignition	3.8			3.8			3.10			4.10		
Time of Flame Propagation	34	0.95	2.8	94	2.7	2.8	29	2.4	8.2	81	1.9	2.3
Rate of Flame Propagation	2.27			6.27			1.93			5.40		
Time of Burning	38	2.05	.72	174	2.05	.72	52	1.68	2.45	128	2.33	1.1
Rate of burning	3.8			6.38			3.47			8.53		
AIHF-60	2.36	0.9	4.23	6.38	0.22	3.45	4.50	0.12	2.84	4.35	0.19	4.35

Table 6.7 Thermal Parameters Measured at BHPT for P/V 33/67 Saree (SA4) along with Supporting Garments

TEST	45			45			45			45			45			45		
Combination	B(P)+SA4			B(P)`+8SA4			B+B(P)+SA4			B+B(P)+8SA4			SA4			8SA4		
GSM	123			543			253			673			60			480		
	Avg	SD	CV%	Avg	SD	CV%	Avg	SD	CV%	Avg	SD	CV%	Avg	SD	CV%	Avg	SD	CV%
Time of Ignition	1.8			2.5			2.4			2.50			1.400			2.70		
Time of Flame Propagation	19.3	1.34	6.9	63.3	1.29	2	19.5	1.2	6.5	46.5	1.02	2.2	9.4	1.28	13	46.7	1.1	2.3
Rate of Flame Propagation	1.29			4.22			1.30			3.10			0.63			3.11		
Time of Burning	58	2.4	4.1	156	3.12	1.89	171	1.72	1.19	175	1.56	1.2	28.8	1.2	4.3	130	1.56	1.7
Rate of burning	3.87			10.40			11.40			11.67			1.92			8.67		
AIHF-60	2.79	0.08	2.98	4.26	0.12	3	3.06	0.10	3.5	5.60	0.14	2.6	1.38	0.03	2.4	4.1	0.16	3.96

TEST	90			90			90			90			90			90		
Combination	B(P)+SA4			B(P)`+8SA4			B+B(P)+SA4			B+B(P)+8SA4			SA4			8SA4		
GSM	123			543			253			673			60			480		
	Avg	SD	CV%	Avg	SD	CV%	Avg	SD	CV%	Avg	SD	CV%	Avg	SD	CV%	Avg	SD	CV%
Time of Ignition	1.8			2.5			2.4			2.50			1.400			2.70		
Time of Flame Propagation	19.3	1.34	6.9	59.9	1.4	2.4	19.5	1.3	6.9	44.4	1.72	3.8	8.9	0.56		44.7	1	2.24
Rate of Flame Propagation	1.29			3.99			1.30			2.96			0.59			2.98		
Time of Burning	56	2.35	3.9	153	3.15	1.89	165	1.65	1.15	169	1.52	.89	25	1.19	4.16	127	1.55	1.69
Rate of burning	3.73			10.20			11.00			11.27			1.67			8.47		
AIHF-60	3.1	0.10	3.45	4.60	0.07	1.59	3.20	0.06	1.89	5.7	0.13	2.4	1.78	0.05	3.1	4.56	0.17	3.76

TEST	45			45			45			45			45			45		
Combination	PL+2SA4			PL+3SA4			PL+10SA4			U.V.+PL+2SA4			U.V.+PL+3SA4			U.V.+PL+10SA4		
GSM	218			278			698			348			408			828		
	Avg	SD	CV%	Avg	SD	CV%	Avg	SD	CV%	Avg	SD	CV%	Avg	SD	CV%	Avg	SD	CV%
Time of Ignition	1.9			2.3			2.9			1.90			2.30			3.10		
Time of Flame Propagation	18.1	5.8	3.2	24.3	1.08	4.5	64.7	1.3	2	38	0.78	2	38	0.91	2.4	90	0.68	0.76
Rate of Flame Propagation	1.21			1.62			4.31			2.53			2.53			6.00		
Time of Burning	75	2.1	2.4	85	2.3	2.56	179	1.7	1.02	93	2.03	2.66	106	1.1	1.06	215	1.12	0.64
Rate of burning	5.00			5.67			11.93			6.20			7.07			14.33		
AIHF-60	2.97	0.05	1.69	3.20	0.05	1.6	4.97	0.14	2.9	3.50	0.04	1.4	4.30	0.05	1.3	5.9	0.12	2.1

TEST	90			90			90			90			90			90		
Combination	PL+2SA4			PL+3SA4			PL+10SA4			U.V.+PL+2SA4			U.V.+PL+3SA4			U.V.+PL+10SA4		
GSM	218			278			698			348			408			828		
	Avg	SD	CV%	Avg	SD	CV%	Avg	SD	CV%	Avg	SD	CV%	Avg	SD	CV%	Avg	SD	CV%
Time of Ignition	1.9			2.3			2.9			1.90			2.30			3.10		
Time of Flame Propagation	18	0.78	4.33	20.31.	1.67	8.2	59.3	1.26	2.15	38.9	1.37	3.6	37.5	2.01	5.3	80.5	2.1	2.6
Rate of Flame Propagation	1.20			1.26			3.95			2.59			2.50			5.37		
Time of Burning	72	2.01	2.34	83	2.02	2.43	175	1.56	1.2	91	2.2	2.56	103	1.1	1.04	213	1.11	0.62
Rate of burning	4.80			5.53			11.67			6.07			6.87			14.20		
AIHF-60	3.35	0.12	3.8	3.60	0.07	2.05	5.23	0.15	2.9	3.9	0.05	1.5	4.5	0.06	1.5	6.20	0.17	2.8

TEST	45			45			45			45			45			45		
Combination	2SA4+PL+3SA4			B(C)+SA4			B(C)+8SA4			B+B(C)+SA4			B+B(C)+8SA4			PH+2SA4		
GSM	398			125			545			255			675			240		
	Avg	SD	CV%	Avg	SD	CV%	Avg	SD	CV%	Avg	SD	CV%	Avg	SD	CV%	Avg	SD	CV%
Time of Ignition	2.1			1.7			2.2			1.80			2.40			2.10		
Time of Flame Propagation	23	.75	3.3	12.9	1.1	8.7	51	1.1	2.3	30	2.08	6.9	61.2	1.5	2.6	37.2	0.74	2.2
Rate of Flame Propagation	1.53			0.86			3.40			2.00			4.08			2.48		
Time of Burning	90	2.5	2.56	52	2.13	4.2	154	2.25	1.89	78	1.65	2.46	165	1.56	0.84	67	1.89	3.7
Rate of burning	6.00			3.47			10.27			5.20			11.00			4.47		
AIHF-60	4.26	0.19	4.63	1.90	0.09	5	4.06	0.06	1.7	3.45	0.06	1.98	5.34	0.05	1	3.10	0.06	2.1

TEST	90			90			90			90			90			90		
Combination	2SA4+PL+3SA4			B(C)+SA4			B(C)+8SA4			B+B(C)+SA4			B+B(C)+8SA4			PH+2SA4		
GSM	398			130			545			255			675			240		
	Avg	SD	CV%	Avg	SD	CV%	Avg	SD	CV%	Avg	SD	CV%	Avg	SD	CV%	Avg	SD	CV%
Time of Ignition	2.1			1.7			2.2			1.80			2.40			2.10		
Time of Flame Propagation	18.5	1.02	5.6	11.6	1.56	1.3	54	1.72	3.1	27.9	1.97	7.3	57.2	3.13	5.49	35.5	1.28	3.6
Rate of Flame Propagation	1.23			0.77			3.60			1.86			3.81			2.37		
Time of Burning	87	2.49	2.45	48	2.12	2.01	153	2.24	1.78	77	1.71	2.55	164	1.77	0.92	66	1.86	3.66
Rate of burning	5.8			3.2			10.2			5.13			10.93			4.40		
AIHF-60	4.39	0.14	3.24	2.40	0.07	3.23	4.60	0.09	1.9	3.80	0.11	3.1	5.80	0.1	1.8	3.98	0.12	3.1

TEST	45			45			45			45			45			45		
Combination	PH+3SA4			PH+10SA4			UV+PH+2SA4			UV+PH+3SA4			UV+PH+10SA4			2SA4+PH+3SA4		
GSM	300			720			370			430			850			420		
	Avg	SD	CV%	Avg	SD	CV%	Avg	SD	CV%	Avg	SD	CV%	Avg	SD	CV%	Avg	SD	CV%
Time of Ignition	2.2			3.2			2.2			2.50			2.60			2.40		
Time of Flame Propagation	38.2	.64	1.6	90	.78	.86	42.4	1.1	2.4	40	0.7	1.7	83.3	0.69	0.83	50	0.63	1.2
Rate of Flame Propagation	2.55			6.00			2.83			2.67			5.55			3.33		
Time of Burning	95	2.56	2.67	198	1.9	1.1	116	1.64	1.59	119	1.56	1.69	216	1.2	0.56	114	1.83	1.8
Rate of burning	6.33			13.20			7.73			7.93			14.40			7.60		
AIHF-60	3.45	0.07	2.1	5.40	0.11	2.1	3.66	0.03	1	4.33	0.05	1.25	6.73	0.33	5	4.40	0.13	3.1

TEST	90			90			90			90			90			90		
Combination	PH+3SA4			PH+10SA4			UV+PH+2SA4			UV+PH+3SA4			UV+PH+10SA4			2SA4+PH+3SA4		
GSM	300			720			370			430			850			420		
	Avg	SD	CV%	Avg	SD	CV%	Avg	SD	CV%	Avg	SD	CV%	Avg	SD	CV%	Avg	SD	CV%
Time of Ignition	2.2			3.2			2.2			2.50			2.60			2.40		
Time of Flame Propagation	25.2	1.6	6.4	108.1	3.08	2.85	38.9	1.3	3.6	62.2	1.35	5.20	60.1	1.86	3.1	14.6	1.11	7.9
Rate of Flame Propagation	1.68			7.21			2.59			4.15			4.01			0.97		
Time of Burning	97	2.58	2.70	192	1.75	1.09	111	1.42	1.77	120	1.52	1.68	210	1.03	0.49	110	1.79	1.59
Rate of burning	6.47			12.80			7.40			8.00			14.00			7.33		
AIHF-60	3.88	0.14	3.8	5.5	0.18	3.4	4.00	0.06	1.5	4.53	0.04	1	7.60	0.35	4.65	4.6	0.14	3.1

TEST	45			45			45			45		
Combination	B(PC)+SA4			B(PC)+8SA4			B+B(PC)+SA4			B+B(PC)+8SA4		
GSM	125			545			255			675		
	Avg	SD	CV%	Avg	SD	CV%	Avg	SD	CV%	Avg	SD	CV%
Time of Ignition	1.7			2.6			1.90			2.9		
Time of Flame Propagation	23.1	1.12	4.8	22	1.2	6.5	24.5	0.67	2.68	53.7	.91	1.7
Rate of Flame Propagation	1.54			1.47			1.63			3.58		
Time of Burning	59	1.56	4.2	158	3.02	1.84	68	2.16	3.56	174	1.77	.96
Rate of burning	3.93			10.53			4.53			11.60		
AIHF-60	1.67	0.04	2.16	5.62	0.06	1.2	3.62	0.05	1.50	4.30	0.10	2.34

TEST	90			90			90			90		
Combination	B(PC)+SA4			B(PC)+8SA4			B+B(PC)+SA4			B+B(PC)+8SA4		
GSM	125			545			255			675		
	Avg	SD	CV%	Avg	SD	CV%	Avg	SD	CV%	Avg	SD	CV%
Time of Ignition	1.7			2.6			1.90			2.9		
Time of Flame Propagation	25.5	.83	3.3	19.7	1.48	7.8	16.3	1.63	10.00	38.7	1.26	3.3
Rate of Flame Propagation	1.70			1.31			1.09			2.58		
Time of Burning	55	1.57	4.14	152	3.15	1.89	67	2.14	3.66	172	1.77	.93
Rate of burning	3.67			10.13			4.47			11.47		
AIHF-60	2.26	0.06	2.9	5.90	.23	3.83	3.80	0.19	5.10	4.60	0.14	3.1

Table 6.8 Thermal Parameters Measured at BHPT for P/C 67/33 Saree (SA5) along with Supporting Garments

TEST P/ C 67/33	45			45			45			45			45			45		
Combination	B(P)+SA5			B(P)+8SA5			B+B(P)+1SA5			B+B(P)+8SA5			1SA5			8SA5		
GSM	119			511			249			641			56			448		
	Avg	SD	CV%	Avg	SD	CV%	Avg	SD	CV%	Avg	SD	CV%	Avg	SD	CV%	Avg	SD	CV%
Time of Ignition	2.6			3.5			2.9			3.70			1.90			3.60		
Time of Flame Propagation	21.1	1.36	.62	55.26	1.29	2.3	20.8	1.83	8.8	41.6	2.93	7	14.2	3	2.89	45.2	3.37	7.4
Rate of Flame Propagation	1.41			3.684			1.39			2.77			0.95			3.01		
Time of Burning	53	1.56	4.11	145	2.56	1.74	62.4	2.45	4.01	153	1.48	0.89	32	1.76	4.8	145	1.87	1.69
Rate of burning	3.53			9.67			4.16			10.20			2.13			9.67		
AIHF-60	2.34	0.10	4.3	3.35	0.11	3.5	2.79	0.11	4.1	5.32	0.18	3.4	1.29	0.01	1	3.36	0.11	3.3

TEST	90			90			90			90			90			90		
Combination	B(P)+SA5			B(P)+8SA5			B+B(P)+1SA5			B+B(P)+8SA5			1SA5			8SA5		
GSM	119			511			249			641			56			448		
	Avg	SD	CV%	Avg	SD	CV%	Avg	SD	CV%	Avg	SD	CV%	Avg	SD	CV%	Avg	SD	CV%
Time of Ignition	2.6			3.5			2.9			3.70			1.90			3.60		
Time of Flame Propagation	17.9	1.04	5.8	52.8	.89	.016	24	1.9	8.9	3.3	1.2	38.3	11.3	3.5	3.1	46.1	1.3	2.9
Rate of Flame Propagation	1.19			3.52			1.6			0.22			0.75			3.07		
Time of Burning	52	1.8	4.10	145	2.53	1.76	62	2.43	4.12	156	1.42	0.92	35	1.77	4.89	148	1.85	1.6
Rate of burning	3.47			9.67			4.13			10.40			2.33			9.87		
AIHF-60	2.90	0.13	4.65	4.23	0.11	2.8	3.09	0.05	1.8	5.5	0.18	3.4	1.42	0.07	5.2	4.20	0.05	1.2

TEST	45			45			45			45			45			45		
Combination	PL+2SA5			PL+3SA5			PL+10SA5			UV+PL+2SA5			UV+PL+3SA5			UV+PL+10SA5		
GSM	210			266			658			340			396			788		
	Avg	SD	CV%	Avg	SD	CV%	Avg	SD	CV%	Avg	SD	CV%	Avg	SD	CV%	Avg	SD	CV%
Time of Ignition	3.80			3.2			3.8			3.20			3.30			3.70		
Time of Flame Propagation	21.5	1.20	5.5	21.2	1.13	5.1	46.8	3.54	7.5	25.7	1.1	4.2	25.6	1.62	6.3	62	0.8	1.2
Rate of Flame Propagation	1.43			1.41			3.12			1.71			1.71			4.13		
Time of Burning	68	2.38	3.7	72	2.8	4.01	150	2.9	1.8	89	3.01	3.5	94	3.5	3.65	177	2.15	1.3
Rate of burning	4.53			4.8			10			5.93			6.27			11.80		
AIHF-60	2.30	0.08	3.6	3.20	0.15	4.9	4.56	0.19	4.45	3.76	0.06	1.73	4.12	0.9	2.4	5.8	0.08	1.51

TEST	90			90			90			90			90			90		
Combination	PL+2SA5			PL+3SA5			PL+10SA5			UV+PL+2SA5			UV+PL+3SA5			UV+PL+10SA5		
GSM	210			266			658			340			396			788		
	Avg	SD	CV%	Avg	SD	CV%	Avg	SD	CV%	Avg	SD	CV%	Avg	SD	CV%	Avg	SD	CV%
Time of Ignition	3.80			3.2			3.8			3.20			3.30			3.70		
Time of Flame Propagation	17.5	1.3	6.9	21.6	2.5	11.7	42.7	2.2	4.8	26	1.1	4.1	25.8	0.87	.3.3	63.3	2.1	3.4
Rate of Flame Propagation	1.17			1.44			2.85			1.73			1.72			4.22		
Time of Burning	64	2.58	4.23	71.1	2.58	3.8	147.7	3.14	2.31	85	3.45	3.78	94	3.12	3.28	174	2.08	1.25
Rate of burning	4.27			4.74			9.85			5.67			6.27			11.61		
AIHF-60	2.97	0.02	1.0	3.50	0.15	4.3	4.83	0.06	1.3	3.95	0.16	4.23	4.25	0.15	3.6	6.10	0.08	1.4

TEST	45			45			45			45			45			45		
Combination	2SA5+PL+3SA5			B(C)+SA5			B(C)+8SA5			B+B(C)+SA5			B+B(C)+8SA5			PH+2SA5		
GSM	378			121			513			251			643			232		
	Avg	SD	CV%	Avg	SD	CV%	Avg	SD	CV%	Avg	SD	CV%	Avg	SD	CV%	Avg	SD	CV%
Time of Ignition	3.20			2.3			2.9			2.40			3.20			2.90		
Time of Flame Propagation	31.6	1.49	4.7	15.6	.9	5.7	41.6	1.6	3.8	21.48	2.4	11	86.7	1.18	13.6	18.9	0.95	5
Rate of Flame Propagation	2.11			1.04			2.77			1.43			5.78			1.26		
Time of Burning	87	2.28	3.2	47	2.01	4.4	120	3.45	2.8	75	2.89	3.8	154	3.12	2.01	49.2	2.25	4.49
Rate of burning	5.80			3.13			8.00			5.00			10.27			3.28		
AIHF-60	4.00	0.11	2.8	2.21	0.11	5.47	3.65	0.13	3.64	3.20	0.03	1	5.80	0.13	2.27	3.01	0.09	2.98

TEST	90			90			90			90			90			90		
Combination	2SA5+PL+3SA5			B(C)+SA5			B(C)+8SA5			B+B(C)+SA5			B+B(C)+8SA5			PH+2SA5		
GSM	378			121			513			251			643			232		
	Avg	SD	CV%	Avg	SD	CV%	Avg	SD	CV%	Avg	SD	CV%	Avg	SD	CV%	Avg	SD	CV%
Time of Ignition	3.20			2.3			2.9			2.40			3.20			2.90		
Time of Flame Propagation	27.3	2.12	7.6	18.2	.87	4.7	40.2	1.8	4.6	21.8	2.4	11	83.4	2.7	3.2	20.9	0.95	5
Rate of Flame Propagation	1.82			1.21			2.68			1.45			5.56			1.39		
Time of Burning	84	1.7	2.9	42	1.8	4.6	105	3.012	2.89	72.3	2.56	3.5	148.3	3.1	2.16	46.5	1.89	4.41
Rate of burning	5.60			2.8			7			4.82			9.88			3.10		
AIHF-60	4.15	0.13	3.2	2.46	0.03	1.3	3.97	0.15	3.83	3.6	0.03	1	6.53	0.07	1.20	3.20	0.09	2.94

TEST	45			45			45			45			45			45		
Combination	PH+3SA5			PH+10SA5			UV+PH+2SA5			UV+PH+3SA5			UV+PH+10SA5			2SA5+PH+3SA5		
GSM	288			680			362			418			810			400		
	Avg	SD	CV%	Avg	SD	CV%	Avg	SD	CV%	Avg	SD	CV%	Avg	SD	CV%	Avg	SD	CV%
Time of Ignition	3			3.9			3			3.20			3.50			3.40		
Time of Flame Propagation	20.2	.83	4.1	30	.87	5	28.1	.83	2.9	28.1	.83	2.9	98.1	1.6	2.3	36.1	1.2	3.3
Rate of Flame Propagation	1.35			2.00			1.87			1.87			6.54			2.41		
Time of Burning	78.3	2.78	3.6	143	2.89	2.3	83	2.9	3.4	89	2.9	3.4	208	1.4	0.7	96.4	2.6	2.7
Rate of burning	5.22			9.53			5.53			5.93			13.87			6.43		
AIHF-60	3.50	0.07	1.99	5.10	0.10	2	4.20	0.07	1.7	4.90	0.08	1.7	7.20	0.13	1.85	4.28	0.06	1.58

TEST	90			90			90			90			90			90		
Combination	PH+3SA5			PH+10SA5			UV+PH+2SA5			UV+PH+3SA5			UV+PH+10SA5			2SA5+PH+3SA5		
GSM	288			680			362			418			810			400		
	Avg	SD	CV%	Avg	SD	CV%	Avg	SD	CV%	Avg	SD	CV%	Avg	SD	CV%	Avg	SD	CV%
Time of Ignition	3			3.9			3			3.20			3.50			3.40		
Time of Flame Propagation	17.4	1.37	7.7	42.1	1.69	4.25	25.8	.93	3.6	25.8	0.68	2.65	66.33	1.66	2.5	38.9	2.67	6
Rate of Flame Propagation	1.16			2.81			1.72			1.72			4.42			2.59		
Time of Burning	78	2.75	3.45	138	2.48	2.12	77	2.78	3.19	83	2.68	3.28	204	1.02	0.48	85	2.46	2.7
Rate of burning	5.20			9.20			5.13			5.53			13.60			5.67		
AIHF-60	3.84	0.06	1.57	5.20	0.08	1.68	4.40	0.07	1.6	5.35	0.08	1.6	7.4	0.19	2.57	4.47	0.18	4.10

TEST	45			45			45			45		
Combination	B(PC)+SA5			B(PC)+8SA5			B+B(PC)+1SA5			B+B(PC)+8SA5		
GSM	121			513			251			643		
	Avg	SD	CV%	Avg	SD	CV%	Avg	SD	CV%	Avg	SD	CV%
Time of Ignition	2.5			3.5			2.7			3.8		
Time of Flame Propagation	15.5	0.36	2.33	64.8	1.74	2	19.5	1.22	6.2	88	1.65	1.89
Rate of Flame Propagation	1.03			4.32			1.30			5.87		
Time of Burning	34	1.05	3.1	115	2.48	2.34	58	2.1.8	3.5	125	2.68	2.22
Rate of burning	2.27			7.67			3.87			8.33		
AIHF-60	1.68	0.03	2.07	4.84	8.2	3.07	2.61	0.11	4.5	3.90	0.19	5

TEST	90			90			90			90		
Combination	B(PC)+SA5			B(PC)+8SA5			B+B(PC)+1SA5			B+B(PC)+8SA5		
GSM	121			513			251			643		
	Avg	SD	CV%	Avg	SD	CV%	Avg	SD	CV%	Avg	SD	CV%
Time of Ignition	2.5			3.5			2.7			3.8		
Time of Flame Propagation	12.3	0.24	2	58	1.72	2.011	18.5	1.57	8.4	78	1.54	1.58
Rate of Flame Propagation	0.82			3.87			1.23			5.20		
Time of Burning	23	0.50	2.2	112	2.32	2.2	53.4	1.98	3.2	118	2.58	2.19
Rate of burning	1.53			7.47			3.56			7.87		
AIHF-60	2.38	0.08	3.75	5.44	2.9	3	3.05	0.10	3.43	4.50	0.21	4.75

Table 6.9 Thermal Parameters Measured at BHPT for Polyester Saree (SA6) along with Supporting Garments

TEST	45			45			45			45			45			45		
Combination	B(P)+SA6			B(P)+8SA6			B+B(P)+SA6			B+B(P)+8SA6			SA6			8SA6		
GSM	118			503			248			633			55			440		
	Avg.	SD	CV%	Avg.	SD	CV%	Avg.	SD	CV%	Avg.	SD	CV%	Avg.	SD	CV%	Avg.	SD	CV%
Time of Ignition	3.2			4			3.4			4.2			2.2			4.1		
Time for flame propagation	20.2	2.10	10.3	55.2	1.78	3.2	29.24	0.7	2.30	80.6	0.97	1.2	8.2	2.66	21.2	84.2	2.7	3.2
Rate of Flame Propagation	1.35			3.68			1.95			5.37			0.55			5.61		
Time of Burning	30.6	0.85	2.8	123	1.69	1.37	35	1.05	3.00	120	1.4	1.94	10.9	0.31	2.9	90	1.99	2.21
Rate of Burning	2.04			8.20			2.33			8.00			0.73			6.00		
AIHF-60	1.87	0.02	1.1	4.58	0.16	3.52	2.9	0.03	4.22	9.056	0.28	3.1	1.47	0.04	3.3	4.24	0.13	3.43

TEST	90			90			90			90			90			90		
Combination	B(P)+SA6			B(P)+8SA6			B+B(P)+SA6			B+B(P)+8SA6			SA6			8SA6		
GSM	118			503			248			633			55			440		
	Avg.	SD	CV%	Avg.	SD	CV%	Avg.	SD	CV%	Avg.	SD	CV%	Avg.	SD	CV%	Avg.	SD	CV%
Time of Ignition	3.2			4			3.4			4.2			2.2			4.1		
Time for flame propagation	12	.95	7.9	53	1.64	5.04	25.9	1.135	0.04	66	1.54	2.3	6.8	0.6	8.8	73.3	1.73	2.36
Rate of Flame Propagation	0.80			3.53			1.73			4.40			0.45			4.89		
Time of Burning	18.1	0.7	3.86	92.7	2.19	3.01	24.8	1.44	4.60	83.09	1.92	2.31	7.7	0.22	2.86	64.2	1.11	1.73
Rate of Burning	1.21			6.18			1.65			5.54			0.51			4.28		
AIHF-60	3.19	.003	3.75	4.89	.04	2.56	3.418	0.12	3.80	9.442	0.03	1.07	2.04	0.03	1.56	4.69	0.02	1.5

TEST	45			45			45			45			45			45		
Combination	PL+2SA6			PL+3SA6			PL+10SA6			UV+PL+2SA6			UV+PL+3SA6			UV+PL+10SA6		
GSM	208			255			640			338			393			778		
	Avg.	SD	CV%	Avg.	SD	CV%	Avg.	SD	CV%	Avg.	SD	CV%	Avg.	SD	CV%	Avg.	SD	CV%
Time of Ignition	3.3			3.7			4.1			3.8			3.9			4.1		
Time for flame propagation	43.36	1.06	2.44	46.5	1.2	2.58	1.06	2.57	2.42	47.95	1.7	3.54	57.1	0.53	0.92	89.7	78	86
Rate of Flame Propagation	2.89			3.10			0.07			3.20			3.81			5.98		
Time of Burning	52.2	1.32	2.52	57.78	1.74	3.01	122.6	2	1.63	61	2.66	4.35	85	3.3	3.91	130	3.64	2.8
Rate of Burning	3.48			3.85			8.17			4.07			5.67			8.67		
AIHF-60	2.7	0.05	2.08	3.84	0.04	1.25	5.626	0.14	2.63	3.99	0.15	3.93	3.91	0.022	1.69	6.16	0.17	2.85

TEST	90			90			90			90			90			90		
Combination	PL+2SA6			PL+3SA6			PL+10SA6			UV+PL+2SA6			UV+PL+3SA6			UV+PL+10SA6		
GSM	208			255			640			338			393			778		
	Avg.	SD	CV%	Avg.	SD	CV%	Avg.	SD	CV%	Avg.	SD	CV%	Avg.	SD	CV%	Avg.	SD	CV%
Time of Ignition	3.3			3.7			4.1			3.8			3.9			4.1		
Time for flame propagation	40.4	1.7	4.2	38.6	1.49	3.86	90.1	1.81	2.00	41.8	1.6	3.82	50.5	2	3.96	83.5	1.5	1.79
Rate of Flame Propagation	2.69			2.57			6.01			2.79			3.37			5.57		
Time of Burning	35	1.16	3.47	43.2	1.93	4.49	86.4	2.17	2.52	45	1.53	3.42	49	1.11	2.28	96.1	2.34	2.43
Rate of Burning	2.33			2.88			5.76			3.00			3.27			6.41		
AIHF-60	3.94	0.18	4.60	4.10	0.08	2.08	5.71	0.04	1.39	4.39	0.17	3.88	4.88	0.02	1.88	6.78	0.05	1.54

TEST	45			45			45			45			45			45		
Combination	2SA6+PL+3SA6			B(C) +SA6			B(C)+8SA6			B+B(C)+SA6			B+B(C)+8SA6			B(PC)+SA6		
GSM	373			120			505			250			635			120		
	Avg.	SD	CV%	Avg.	SD	CV%	Avg.	SD	CV%	Avg.	SD	CV%	Avg.	SD	CV%	Avg.	SD	CV%
Time of Ignition	3.6			3			3.4			3			3.8			3		
Time for flame propagation	50.38	1.18	2.34	32	1.26	3.93	121.6	1.01	0.83	43.9	2.16	4.92	97.6	1.2	1.22	23.6	.91	3.85
Rate of Flame Propagation	3.36			2.13			8.11			2.93			6.51			1.57		
Time of Burning	84	1.5	1.79	32	0.79	2.49	121	0.85	0.64	59	1.9	3.22	126	1.92	1.53	31.2	.93	2.98
Rate of Burning	5.60			2.13			8.07			3.93			8.40			2.08		
AIHF-60	4.77	0.14	3.14	1.76	.02	2.98	5.12	0.05	1.24	3.30	0.03	3.19	5.65	0.04	1.30	2.7	.016	3.83

TEST	90			90			90			90			90			90		
Combination	2SA6+PL+3SA6			B(C) +SA6			B(C)+8SA6			B+B(C)+SA6			B+B(C)+8SA6			B(PC)+SA6		
GSM	373			120			505			250			635			120		
	Avg.	SD	CV%	Avg.	SD	CV%	Avg.	SD	CV%	Avg.	SD	CV%	Avg.	SD	CV%	Avg.	SD	CV%
Time of Ignition	3.60			3.00			3.40			3.00			3.80			3.00		
Time for flame propagation	46.4	1.49	3.2	30.2	1.24	4.1	115.2	2.35	2.00	42	2.56	6	91	2.2	2.4	19.5	1.43	7.33
Rate of Flame Propagation	3.09			2.01			7.68			2.80			6.07			1.30		
Time of Burning	29.2	0.88	3.04	24.8	0.47	1.9	87.12	1.9	2.19	43.6	2.05	4.71	93.5	1.72	1.84	25.9	0.84	3.28
Rate of Burning	1.95			1.65			5.81			2.91			6.23			1.73		
AIHF-60	5.24	0.25	4.9	2.8	0.09	3.45	5.28	0.05	1.46	4.122	0.1	2.47	6.053	0.04	1.55	3.13	0.03	9.6

TEST	45			45			45			45			45			45		
Combination	B(PC)+8SA6			B+B(PC)+SA6			B+B(PC)+8SA6			PH+2SA6			PH+3SA6			PH+10SA6		
GSM	505			250			635			230			285			670		
	Avg.	SD	CV%	Avg.	SD	CV%	Avg.	SD	CV%	Avg.	SD	CV%	Avg.	SD	CV%	Avg.	SD	CV%
Time of Ignition	4.1			3.2			4.3			3.4			3.5			4.1		
Time for flame propagation	51.4	1.68	3.26	25.6	1.28	5	131	.77	0.58	40.6	1.11	2.7	60.18	0.83	1.37	84.2	.87	1.03
Rate of Flame Propagation	3.43			1.71			8.73			2.71			4.01			5.61		
Time of Burning	118	2.28	1.94	34.2	0.88	2.6	124	0.43	3.50	47.1	2.25	4.77	83.7	2.53	3.02	128	1.2	1.22
Rate of Burning	7.87			2.28			8.27			3.14			5.58			8.53		
AIHF-60	4.6	0.2	4.5	4.1	6	4.06	4.436	0.73	0.53	3.59	0.09	2.6	4.27	0.04	1.15	5.59	.04	1.65

TEST	90			90			90			90			90			90		
Combination	B(PC)+8SA6			B+B(PC)+SA6			B+B(PC)+8SA6			PH+2SA6			PH+3SA6			PH+10SA6		
GSM	505			250			635			230			285			670		
	Avg.	SD	CV%	Avg.	SD	CV%	Avg.	SD	CV%	Avg.	SD	CV%	Avg.	SD	CV%	Avg.	SD	CV%
Time of Ignition	4.1			3.2			4.3			3.4			3.5			4.1		
Time for flame propagation	46.2	1.4	3	19.8	1.7	8.5	125.3	2.14	1.70	34.1	1.86	5.4	52.7	1.769	3.39	76.8	1.24	1.61
Rate of Flame Propagation	3.08			1.32			8.35			2.27			3.51			5.12		
Time of Burning	80	2.24	2.8	29.2	0.82	2.84	90.2	1.45	1.61	37.6	1.62	4.3	60.7	1.21	2	90.1	0.081	2
Rate of Burning	5.33			1.95			6.01			2.51			4.05			6.01		
AIHF-60	6.44	0.04	4.76	4.7	0.03	7.8	4.94	0.16	3.46	4.12	0.18	4.51	4.58	0.16	3.53	5.8	0.11	2.02

TEST	45			45			45			45		
Combination	UV+PH+2SA6			UV+PH+3SA6			UV+PH+10SA6			2SA6+PH+3SA6		
GSM	360			415			800			395		
	Avg.	SD	CV%	Avg.	SD	CV%	Avg.	SD	CV%	Avg.	SD	CV%
Time of Ignition	3.5			3.7			4			3.8		
Time for flame propagation	74.3	.9	1.21	70.6	1.62	2.2	91.49	1.9	2.07	51.7	2.05	3.9
Rate of Flame Propagation	4.95			4.71			6.10			3.45		
Time of Burning	85.8	1.79	2.08	88	1.44	1.77	138	1.93	1.40	73.2	1.85	2.53
Rate of Burning	5.72			5.87			9.20			4.88		
AIHF-60	4.88	.02	1.42	5.94	0.1	1.73	7.62	0.11	1.53	5.1	0.24	4.83

TEST	90			90			90			90		
Combination	UV+PH+2SA6			UV+PH+3SA6			UV+PH+10SA6			2SA6+PH+3SA6		
GSM	360			415			800			395		
	Avg.	SD	CV%	Avg.	SD	CV%	Avg.	SD	CV%	Avg.	SD	CV%
Time of Ignition	3.5			3.7			4			3.8		
Time for flame propagation	62	1.94	3.1	64.7	1.79	2.76	86.4	2.2	2.54	50.4	2.17	4.3
Rate of Flame Propagation	4.13			4.31			5.76			3.36		
Time of Burning	61.2	1.27	2.09	63	1.44	2.29	99.7	1.77	1.78	62.3	2.1	3.37
Rate of Burning	4.08			4.20			6.65			4.15		
AIHF-60	4.86	0.05	3.57	6.3	0.05	3.4	8.09	0.17	2.22	5.5	0.2	3.73

Table 6.10 Thermal Parameters Measured at BHPT for Cotton Saree (SA7) along with Supporting Garments

TEST	45			45			45			45			45			45		
Combination	B(P)+SA7			B(P)+8SA7			B+B(P)+SA7			B+B(P)+8SA7			SA7			8SA7		
GSM	116			487			246			617			53			424		
	Avg.	SD	CV%	Avg.	SD	CV%	Avg.	SD	CV%	Avg.	SD	CV%	Avg.	SD	CV%	Avg.	SD	CV%
Time of Ignition	1.3			2			1.8			2.3			1			2		
Time for flame propagation	14.61	.65	4.4	71.09	1.88	2.6	25.8	0.75	2.86	80.8	1.4	1.75	6.89	0.16	2.3	59.3	.7	1.1
Rate of Flame Propagation	0.97			4.74			1.72			5.39			0.46			3.95		
Time of Burning	21.6	0.58	2.7	83.5	1.74	2	52.8	1.42	2.70	95.8	1.4	1.46	9.9	0.16	1.7	75.4	1.6	2
Rate of Burning	1.44			5.57			3.52			6.39			0.66			5.03		
AIHF-60	3.2	0.15	4.77	5.23	0.05	2.18	3.5	0.02	3.00	6.42	0.12	2	0.51	0.006	2.56	5.08	0.07	1.53

TEST	90			90			90			90			90			90		
Combination	B(P)+SA7			B(P)+8SA7			B+B(P)+SA7			B+B(P)+8SA7			SA7			8SA7		
GSM	116			487			246			617			53			424		
	Avg.	SD	CV%	Avg.	SD	CV%	Avg.	SD	CV%	Avg.	SD	CV%	Avg.	SD	CV%	Avg.	SD	CV%
Time of Ignition	1.3			2			1.8			2.3			1			2		
Time for flame propagation	15.1	.8	5	23.9	.7	2.9	33.2	1.16	3.49	25.6	1.4	5.4	29.9	1.5	5	29.6	.8	2.7
Rate of Flame Propagation	1.01			1.59			2.21			1.71			1.99			1.97		
Time of Burning	11	0.24	2.27	43	1.4	3.5	27.4	0.65	2.40	46	1.8	3.9	5.5	0.17	3.2	39.4	0.98	2.5
Rate of Burning	0.73			2.87			1.83			3.07			0.37			2.63		
AIHF-60	4.4	0.1	2.34	5.56	0.18	3.23	3.84	0.1	2.70	6.84	0.04	4.2	0.57	0.02	3.84	5.31	0.14	2.67

TEST	45			45			45			45			45			45		
Combination	PL+2SA7			PL+3SA7			PL+10SA7			UV+PL+2SA7			UV+PL+3SA7			UV+PL+10SA7		
GSM	204			257			628			334			387			758		
	Avg.	SD	CV%	Avg.	SD	CV%	Avg.	SD	CV%	Avg.	SD	CV%	Avg.	SD	CV%	Avg.	SD	CV%
Time of Ignition	1.4			1.6			2.4			1.4			1.7			2.5		
Time for flame propagation	31.53	1.26	4	46.1	1.1	2.3	67.19	0.9	1.33	53.4	1.6	3	58.99	1.18	2	91.3	1.32	1.43
Rate of Flame Propagation	2.10			3.07			4.48			3.56			3.93			6.08		
Time of Burning	40.8	1.32	3.3	54.2	1.3	2.4	98.2	1.37	1.40	62.8	1.36	2.15	68.8	0.87	1.26	103	1.9	1.84
Rate of Burning	2.72			3.61			6.55			4.19			4.59			6.89		
AIHF-60	3	0.13	4.4	3.57	0.09	2.54	5.86	0.1	1.77	4.22	0.13	3.15	5.044	0.18	3.6	6.25	0.1	1.68

TEST	90			90			90			90			90			90		
Combination	PL+2SA7			PL+3SA7			PL+10SA7			UV+PL+2SA7			UV+PL+3SA7			UV+PL+10SA7		
GSM	204			257			628			334			387			758		
	Avg.	SD	CV%	Avg.	SD	CV%	Avg.	SD	CV%	Avg.	SD	CV%	Avg.	SD	CV%	Avg.	SD	CV%
Time of Ignition	1.4			1.6			2.4			1.4			1.7			2.5		
Time for flame propagation	15.1	.8	5	23.9	.7	2.9	33.2	1.16	3.49	25.6	1.4	5.4	29.9	1.5	5	44.6	1.9	4.2
Rate of Flame Propagation	1.01			1.59			2.21			1.71			1.99			2.97		
Time of Burning	21.1	.8	3.7	26	0.57	2.2	51.8	1.16	3.00	29.7	0.98	3.3	32.9	1.34	4.1	50.4	2.4	4
Rate of Burning	1.41			1.73			3.45			1.98			2.19			3.36		
AIHF-60	3.22	0.11	3.45	3.8	0.1	2.7	6.84	0.28	4.20	4.52	0.21	4.86	5.38	0.2	3.75	6.38	0.22	3.53

TEST	45			45			45			45			45			45		
Combination	2SA7+PL+3SA7			B(C)+SA7			B(C)+8SA7			B+B(C)+SA7			B+B(C)+8SA7			B(PC)+SA7		
GSM	363			118			489			248			619			118		
	Avg.	SD	CV%	Avg.	SD	CV%	Avg.	SD	CV%	Avg.	SD	CV%	Avg.	SD	CV%	Avg.	SD	CV%
Time of Ignition	1.6			1.2			1.6			1.2			1.8			1.2		
Time for flame propagation	48.6	.6	1.25	18.4	.87	4.7	64.33	0.7	1.00	31.8	1.1	3.5	73.01	0.6	1.09	15.5	.67	4
Rate of Flame Propagation	3.24			1.23			4.29			2.12			4.87			1.03		
Time of Burning	63.2	1.46	2.3	25.8	0.74	2.9	82.9	1.6	1.94	42.36	0.68	1.6	97.2	1.81	1.87	36.2	1.04	2.9
Rate of Burning	4.21			1.72			5.53			2.82			6.48			2.41		
AIHF-60	4.42	0.21	4.8	2.9	0.08	2.87	4.92	0.05	1.03	3.67	0.16	4.53	4.054	0.05	1.33	2.9	0.08	2.9

TEST	90			90			90			90			90			90		
Combination	2SA7+PL+3SA7			B(C)+SA7			B(C)+8SA7			B+B(C)+SA7			B+B(C)+8SA7			B(PC)+SA7		
GSM	363			118			489			248			619			118		
	Avg.	SD	CV%	Avg.	SD	CV%	Avg.	SD	CV%	Avg.	SD	CV%	Avg.	SD	CV%	Avg.	SD	CV%
Time of Ignition	1.6			1.2			1.6			1.2			1.8			1.2		
Time for flame propagation	35.3	1.8	5	14.8	1.2	8	50.4	2.5	4.90	27	1.6	5.9	61.3	1.77	2.9	13.9	1.7	12
Rate of Flame Propagation	2.35			0.99			3.36			1.80			4.09			0.93		
Time of Burning	32.8	0.72	2.2	14.1	0.4	2.9	43.1	0.86	2.00	23.7	0.92	3.9	45.2	0.99	2.2	21	0.35	1.7
Rate of Burning	2.19			0.94			2.87			1.58			3.01			1.40		
AIHF-60	4.65	0.22	4.85	3.8	0.92	2.43	5.16	0.15	3.00	3.7	0.12	3.42	4.842	0.12	2.7	3.16	0.06	2.1

TEST	45			45			45			45			45			45		
Combination	B(PC)+8SA7			B+B(PC)+SA7			B+B(PC)+8SA7			PH+2SA7			PH+3SA7			PH+10SA7		
GSM	489			248			619			226			279			650		
	Avg.	SD	CV%	Avg.	SD	CV%	Avg.	SD	CV%	Avg.	SD	CV%	Avg.	SD	CV%	Avg.	SD	CV%
Time of Ignition	2			1.4			2.2			1.5			1.6			2.5		
Time for flame propagation	70	.78	1.1	20	.73	3.56	.61.3	0.45	0.73	40.2	97	2.7	48.1	0.83	1.72	85.4	.91	1.07
Rate of Flame Propagation	4.67			1.33			3.56			2.68			3.21			5.69		
Time of Burning	80.09	.79	.98	52.1	1.4	2.7	96.27	0.59	0.62	24.3	0.31	1.29	35.2	0.4	1.14	101	.94	.93
Rate of Burning	5.34			3.47			6.42			1.62			2.35			6.74		
AIHF-60	5.76	0.28	4.9	3.8	0.15	4	5.88	0.07	1.30	3.23	0.09	3	3.7	0.04	1.21	6.03	0.19	3.21

TEST	90			90			90			90			90			90		
Combination	B(PC)+8SA7			B+B(PC)+SA7			B+B(PC)+8SA7			PH+2SA7			PH+3SA7			PH+10SA7		
GSM	489			248			619			226			279			650		
	Avg.	SD	CV%	Avg.	SD	CV%	Avg.	SD	CV%	Avg.	SD	CV%	Avg.	SD	CV%	Avg.	SD	CV%
Time of Ignition	2			1.4			2.2			1.5			1.6			2.5		
Time for flame propagation	58.1	2.3	3.2	15.8	1.2	2	50	1.7	3.30	36	1.4	4	44	1.7	3.8	80	1.6	2
Rate of Flame Propagation	3.87			1.05			3.33			2.40			2.93			5.33		
Time of Burning	40.3	1.16	2.9	24.6	0.31	1.3	55.2	0.99	1.80	12.8	0.46	3.6	18.2	0.25	1.4	50.1	0.89	1.79
Rate of Burning	2.69			1.64			3.68			0.85			1.21			3.34		
AIHF-60	5.98	0.07	3.9	4.2	0.15	3.6	6.2	0.19	3.20	3.39	0.035	4.34	4.04	0.19	4.83	6.25	0.33	5.3

TEST	45			45			45			45		
Combination	UV+PH+2SA7			UV+PH+3SA7			UV+PH+10SA7			2SA7+PH+3SA7		
GSM	356			409			780			363		
	Avg.	SD	CV%	Avg.	SD	CV%	Avg.	SD	CV%	Avg.	SD	CV%
Time of Ignition	1.5			1.9			2			1.9		
Time for flame propagation	1.2	1.05	72.5	.8	1.4	97.4	1.28	1.3	41.69	1.18	2.8	13.7
Rate of Flame Propagation	0.08			0.05			0.09			0.08		
Time of Burning	65.1	1.1	1.7	72.2	0.64	.89	108.5	1.68	1.55	66.5	1.26	1.9
Rate of Burning	4.34			4.81			7.23			4.43		
AIHF-60	4.36	0.18	4.23	5.4	0.19	3.77	6.33	0.06	1.07	4.72	0.1	2.23

TEST	90			90			90			90		
Combination	UV+PH+2SA7			UV+PH+3SA7			UV+PH+10SA7			2SA7+PH+3SA7		
GSM	356			409			780			363		
	Avg.	SD	CV%	Avg.	SD	CV%	Avg.	SD	CV%	Avg.	SD	CV%
Time of Ignition	1.5			1.9			2			1.9		
Time for flame propagation	63.4	1.8	2.8	66.1	1.8	2.7	90.7	2.1	2.30	38.7	1.3	3.3
Rate of Flame Propagation	4.23			4.41			6.05			2.58		
Time of Burning	33.2	0.66	2	37.5	0.71	1.9	55.4	1.05	1.90	38.2	1.33	3.5
Rate of Burning	2.21			2.50			3.69			2.55		
AIHF-60	4.78	0.17	3.6	5.84	0.29	5.1	6.84	0.23	3.40	4.83	0.13	2.9

Table 6.11 Thermal Parameters Measured at BHPT for P/C Saree (SA8) along with Supporting Garments

TEST	45			45			45			45			45			45		
Combination	B(P)+SA8			B(P)+8SA8			B+B(P)+SA8			B+B(P)+8SA8			SA8			8SA8		
GSM	138			663			268			793			75			600		
	Avg.	SD	CV%	Avg.	SD	CV%	Avg.	SD	CV%	Avg.	SD	CV%	Avg.	SD	CV%	Avg.	SD	CV%
Time of Ignition	2			2.8			2.7			2.9			1.5			3		
Time for flame propagation	26.3	1.1	4.1	36.1	1.13	3.13	61.6	1.35	2.20	201	1.73	8.6	21	1.48	7.04	142	1.3	.92
Rate of Flame Propagation	1.75			2.41			4.11			13.40			1.40			9.46		
Time of Burning	35.1	.94	2.26	184	2.93	1.6	81.6	1.35	1.66	200.2	4.4	2.2	18	0.48	2.7	157	2.18	1.4
Rate of Burning	2.34			12.24			5.44			13.35			1.20			10.45		
AIHF-60	3.8	.07	1.88	5.08	0.12	2.49	2.55	0.07	3.00	6.21	0.2	2.12	1.32	0.04	3.67	4.12	1.23	1.38

TEST	90			90			90			90			90			90		
Combination	B(P)+SA8			B(P)+8SA8			B+B(P)+SA8			B+B(P)+8SA8			SA8			8SA8		
GSM	138			663			268			793			75			600		
	Avg.	SD	CV%	Avg.	SD	CV%	Avg.	SD	CV%	Avg.	SD	CV%	Avg.	SD	CV%	Avg.	SD	CV%
Time of Ignition	2			2.8			2.7			2.9			1.5			3		
Time for flame propagation	20.8	1.24	.059	24.4	1.42	.058	48.75	1.29	0.03	35.2	1.24	0.04	1.28	1.28	0.08	39.7	1.37	.034
Rate of Flame Propagation	1.39			1.63			3.25			2.35			0.09			2.64		
Time of Burning	27.2	0.38	1.4	141	1.01	0.72	68.77	0.37	0.54	155	1.1	0.71	13.8	0.07	0.57	131	2.24	1.72
Rate of Burning	1.81			9.39			4.58			10.33			0.92			8.72		
AIHF-60	4.23	0.14	3.48	5.56	0.13	2.4	3.45	0.15	4.32	7.2	0.09	3.72	2.03	0.015	3.66	4.95	0.09	1.94

TEST	45			45			45			45			45			45		
Combination	PL+2SA8			PL+3SA8			PL+10SA8			UV+PL+2SA8			UV+PL+3SA8			UV+PL+10SA8		
GSM	248			323			848			378			453			978		
	Avg.	SD	CV%	Avg.	SD	CV%	Avg.	SD	CV%	Avg.	SD	CV%	Avg.	SD	CV%	Avg.	SD	CV%
Time of Ignition	2.2			2.7			3.2			2.7			2.8			3.3		
Time for flame propagation	54.9	.94	1.74	75.31	1.13	1.5	183.3	1.77	0.96	64	1.18	1.8	94.4	1.2	1.27	209	.78	3.9
Rate of Flame Propagation	3.66			5.02			12.22			4.27			6.29			13.93		
Time of Burning	79.9	1.36	1.7	108	1.09	1.01	212.8	3.23	1.52	92	1.15	1.26	112	0.68	0.61	90	0.64	.72
Rate of Burning	5.33			7.20			14.19			6.13			7.47			6.00		
AIHF-60	2.83	0.05	2.04	3.35	0.09	2.8	5.81	0.11	1.95	3.75	0.40	1.58	4.20	0.50	1.32	6.20	0.15	2.5

TEST	90			90			90			90			90			90		
Combination	PL+2SA8			PL+3SA8			PL+10SA8			UV+PL+2SA8			UV+PL+3SA8			UV+PL+10SA8		
GSM	248			323			848			378			453			978		
	Avg.	SD	CV%	Avg.	SD	CV%	Avg.	SD	CV%	Avg.	SD	CV%	Avg.	SD	CV%	Avg.	SD	CV%
Time of Ignition	2.2			2.7			3.2			2.7			2.8			3.3		
Time for flame propagation	48	1.65	3.4	62.7	1.79	2.8	170.5	1.5	0.88	56.9	2.02	3.55	87.6	2.1	2.4	186	1.6	4.41
Rate of Flame Propagation	3.20			4.18			11.37			3.79			5.84			12.39		
Time of Burning	68.3	1.72	2.5	91.17	2.55	2.8	99.5	0.67	0.68	90.4	1.42	1.58	120.6	2.33	1.94	282	1.46	.51
Rate of Burning	4.55			6.08			6.63			6.03			8.04			18.79		
AIHF-60	3.48	0.18	5.2	3.48	0.05	1.61	5.98	0.14	2.47	4.60	0.17	3.77	4.79	0.13	4.50	6.51	0.13	1.99

TEST	45			45			45			45			45			45		
Combination	2SA8+PL+3SA8			B(C)+SA8			B(C)+8SA8			B+B(C)+SA8			B+B(C)+8SA8			B(PC)+SA8		
GSM	473			140			665			270			795			140		
	Avg.	SD	CV%	Avg.	SD	CV%	Avg.	SD	CV%	Avg.	SD	CV%	Avg.	SD	CV%	Avg.	SD	CV%
Time of Ignition	2.4			1.8			2.4			1.9			2.6			1.9		
Time for flame propagation	165	.8	.48	35.45	.89	2.5	149.4	1.9	1.32	63.89	1.68	2.2	158.4	0.91	0.57	30.9	1.13	3.6
Rate of Flame Propagation	11.00			2.36			9.96			4.26			10.56			2.06		
Time of Burning	110	0.57	.52	65	.77	1.8	191.5	2.57	1.20	80.24	1.7	2.21	206	1.31	0.64	65.7	1.28	1.96
Rate of Burning	7.33			4.33			12.77			5.35			13.73			4.38		
AIHF-60	3.90	0.09	2.36	2.23	0.08	3.73	3.72	0.31	4.10	2.35	0.04	1.79	3.85	0.83	1.06	1.92	.34	3.81

TEST	90			90			90			90			90			90		
Combination	2SA8+PL+3SA8			B(C)+SA8			B(C)+8SA8			B+B(C)+SA8			B+B(C)+8SA8			B(PC)+SA8		
GSM	473			140			665			270			795			140		
	Avg.	SD	CV%	Avg.	SD	CV%	Avg.	SD	CV%	Avg.	SD	CV%	Avg.	SD	CV%	Avg.	SD	CV%
Time of Ignition	2.4			1.8			2.4			1.9			2.6			1.9		
Time for flame propagation	156.3	1.55	.9	29.3	1.41	4.8	144.4	1.9	1.30	62.9	1.64	2.6	150.7	1.41	0.94	26.5	1.36	5.13
Rate of Flame Propagation	10.42			1.95			9.63			4.19			10.05			1.77		
Time of Burning	185.7	1.71	.93	56.1	1.7	3	189.1	2.46	1.30	80.4	1.8	2.25	210.7	1.83	0.87	50.1	1.9	3.8
Rate of Burning	12.38			3.74			12.61			5.36			14.05			3.34		
AIHF-60	4.65	0.12	2.69	3.75	.04	5.24	4.99	0.25	4.30	3.24	0.05	2.28	5.96	1.47	2.00	2.52	.36	4.7

TEST	45			45			45			45			45			45		
Combination	B(PC)+8SA8			B+B(PC)+SA8			B+B(PC)+8SA8			PH+2SA8			PH+3SA8			PH+10SA8		
GSM	665			270			795			270			345			870		
	Avg.	SD	CV%	Avg.	SD	CV%	Avg.	SD	CV%	Avg.	SD	CV%	Avg.	SD	CV%	Avg.	SD	CV%
Time of Ignition	3.2			2.2			3.3			2.2			2.7			3.5		
Time for flame propagation	154	1.61	1.04	68.9	1.13	1.66	196.6	0.91	0.46	64	1	1.56	85.5	0.8	0.94	175	.74	.42
Rate of Flame Propagation	10.27			4.59			13.11			4.27			5.70			11.65		
Time of Burning	183.2	1.15	0.63	84.44	0.67	0.8	202.5	3.15	1.56	82.2	1.04	1.27	87	1.83	2.11	222	1.06	.48
Rate of Burning	12.21			5.63			13.50			5.48			5.80			14.79		
AIHF-60	4.77	1.07	1.53	3.25	.63	2.89	5.66	3.49	2.50	3.35	0.31	1.95	4.07	0.76	2.50	6.27	0.13	2.18

TEST	90			90			90			90			90			90		
Combination	B(PC)+8SA8			B+B(PC)+SA8			B+B(PC)+8SA8			PH+2SA8			PH+3SA8			PH+10SA8		
GSM	665			270			795			270			345			870		
	Avg.	SD	CV%	Avg.	SD	CV%	Avg.	SD	CV%	Avg.	SD	CV%	Avg.	SD	CV%	Avg.	SD	CV%
Time of Ignition	3.2			2.2			3.3			2.2			2.7			3.5		
Time for flame propagation	141.2	1.21	.85	66.1	1.22	1.8	169.5	1.74	1.02	1.24	1.24	2.75	29.4	1.42	4.8	25.3	0.9	2.54
Rate of Flame Propagation	9.41			4.41			11.30			0.08			1.96			1.69		
Time of Burning	156.1	1.62	1.04	79.7	1.26	1.5	280.8	1.57	0.56	96	2.28	2.38	75.7	1.26	1.66	280	3.35	1.2
Rate of Burning	10.41			5.31			18.72			6.40			5.05			18.64		
AIHF-60	4.67	.09	1.92	3.85	.06	1.05	5.86	0.02	2.20	4.20	0.14	3.51	5.04	0.06	2.68	6.84	0.13	1.92

TEST	45			45			45			45		
Combination	UV+PH+2SA8			UV+PH+3SA8			UV+PH+10SA8			2SA8+PH+3SA8		
GSM	400			475			1000			495		
	Avg.	SD	CV%	Avg.	SD	CV%	Avg.	SD	CV%	Avg.	SD	CV%
Time of Ignition	2.5			2.8			2.9			2.7		
Time for flame propagation	77.27	1.28	1.66	.91	1.18	1.3	171.3	1.34	0.78	75.2	0.74	0.98
Rate of Flame Propagation	5.15			0.06			11.42			5.01		
Time of Burning	102.8	1.16	1.13	120	1.38	1.15	238.8	2.31	0.97	130.3	1.96	1.51
Rate of Burning	6.85			8.03			15.92			8.69		
AIHF-60	3.76	0.12	3.43	4.44	0.07	1.8	7.35	0.34	4.70	4.63	0.15	3.32

TEST	90			90			90			90		
Combination	UV+PH+2SA8			UV+PH+3SA8			UV+PH+10SA8			2SA8+PH+3SA8		
GSM	400			475			1000			495		
	Avg.	SD	CV%	Avg.	SD	CV%	Avg.	SD	CV%	Avg.	SD	CV%
Time of Ignition	2.5			2.8			2.9			2.7		
Time for flame propagation	37.1	1.57	4.2	42.4	1.42	3.3	151	1	0.66	52.27	1.13	2.16
Rate of Flame Propagation	2.47			2.83			10.07			3.48		
Time of Burning	90.4	1.01	1.12	101	1.28	1.28	201	1.26	0.61	60.9	0.83	1.38
Rate of Burning	6.03			6.70			13.40			4.06		
AIHF-60	4.70	0.09	2.09	5.12	0.02	1.30	7.80	0.21	2.90	5.44	0.20	2.75

Table 6.12 Thermal Parameters Measured at BHPT for P/V Saree (SA9) along with Supporting Garments

TEST	45			45			45			45			45			45		
Combination	B(P)+SA9			B(P)+SA9			B+B(P)+SA9			B+B(P)+SA9			SA9			8SA9		
GSM	134			631			264			761			71			568		
	Avg.	SD	CV%	Avg.	SD	CV%	Avg.	SD	CV%	Avg.	SD	CV%	Avg.	SD	CV%	Avg.	SD	CV%
Time of Ignition	2.1			3			2.9			3.2			1.7			3.1		
Time for flame propagation	14	1.21	10	57	1.18	2.07	28.5	0.92	3.22	43.7	1.26	2.88	8.7	1.1	1.26	55.5	0.8	1.44
Rate of Flame Propagation	0.93			3.80			1.90			2.91			0.58			3.70		
Time of Burning	21	0.79	3.8	102	1.13	1.1	90	1.8	2.00	188.4	1.98	1.14	11.7	0.58	4.6	103	1.7	1.59
Rate of Burning	1.40			6.79			6.00			12.56			0.78			6.87		
AIHF-60	1.72	0.08	4.70	5.97	0.06	2.40	3.39	0.05	3.13	7.19	0.05	1.23	1.20	0.03	3.41	5.23	0.07	2.60

TEST	90			90			90			90			90			90		
Combination	B(P)+SA9			B(P)+SA9			B+B(P)+SA9			B+B(P)+SA9			SA9			8SA9		
GSM	134			631			264			761			71			568		
	Avg.	SD	CV%	Avg.	SD	CV%	Avg.	SD	CV%	Avg.	SD	CV%	Avg.	SD	CV%	Avg.	SD	CV%
Time of Ignition	2.1			3			2.9			3.2			1.7			3.1		
Time for flame propagation	10.3	.9	8.73	28.4	1.2	4.2	20.4	0.65	3.18	31	1.1	3.5	4	0.85	21	34.2	1.2	3.58
Rate of Flame Propagation	0.69			1.89			1.36			2.07			0.27			2.28		
Time of Burning	25.8	1.18	4.6	176	3.4	1.97	41	1.1	2.68	246	1.47	0.6	7.4	0.35	4.8	164	3.6	2.12
Rate of Burning	1.72			11.73			2.73			16.40			0.49			10.92		
AIHF-60	2.15	0.09	4.20	6.81	0.22	3.24	4.04	0.02	2.84	7.60	0.04	2.90	1.69	0.03	1.90	5.80	0.25	4.44

TEST	45			45			45			45			45			45		
Combination	PL+2SA9			PL+3SA9			PL+10SA9			UV+PL+2SA9			UV+PL+3SA9			UV+PL+10SA9		
GSM	240			311			808			370			441			938		
	Avg.	SD	CV%	Avg.	SD	CV%	Avg.	SD	CV%	Avg.	SD	CV%	Avg.	SD	CV%	Avg.	SD	CV%
Time of Ignition	2.3			2.8			3.1			2.8			2.9			3.4		
Time for flame propagation	30	1.3	4.3	57.2	0.8	1.39	76.3	0.9	1.17	69.5	1.2	1.7	51	1.23	2.4	52	1.3	2.5
Rate of Flame Propagation	2.00			3.81			5.09			4.63			3.40			3.47		
Time of Burning	48.5	2.1	4.32	87	1.2	1.38	245.6	3.46	1.41	84.4	0.9	1.06	187.1	2.6	1.4	287	1.62	0.58
Rate of Burning	3.23			5.80			16.37			5.63			12.47			19.15		
AIHF-60	2.47	0.11	4.70	2.73	0.08	3.21	7.35	0.26	3.64	3.95	0.08	2.06	4.30	0.12	2.86	8.06	0.23	2.80

TEST	90			90			90			90			90			90		
Combination	PL+2SA9			PL+3SA9			PL+10SA9			UV+PL+2SA9			UV+PL+3SA9			UV+PL+10SA9		
GSM	240			311			808			370			441			938		
	Avg.	SD	CV%	Avg.	SD	CV%	Avg.	SD	CV%	Avg.	SD	CV%	Avg.	SD	CV%	Avg.	SD	CV%
Time of Ignition	2.3			2.8			3.1			2.8			2.9			3.4		
Time for flame propagation	15.8	.78	4.9	20.8	1.16	5.57	37	1.2	3.20	21.3	1.4	6.57	26.1	1.3	4.9	35.6	.9	2.52
Rate of Flame Propagation	1.05			1.39			2.47			1.42			1.74			2.37		
Time of Burning	42.2	1.8	4.2	50.6	1.2	1.77	275	1.59	0.58	41.7	1.16	2.52	49.5	1.28	2.58	258	1.44	0.56
Rate of Burning	2.81			3.37			18.33			2.78			3.30			17.20		
AIHF-60	2.98	0.11	3.92	3.43	0.12	3.5	8.14	0.06	2.05	4.30	0.08	2.00	4.70	0.11	2.43	9.16	0.21	2.30

TEST	45			45			45			45			45			45		
Combination	2SA9+PL+3SA9			B(C)+SA9			B(C)+8SA9			B+B(C)+SA9			B+B(C)+8SA9			B(PC)+SA9		
GSM	453			136			633			266			763			136		
	Avg.	SD	CV%	Avg.	SD	CV%	Avg.	SD	CV%	Avg.	SD	CV%	Avg.	SD	CV%	Avg.	SD	CV%
Time of Ignition	2.5			2			2.5			2.2			2.7			2		
Time for flame propagation	53.7	1.26	2.3	15	0.63	4.1	49.6	1.01	2.00	26.9	1.3	4.8	34.8	1.93	5.5	14.1	0.9	6
Rate of Flame Propagation	3.58			1.00			3.31			1.79			2.32			0.94		
Time of Burning	91.4	1.11	1.2	25.9	0.7	2.7	201.1	2.44	1.30	53.5	1.01	1.9	262	2.33	0.89	26.6	1.4	4.26
Rate of Burning	6.09			1.73			13.41			3.57			17.47			1.77		
AIHF-60	4.21	0.08	1.92	3.07	0.00	2.20	6.06	0.02	2.60	3.07	0.06	2.00	6.64	0.01	2.70	2.19	0.01	4.61

TEST	90			90			90			90			90			90		
Combination	2SA9+PL+3SA9			B(C)+SA9			B(C)+8SA9			B+B(C)+SA9			B+B(C)+8SA9			B(PC)+SA9		
GSM	453			136			633			266			763			136		
	Avg.	SD	CV%	Avg.	SD	CV%	Avg.	SD	CV%	Avg.	SD	CV%	Avg.	SD	CV%	Avg.	SD	CV%
Time of Ignition	2.5			2			2.5			2.2			2.7			2		
Time for flame propagation	26	1.09	4.19	10.3	.64	6.4	25.9	1.2	4.60	16	0.81	5	32	1.89	5.9	14.7	.9	6
Rate of Flame Propagation	1.73			0.69			1.73			1.07			2.13			0.98		
Time of Burning	154	3.07	2.01	15.1	0.72	4.7	178.9	2.46	1.38	41.4	1.2	2.8	251	1.4	0.56	20.1	.7	3.4
Rate of Burning	10.26			1.01			11.93			2.76			16.73			1.34		
AIHF-60	5.06	0.17	3.40	3.63	0.18	4.20	6.26	0.03	1.81	4.28	0.18	4.20	8.58	0.03	3.40	3.11	.005	3.4

TEST	45			45			45			45			45			45		
Combination	B(PC)+8SA9			B+B(PC)+SA9			B+B(PC)+8SA9			PH+2SA9			PH+3SA9			PH+10SA9		
GSM	633			266			763			262			333			830		
	Avg.	SD	CV%	Avg.	SD	CV%	Avg.	SD	CV%	Avg.	SD	CV%	Avg.	SD	CV%	Avg.	SD	CV%
Time of Ignition	3.1			2.2			3.3			2.7			2.8			3.6		
Time for flame propagation	58.9	0.9	1.5	29	1.18	4	29.8	0.87	2.90	68.8	2.52	3.9	69.7	0.9	1.2	63.3	2.1	33.4
Rate of Flame Propagation	3.93			1.93			1.99			4.59			4.65			4.22		
Time of Burning	185	2.32	1.26	60.9	0.8	1.3	202	1.22	0.90	82.7	1	1.12	86.9	1.68	1.94	248	1.48	0.6
Rate of Burning	12.32			4.06			13.47			5.51			5.79			16.53		
AIHF-60	5.81	0.03	1.29	2.61	0.02	1.60	7.52	0.05	1.50	2.89	0.06	2.35	3.00	0.02	1.36	7.85	0.14	1.90

TEST	90			90			90			90			90			90		
Combination	B(PC)+8SA9			B+B(PC)+SA9			B+B(PC)+8SA9			PH+2SA9			PH+3SA9			PH+10SA9		
GSM	633			266			763			262			333			830		
	Avg.	SD	CV%	Avg.	SD	CV%	Avg.	SD	CV%	Avg.	SD	CV%	Avg.	SD	CV%	Avg.	SD	CV%
Time of Ignition	3.1			2.2			3.3			2.7			2.8			3.6		
Time for flame propagation	32.7	1.4	4.2	10.9	.94	8	56.4	1.28	2.26	19.8	1.24	6	26.8	1.24	4.6	33.9	2.21	6
Rate of Flame Propagation	2.18			0.73			3.76			1.32			1.79			2.26		
Time of Burning	198	2.57	1.36	46.1	2.57	4.2	237	1.73	0.73	43	1.26	2.9	51.6	1.49	2	268	1.12	0.42
Rate of Burning	13.20			3.07			15.80			2.87			3.44			17.87		
AIHF-60	6.60	.037	1.8	3.85	0.14	3.80	7.80	0.14	1.80	3.89	0.11	3.00	4.00	0.05	1.39	8.33	0.34	4.2

TEST	45			45			45			45		
Combination	UV+PH+2SA9			UV+PH+3SA9			UV+PH+10SA9			2SA9+PH+3SA9		
GSM	392			463			960			475		
	Avg.	SD	CV%	Avg.	SD	CV%	Avg.	SD	CV%	Avg.	SD	CV%
Time of Ignition	2.6			2.9			3			2.8		
Time for flame propagation	66.6	0.91	1.36	71.8	1.33	1.8	73.8	1.5	2.00	51.5	1.02	1.9
Rate of Flame Propagation	4.44			4.79			4.92			3.43		
Time of Burning	81.8	1.77	2.17	95.2	1.48	1.56	286	1.46	0.49	181.5	2.9	1.6
Rate of Burning	5.45			6.35			19.07			12.10		
AIHF-60	4.48	0.11	2.60	4.80	0.00	0.86	9.02	0.09	1.30	4.81	0.07	0.50

TEST	90			90			90			90		
Combination	UV+PH+2SA9			UV+PH+3SA9			UV+PH+10SA9			2SA9+PH+3SA9		
GSM	392			463			960			475		
	Avg.	SD	CV%	Avg.	SD	CV%	Avg.	SD	CV%	Avg.	SD	CV%
Time of Ignition	2.6			2.9			3			2.8		
Time for flame propagation	25.4	1.62	6.3	28.4	.8	2.8	41.54	1.3	3.10	32.5	1.55	4.76
Rate of Flame Propagation	1.69			1.89			2.77			2.17		
Time of Burning	29.1	1.92	3.2	62.6	1.56	2.5	283.6	1.36	0.48	58.9	1.26	2.19
Rate of Burning	1.94			4.17			18.91			3.93		
AIHF-60	5.39	0.16	3	5.49	0.17	3.20	9.61	0.04	3.20	5.27	0.02	2.11

Fig.6.1a Tig Values of All Saree along with 1st Combination B(P) & PL

Saree Code	SA1	SA2	SA3	SA4	SA5	SA6	SA7	SA8	SA9
Material zones	N	p/c	p/v	p/v	p/c	p	c	p/c	p/v
blend	100	33/67	67/33	33/67	67/33	100	100	50/50	50/50
B (P)	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8
B (P) + SA	3.4	1.4	2.8	1.8	2.6	3.2	1.3	2	2.1
B (P) + 8 SA	4.3	2.3	3.8	2.5	3.5	4	2	2.8	3
B + B (P)+SA	3.7	2.1	3.2	2.4	2.9	3.4	1.8	2.7	2.9
B+ B(P)+8SA	4.5	2.4	4	2.5	3.7	4.2	2.3	2.9	3.2
SA	2.8	1.2	2.1	1.4	1.9	2.2	1	1.5	1.7
8SA	4.4	2.4	3.9	2.7	3.6	4.1	2	3	3.1
PL+2 SA	3.5	1.6	3.1	1.9	3.8	3.3	1.4	2.2	2.3
PL+3 SA	4	2	3.5	2.3	3.2	3.7	1.6	2.7	2.8
PL+10 SA	4.5	2.7	3.9	2.9	3.8	4.1	2.4	3.2	3.1
UV+PL+2SA	4.1	1.7	3.4	1.9	3.2	3.8	1.4	2.7	2.8
UV+PL+3SA	4.2	2.2	3.5	2.3	3.3	3.9	1.7	2.8	2.9
UV+PL+10SA	4.5	2.8	3.9	3.1	3.7	4.1	2.5	3.3	3.4
2SA1+PL+3SA	3.8	1.9	3.4	2.1	3.2	3.6	1.6	2.4	2.5

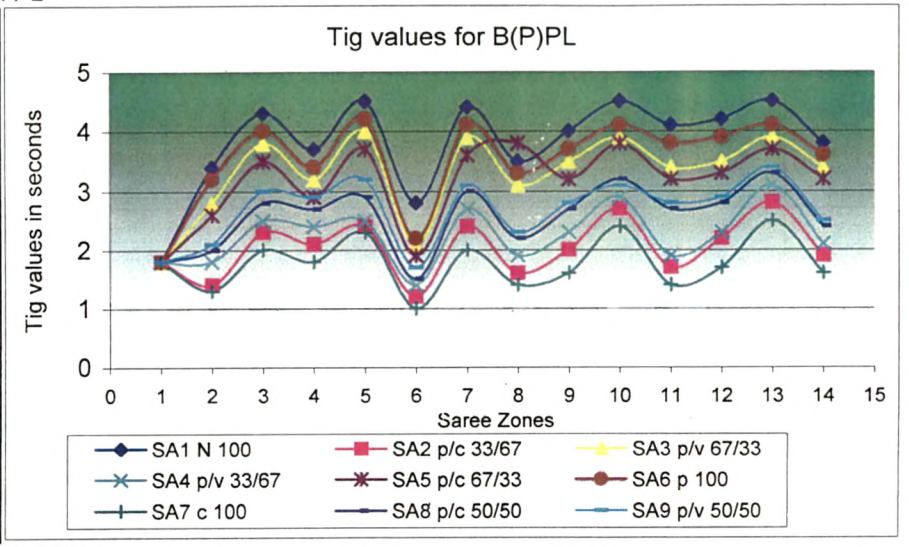

Fig.6.1b Tig Values of All Saree along with 2nd Combination B(P/C) & PL

Saree Code	SA1	SA2	SA3	SA4	SA5	SA6	SA7	SA8	SA9
Material zones	N	p/c	p/v	p/v	p/c	p	c	p/c	p/v
blend	100	33/67	67/33	33/67	67/33	100	100	50/50	50/50
B (PC)	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2
B (PC) + SA	3.3	1.4	2.8	1.7	2.5	3	1.2	1.9	2
B (PC) + 8SA	4.3	2.4	3.8	2.6	3.5	4.1	2	2.8	3.1
B + B (PC) + SA	3.5	1.7	3.1	1.9	2.7	3.2	1.4	2.2	2.2
B + B (PC) + 8SA	4.5	2.6	4.1	2.9	3.8	4.3	2.2	3.3	3.3
SA	2.8	1.2	2.1	1.4	1.9	2.2	1	1.5	1.7
8SA	4.4	2.4	3.9	2.7	3.6	4.1	2	3	3.1
PL+2 SA	3.5	1.6	3.1	1.9	3.8	3.3	1.4	2.2	2.3
PL+3 SA	4	2	3.5	2.3	3.2	3.7	1.6	2.7	2.8
PL+10 SA	4.5	2.7	3.9	2.9	3.8	4.1	2.4	3.2	3.1
UV+PL+2SA	4.1	1.7	3.4	1.9	3.2	3.8	1.4	2.7	2.8
UV+PL+3SA	4.2	2.2	3.5	2.3	3.3	3.9	1.7	2.8	2.9
UV+PL+10SA	4.5	2.8	3.9	3.1	3.7	4.1	2.5	3.3	3.4
2SA1+PL+3SA	3.8	1.9	3.4	2.1	3.2	3.6	1.6	2.4	2.5

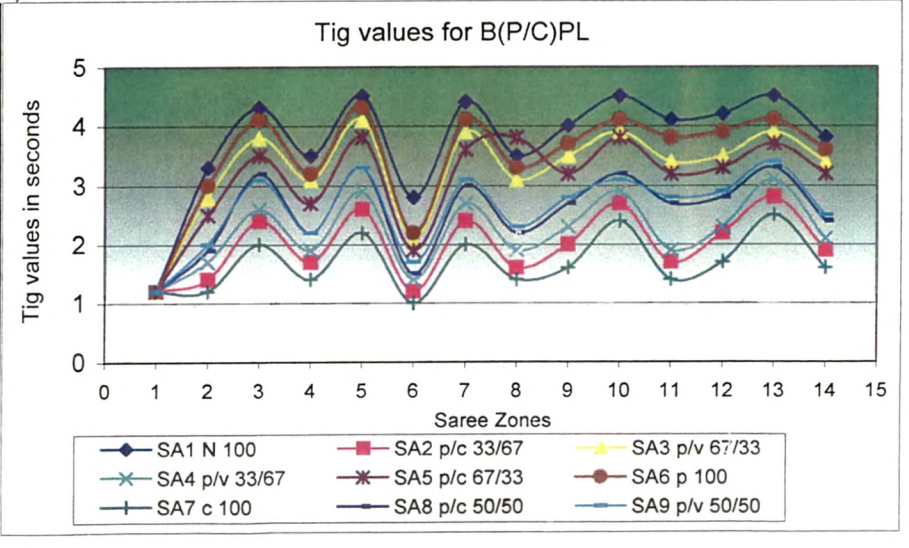

Fig. 6.1c Tig Values of All Saree along with 3rd Combination B(C) & PL

Saree Code	SA1	SA2	SA3	SA4	SA5	SA6	SA7	SA8	SA9
Material zones	N	p/c	p/v	p/v	p/c	p	c	p/c	p/v
blend	100	33/67	67/33	33/67	67/33	100	100	50/50	50/50
B(C)	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2
B(C)+SA	3.1	1.3	2.6	1.7	2.3	3	1.2	1.8	2
B(C)+ 8 SA	3.7	2	3.2	2.2	2.9	3.4	1.6	2.4	2.5
B+B(C)+SA	3.3	1.6	2.8	1.8	2.5	3	1.2	1.9	2.2
B+B (C)+8SA	4.1	2.2	3.5	2.4	3.2	3.8	1.8	2.6	2.7
SA	2.8	1.2	2.1	1.4	1.9	2.2	1	1.5	1.7
8SA	4.4	2.4	3.9	2.7	3.6	4.1	2	3	3.1
PL+2 SA	3.5	1.6	3.1	1.9	3.8	3.3	1.4	2.2	2.3
PL+3 SA	4	2	3.5	2.3	3.2	3.7	1.6	2.7	2.8
PL+10 SA	4.5	2.7	3.9	2.9	3.8	4.1	2.4	3.2	3.1
UV+PL+2SA	4.1	1.7	3.4	1.9	3.2	3.8	1.4	2.7	2.8
UV+PL+3SA	4.2	2.2	3.5	2.3	3.3	3.9	1.7	2.8	2.9
UV+PL+10SA	4.5	2.8	3.9	3.1	3.7	4.1	2.5	3.3	3.4
2SA1+PL+3SA	3.8	1.9	3.4	2.1	3.2	3.6	1.6	2.4	2.5

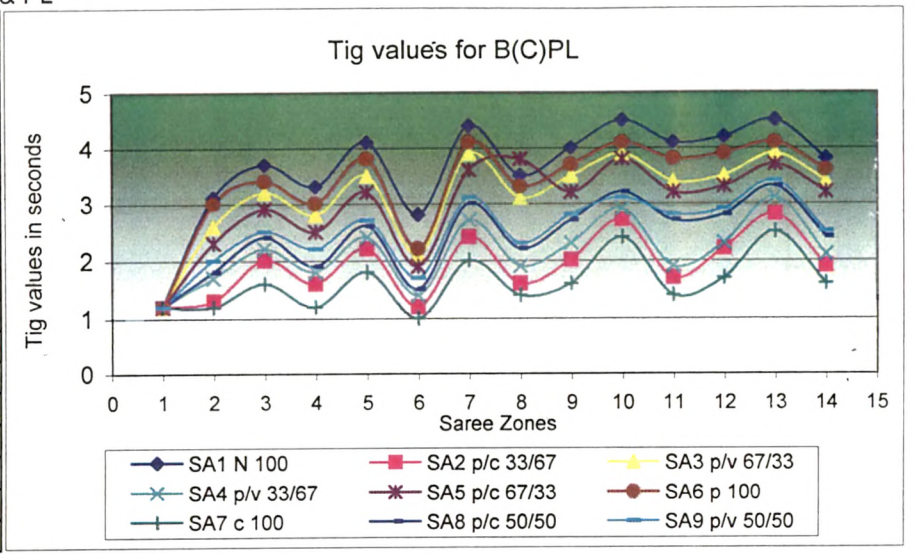

Fig. 6.1d Tig Values of All Saree along with 4th Combination B(P) & PH

Saree Code	SA1	SA2	SA3	SA4	SA5	SA6	SA7	SA8	SA9
Material zones	N	p/c	p/v	p/v	p/c	p	c	p/c	p/v
blend	100	33/67	67/33	33/67	67/33	100	100	50/50	50/50
B (P)	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8
B (P) + SA	3.4	1.4	2.8	1.8	2.6	3.2	1.3	2	2.1
B (P) + 8 SA	4.3	2.3	3.8	2.5	3.5	4	2	2.8	3
B + B (P)+SA	3.7	2.1	3.2	2.4	2.9	3.4	1.8	2.7	2.9
B+ B(P)1+8 SA	4.5	2.4	4	2.5	3.7	4.2	2.3	2.9	3.2
SA	2.8	1.2	2.1	1.4	1.9	2.2	1	1.5	1.7
8SA	4.4	2.4	3.9	2.7	3.6	4.1	2	3	3.1
PH+2SA	3.6	1.9	3.3	2.1	2.9	3.4	1.5	2.2	2.7
PH+3SA	3.7	2	3.4	2.2	3	3.5	1.6	2.7	2.8
PH+10SA	4.4	2.9	4	3.2	3.9	4.1	2.5	3.5	3.6
UV+PH+2SA	3.8	1.9	3.3	2.2	3	3.5	1.5	2.5	2.6
UV+PH+3SA	3.9	2.2	3.4	2.5	3.2	3.7	1.9	2.8	2.9
UV+PH+10SA	4.2	2.4	3.8	2.6	3.5	4	2	2.9	3
2SA+PH+3SA	3.9	2.2	3.5	2.4	3.4	3.8	1.9	2.7	2.8

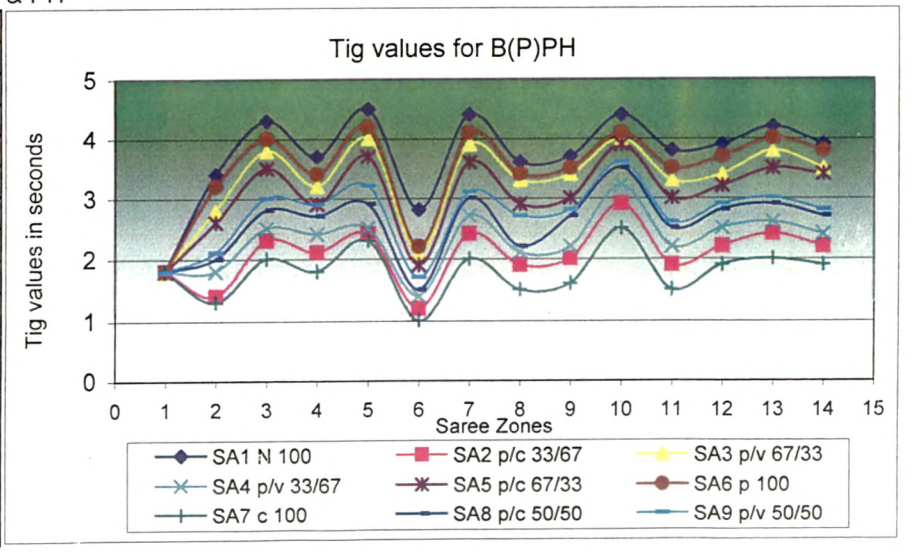

Fig. 6.1e Tig Values of All Saree along with 5th Combination B(P/C) & PH

Saree Code	SA1	SA2	SA3	SA4	SA5	SA6	SA7	SA8	SA9
Material zones	N	p/c	p/v	p/v	p/c	p	c	p/c	p/v
blend	100	33/67	67/33	33/67	67/33	100	100	50/50	50/50
B (PC)	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2
B (PC) + SA	3.3	1.4	2.8	1.7	2.5	3	1.2	1.9	2
B (PC) + 8SA	4.3	2.4	3.8	2.6	3.5	4.1	2	3.2	3.1
B + B (PC) + SA	3.5	1.7	3.1	1.9	2.7	3.2	1.4	2.2	2.2
B + B (PC) + 8SA	4.5	2.6	4.1	2.9	3.8	4.3	2.2	3.3	3.3
SA	2.8	1.2	2.1	1.4	1.9	2.2	1	1.5	1.7
8SA	4.4	2.4	3.9	2.7	3.6	4.1	2	3	3.1
PH+2SA	3.6	1.9	3.3	2.1	2.9	3.4	1.5	2.2	2.7
PH+3SA	3.7	2	3.4	2.2	3	3.5	1.6	2.7	2.8
PH+10SA	4.4	2.9	4	3.2	3.9	4.1	2.5	3.5	3.6
UV+PH+2SA	3.8	1.9	3.3	2.2	3	3.5	1.5	2.5	2.6
UV+PH+3SA	3.9	2.2	3.4	2.5	3.2	3.7	1.9	2.8	2.9
UV+PH+10SA	4.2	2.4	3.8	2.6	3.5	4	2	2.9	3
2SA+PH+3SA	3.9	2.2	3.5	2.4	3.4	3.8	1.9	2.7	2.8

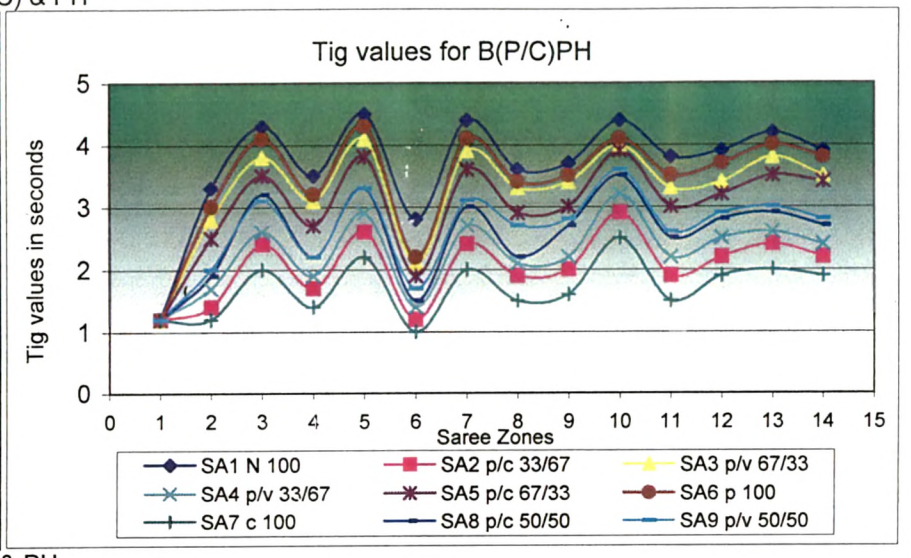

Fig. 6.1f Tig Values of All Saree along with 6th Combination B(C) & PH

Saree Code	SA1	SA2	SA3	SA4	SA5	SA6	SA7	SA8	SA9
Material zones	N	p/c	p/v	p/v	p/c	p	c	p/c	p/v
blend	100	33/67	67/33	33/67	67/33	100	100	50/50	50/50
B(C)	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2
B(C)+SA	3.1	1.3	2.6	1.7	2.3	3	1.2	1.8	2
B(C)+ 8SA	3.7	2	3.2	2.2	2.9	3.4	1.6	2.4	2.5
B+B(C)+SA	3.3	1.6	2.8	1.8	2.5	3	1.2	1.9	2.2
B+B(C)+8SA	4.1	2.2	3.5	2.4	3.2	3.8	1.8	2.6	2.7
SA	2.8	1.2	2.1	1.4	1.9	2.2	1	1.5	1.7
8SA	4.4	2.4	3.9	2.7	3.6	4.1	2	3	3.1
PH+2SA	3.6	1.9	3.3	2.1	2.9	3.4	1.5	2.2	2.7
PH+3SA	3.7	2	3.4	2.2	3	3.5	1.6	2.7	2.8
PH+10SA	4.4	2.9	4	3.2	3.9	4.1	2.5	3.5	3.6
UV+PH+2SA	3.8	1.9	3.3	2.2	3	3.5	1.5	2.5	2.6
UV+PH+3SA	3.9	2.2	3.4	2.5	3.2	3.7	1.9	2.8	2.9
UV+PH+10SA	4.2	2.4	3.8	2.6	3.5	4	2	2.9	3
2SA+PH+3SA	3.9	2.2	3.5	2.4	3.4	3.8	1.9	2.7	2.8

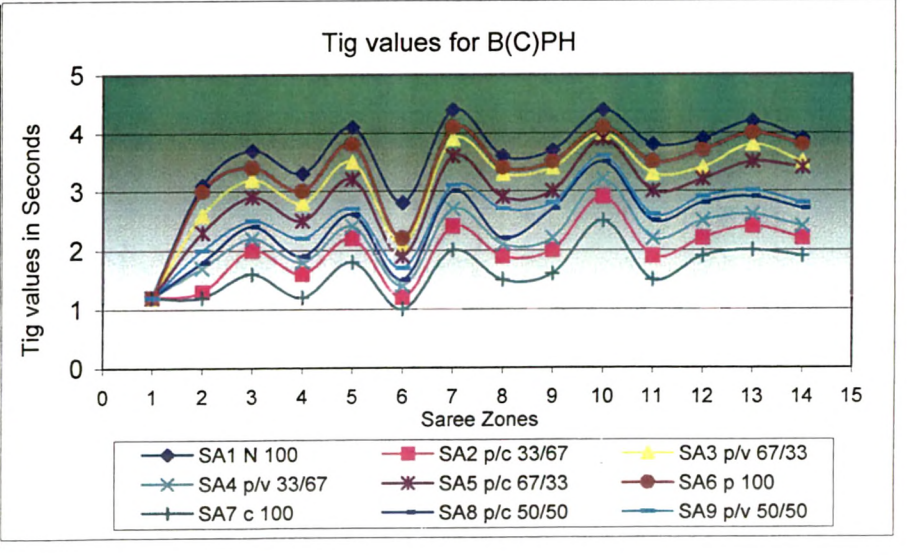

Fig. 6.2a AIHF 60 for Nylon Saree 1st Combination B(P) & PL

Combination	GSM	45	90
1SA1	60	0.86	1.12
8SA1	480	2.92	3.82
B(P)	63	1.21	2.46
B(P)+1SA1	123	1.41	1.86
B(P)+8SA1	543	5.04	5.60
B+B(P)+1SA1	253	2.03	2.57
B+B(P)+8SA1	673	6.40	7.80
PL+2SA1	218	2.21	3.32
PL+3SA1	278	2.52	3.54
PL+10SA1	698	6.21	6.87
UV+PL+2SA1	348	3.70	3.87
UV+PL+3SA1	408	4.32	4.43
UV+PL+10SA1	828	7.00	7.76
2SA1+PL+3SA1	398	4.30	4.35

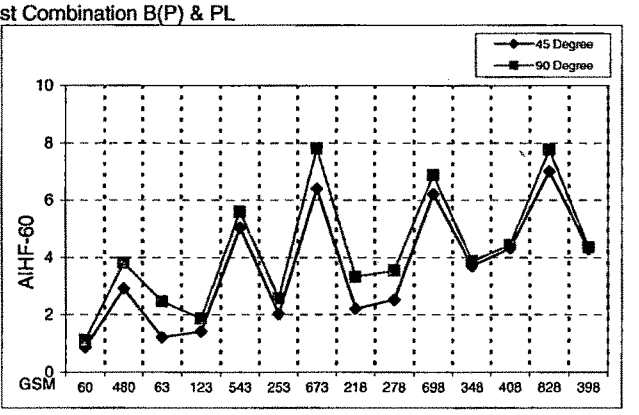

Fig.6.2b AIHF 60 for Nylon Saree 2nd Combination B(C) & PL

Combination	GSM	45	90
1SA1	60	0.86	1.12
8SA1	480	2.92	3.82
B(C)	65	1.73	1.77
SA1+B(C)	125	1.53	2.78
8SA2+B(C)	545	5.00	6.05
B+B(C)+SA1	255	2.30	2.80
B+B(C)+8SA1	675	5.74	6.94
PL+2SA1	218	2.21	3.32
PL+3SA1	278	2.52	3.54
PL+10SA1	698	6.21	6.87
UV+PL+2SA1	348	3.70	3.87
UV+PL+3SA1	408	4.32	4.43
UV+PL+10SA1	828	7.00	7.76
2SA1+PL+3SA1	398	4.30	4.35

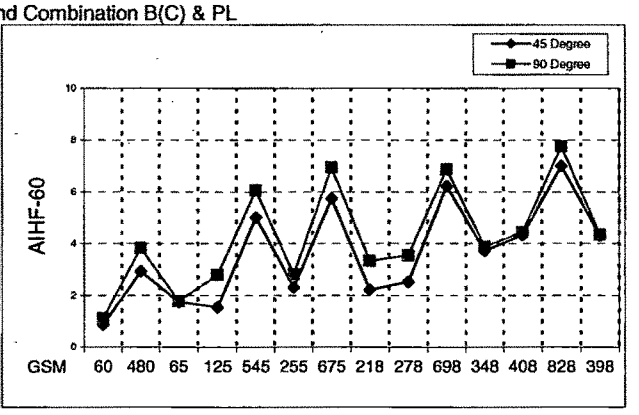

Fig. 6.2c AIHF 60 for Nylon Saree 3rd Combination B(P/C) & PL

Combination	GSM	45	90
1SA1	60	0.86	1.12
8SA1	480	2.92	3.82
B(PC)	65	1.20	2.11
B(PC)+SA1	125	1.73	2.69
B(PC)+8SA1	545	5.31	7.60
B+B(PC)+SA1	255	2.10	3.20
B+B(PC)+8SA1	675	2.40	3.50
PL+2SA1	218	2.21	3.32
PL+3SA1	278	2.52	3.54
PL+10SA1	698	6.21	6.87
UV+PL+2SA1	348	3.70	3.87
UV+PL+3SA1	408	4.32	4.43
UV+PL+10SA1	828	7.00	7.76
2SA1+PL+3SA1	398	4.30	4.35

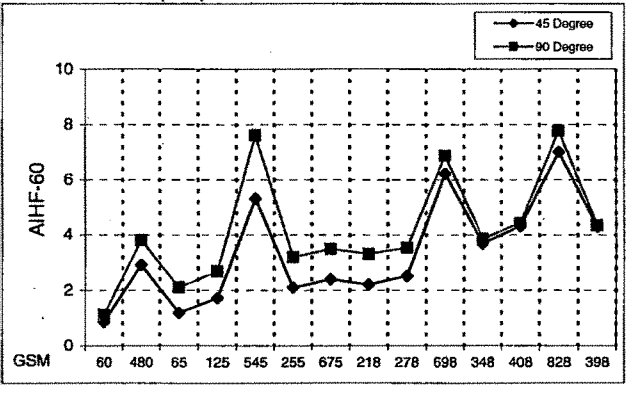

Figure 6.2d AIHF 60 for Nylon Saree 4th Combination B(P) & PH

Combination	GSM	45	90
1SA1	60	0.86	1.12
8SA1	480	2.92	3.82
B(P)	63	1.21	2.46
B(P)+1SA1	123	1.41	1.86
B(P)+8SA1	543	5.08	6.72
B+B(P)+1SA1	253	2.00	2.44
B+B(P)+8SA1	673	2.40	3.50
PH+2SA1	240	2.40	3.50
PH+3SA1	300	2.65	3.64
PH+10SA1	720	6.40	7.05
UV+PH+2SA1	370	3.76	4.00
UV+PH+3SA1	430	4.55	4.76
UV+PH+10SA1	850	7.20	8.16
2SA1+PH+3SA1	420	4.48	4.68

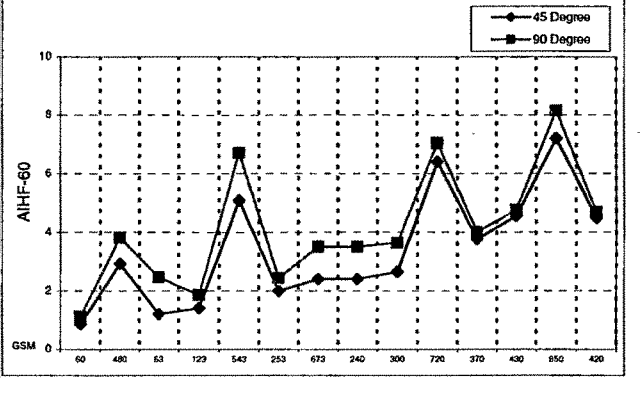

Figure 6.2e AIHF 60 for Nylon Saree 5th Combination B(C) & PH

Combination	GSM	45	90
1SA1	60	0.86	1.12
8SA1	480	2.92	3.82
B(P)	63	1.21	2.46
B(P)+1SA1	123	1.41	1.86
B(P)+8SA1	543	5.08	6.72
B+B(P)+1SA1	253	2.00	2.44
B+B(P)+8SA1	673	2.40	3.50
PH+2SA1	240	2.40	3.50
PH+3SA1	300	2.65	3.64
PH+10SA1	720	6.40	7.05
UV+PH+2SA1	370	3.76	4.00
UV+PH+3SA1	430	4.55	4.76
UV+PH+10SA1	850	7.20	8.16
2SA1+PH+3SA1	420	4.48	4.68

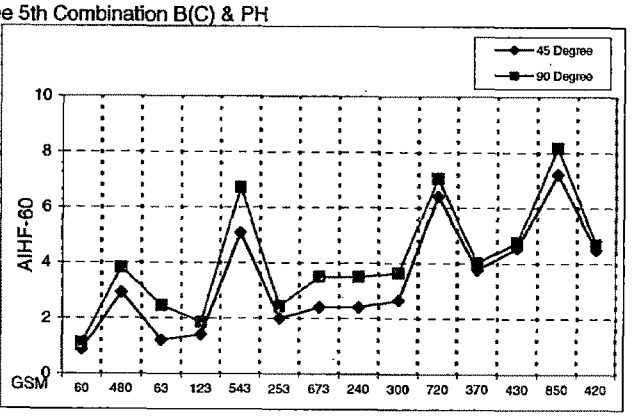

Figure 6.2f AIHF 60 Nylon Saree 6th Combination B(P/C) & PH

Combination	GSM	45	90
1SA1	60	0.86	1.12
8SA1	480	2.92	3.82
B(PC)	65	1.20	2.11
B(PC)+SA1	125	1.73	2.69
B(PC)+8SA1	545	5.31	7.60
B+B(PC)+SA1	255	2.10	3.20
B+B(PC)+8SA1	675	5.70	7.50
PH+2SA1	240	2.40	3.50
PH+3SA1	300	2.65	3.64
PH+10SA1	720	6.40	7.05
UV+PH+2SA1	370	3.76	4.00
UV+PH+3SA1	430	4.55	4.76
UV+PH+10SA1	850	7.20	8.16
2SA1+PH+3SA1	420	4.48	4.68

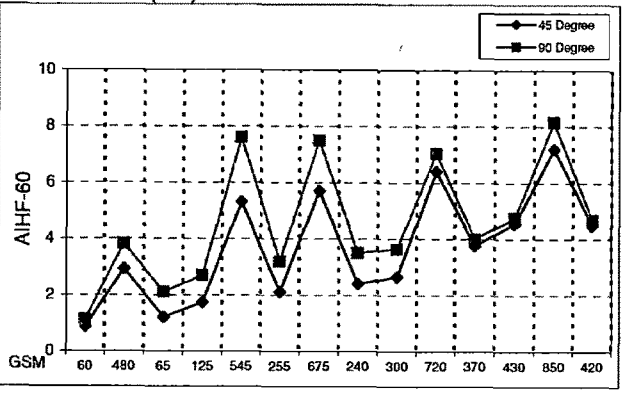

Fig.6.3a AIHF 60 for P/C 33/67 Saree 1st Combination B(P) & PL

Combination	GSM	45	90
1SA2	60	1.16	1.66
8SA2	480	3.20	3.79
B(P)	63	1.21	2.46
B(P)+1SA2	123	1.98	2.54
B(P)+8SA2	543	4.50	4.80
B+B(P)+1SA2	253	2.14	2.80
B+B(P)+8SA2	673	5.28	5.45
PL+2SA2	218	1.90	2.11
PL+3SA2	278	3.09	3.20
PL+10SA2	698	5.60	5.70
UV+PL+2SA2	348	3.20	3.50
UV+PL+3SA2	408	3.97	4.20
UV+PL+10SA2	828	6.54	6.86
2SA2+PL+3SA2	398	3.90	4.13

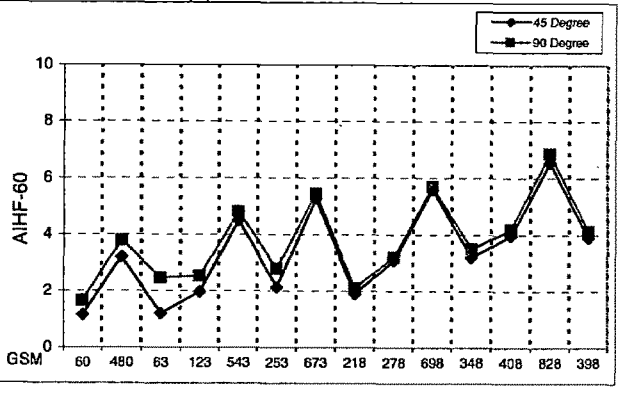

Figure 6.3b:AIHF 60 for P/C 33/67 Saree 2nd Combination B(C) & PL

Combination	GSM	45	90
1SA2	60	1.16	1.66
8SA2	480	3.20	3.79
B(C)	65	1.73	1.77
SA2+B(C)	125	1.70	1.90
8SA2+B(C)	545	3.35	4.20
B+B(C)+SA2	255	2.36	2.68
B+B(C)+8SA2	675	5.45	5.75
PL+2SA2	218	1.90	2.11
PL+3SA2	278	3.09	3.20
PL+10SA2	698	5.60	5.70
UV+PL+2SA2	348	3.20	3.50
UV+PL+3SA2	408	3.97	4.20
UV+PL+10SA2	828	6.54	6.86
2SA2+PL+3SA2	398	3.90	4.13

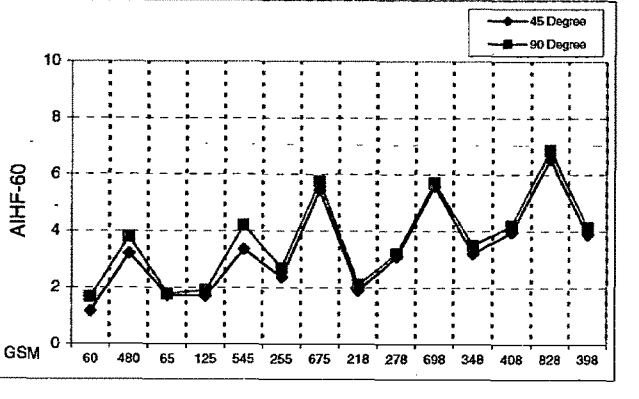

Figure 6.3c:P/C 33/67 Saree 3rd Combination B(P/C) & PL

Combination	GSM	45	90
1SA2	60	1.16	1.66
8SA2	480	3.20	3.79
B(PC)	65	1.20	2.11
B(P)+1SA2	125	1.68	2.10
B(P)+8SA2	545	3.45	4.30
B+B(P)+1SA2	255	2.89	3.30
B+B(P)+8SA2	675	4.15	4.35
PL+2SA2	218	1.90	2.11
PL+3SA2	278	3.09	3.20
PL+10SA2	698	5.60	5.70
UV+PL+2SA2	348	3.20	3.50
UV+PL+3SA2	408	3.97	4.20
UV+PL+10SA2	828	6.54	6.86
2SA2+PL+3SA2	398	3.90	4.13

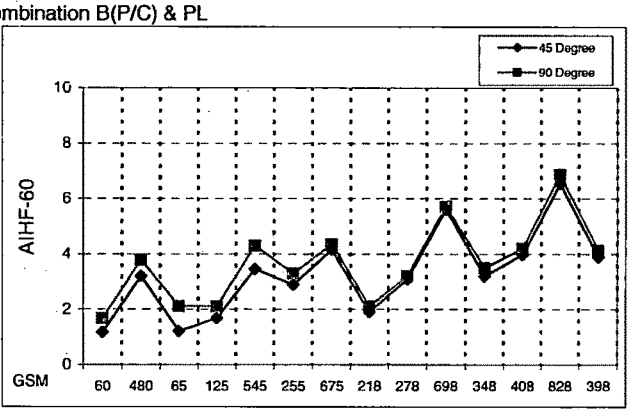

Figure 6.3d:P/C 33/67 Saree 4th Combination B(P) & PH

Combination	GSM	45	90
1SA2	60	1.16	1.66
8SA2	480	3.20	3.79
B(P)	63	1.21	2.46
B(P)+1SA2	123	1.98	2.54
B(P)+8SA2	543	4.50	4.80
B+B(P)+1SA2	253	2.14	2.80
B+B(P)+8SA2	673	5.28	5.45
PH+2SA2	240	2.54	2.68
PH+3SA2	300	3.18	3.56
PH+10SA2	720	5.86	6.32
UV+PH+2SA2	370	4.10	4.30
UV+PH+3SA2	430	4.70	4.98
UV+PH+10SA2	850	6.90	7.01
2SA2+PH+3SA2	420	4.59	4.87

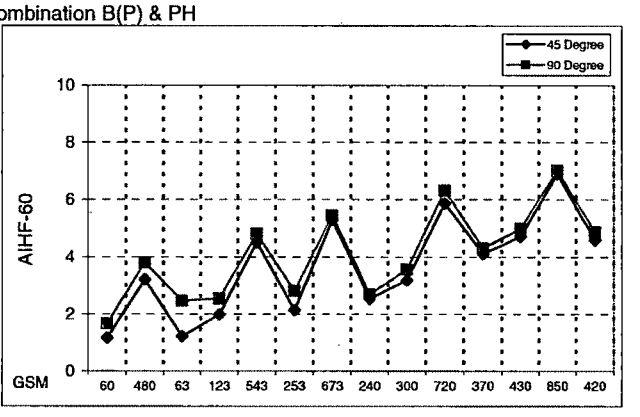

Figure 6.3e :P/V 33/67 Saree 5 th Combination B(C) & PH

Combination	GSM	45	90
1SA2	60	1.16	1.66
8SA2	480	3.20	3.79
B(C)	65	1.73	1.77
SA2+B(C)	125	1.70	1.90
8SA2+B(C)	545	3.35	4.20
B+B(C)+SA2	255	2.36	2.68
B+B(C)+8SA2	675	5.45	5.75
PH+2SA2	240	2.54	2.68
PH+3SA2	300	3.18	3.56
PH+10SA2	720	5.86	6.32
UV+PH+2SA2	370	4.10	4.30
UV+PH+3SA2	430	4.70	4.98
UV+PH+10SA2	850	6.90	7.01
2SA2+PH+3SA2	420	4.59	4.87

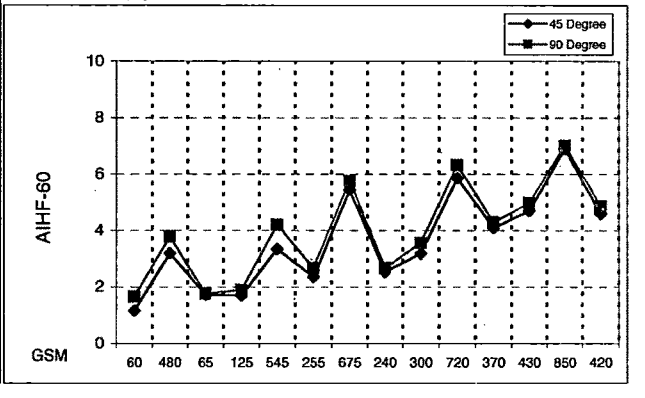

Figure 6.3f:P/C 33/67 Saree 6 th Combination B(P/C) & PH

Combination	GSM	45	90
1SA2	60	1.16	1.66
8SA2	480	3.20	3.79
B(PC)	65	1.20	2.11
B(PC)+1SA2	125	1.68	2.10
B(PC)+8SA2	545	3.45	4.30
B+B(PC)+1SA2	255	2.89	3.30
B+B(PC)+8SA2	675	4.15	4.35
PH+2SA2	240	2.54	2.68
PH+3SA2	300	3.18	3.56
PH+10SA2	720	5.86	6.32
UV+PH+2SA2	370	4.10	4.30
UV+PH+3SA2	430	4.70	4.98
UV+PH+10SA2	850	6.90	7.01
2SA2+PH+3SA2	420	4.59	4.87

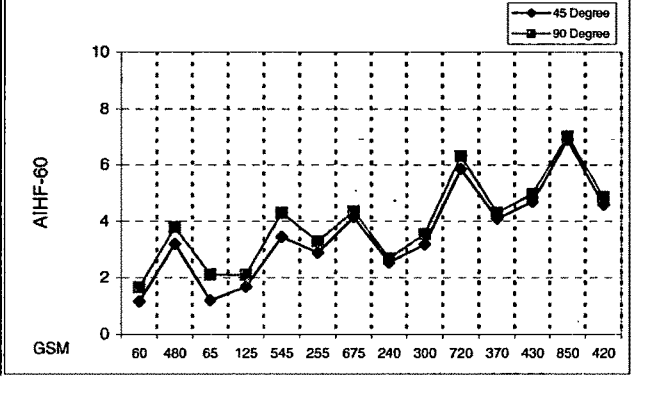

Figure 6.4a:P/V 67/33 Saree 1st Combination B(P) & PL

Combination	GSM	45	90
1SA3	69	1.45	1.87
8SA3	552	4.30	4.90
B(P)	63	1.21	2.46
B(P)+SA3	132	2.10	3.20
B(P)+8SA3	615	4.98	5.20
B+B(P)+1SA3	262	2.97	3.20
B+B(P)+8SA3	745	7.20	7.90
PL+2SA3	236	3.00	3.26
PL+3SA3	305	3.20	3.47
PL+10SA3	788	5.23	5.46
UV+PL+2SA3	366	3.58	3.78
UV+PL+3SA3	435	4.20	4.36
UV+PL+10SA3	918	6.21	6.35
2SA3+PL+3SA3	443	4.37	4.66

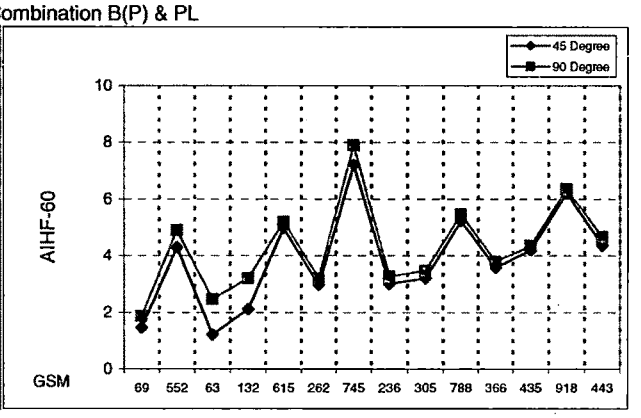

Figure 6.4b:P/V 67/33 Saree 2nd Combination B(C) & PL

Combination	GSM	45	90
1SA3	69	1.45	1.87
8SA3	552	4.30	4.90
B(C)	65	1.73	1.77
B(C)+SA3	134	1.57	2.45
B(C)+8SA3	617	5.20	5.40
B+B(C)+SA3	264	3.50	3.90
B+B(C)+8SA3	747	5.36	5.90
PL+2SA3	236	3.00	3.26
PL+3SA3	305	3.20	3.47
PL+10SA3	788	5.23	5.46
UV+PL+2SA3	366	3.58	3.78
UV+PL+3SA3	435	4.20	4.36
UV+PL+10SA3	918	6.21	6.35
2SA3+PL+3SA3	443	4.37	4.66

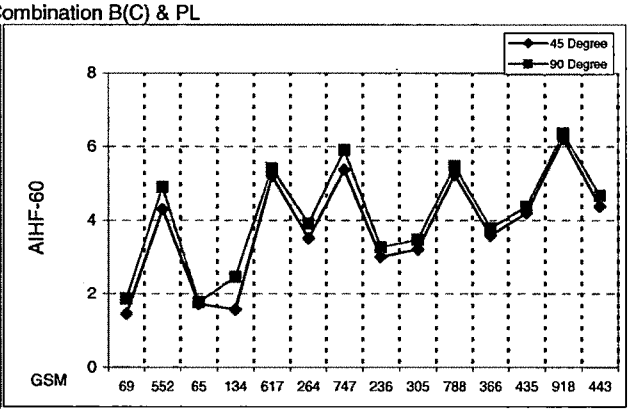

Figure 6.4c:P/V 67/33 Saree 3rd Combination B(P/C) & PL

Combination	GSM	45	90
1SA3	69	1.45	1.87
8SA3	552	4.30	4.90
B(PC)	65	1.20	2.11
B(PC)+SA3	134	2.25	2.36
B(PC)+8SA3	617	4.00	6.38
B+B(PC)+1SA3	264	3.90	4.50
B+B(PC)+8SA3	747	4.23	4.35
PL+2SA3	236	3.00	3.26
PL+3SA3	305	3.20	3.47
PL+10SA3	788	5.23	5.46
UV+PL+2SA3	366	3.58	3.78
UV+PL+3SA3	435	4.20	4.36
UV+PL+10SA3	918	6.21	6.35
2SA3+PL+3SA3	443	4.37	4.66

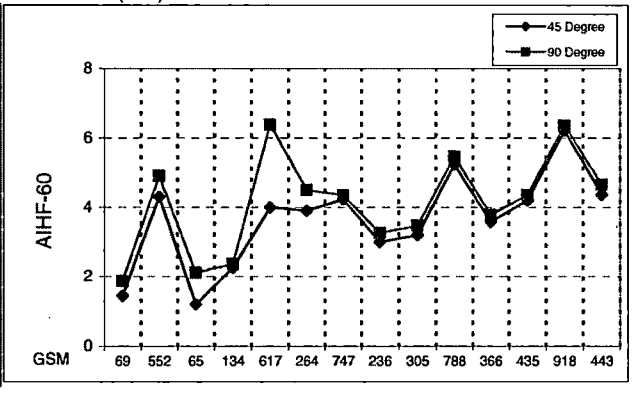

Figure 6.4d:P/V 67/33 Saree 4th Combination B(P) & PH

Combination	GSM	45	90
1SA3	69	1.45	1.87
8SA3	552	4.30	4.90
B(P)	63	1.21	2.46
B(P)+SA3	132	2.10	3.20
B(P)+8SA3	615	4.98	5.20
B+B(P)+1SA3	262	2.97	3.20
B+B(P)+8SA3	745	7.20	7.90
PH+2SA3	258	3.14	3.22
PH+3SA3	327	3.36	3.67
PH+10SA3	810	5.30	5.87
UV+PH+2SA3	388	3.6	3.9
UV+PH+3SA3	457	4.60	4.90
UV+PH+10SA3	940	7.30	7.71
2SA3+PH+3SA3	465	4.85	5.10

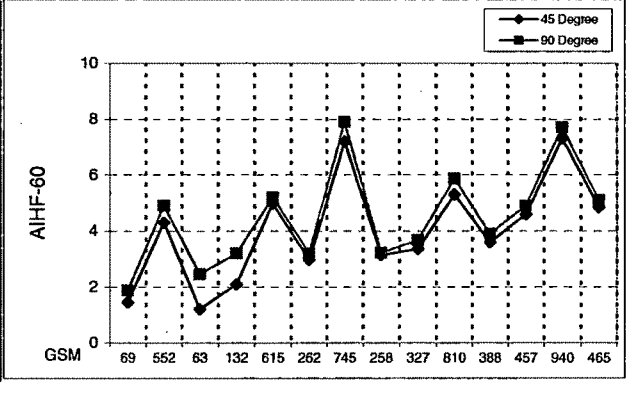

Figure 6.4e:P/V 67/33 Saree 5th Combination B(C) & PH

Combination	GSM	45	90
1SA3	69	1.45	1.87
8SA3	552	4.30	4.90
B(C)	65	1.73	1.77
B(C)+SA3	134	1.57	2.45
B(C)+8SA3	617	5.20	5.40
B+B(C)+SA3	264	3.50	3.90
B+B(C)+8SA3	747	5.36	5.90
PH+2SA3	258	3.14	3.22
PH+3SA3	327	3.36	3.67
PH+10SA3	810	5.30	5.87
UV+PH+2SA3	388	3.6	3.9
UV+PH+3SA3	457	4.60	4.90
UV+PH+10SA3	940	7.30	7.71
2SA3+PH+3SA3	465	4.85	5.10

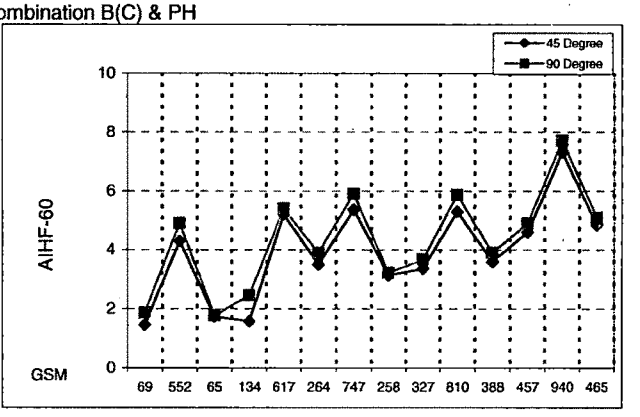

Figure 6.4f:P/V 67/33 Saree 6th Combination B(P/C) & PH

Combination	GSM	45	90
1SA3	69	1.45	1.87
8SA3	552	4.30	4.90
B(PC)	65	1.20	2.11
B(PC)+SA3	134	2.25	2.36
B(PC)+8SA3	617	4.00	6.38
B+B(PC)+1SA3	264	3.90	4.50
B+B(PC)+8SA3	747	4.23	4.35
PH+2SA3	258	3.14	3.22
PH+3SA3	327	3.36	3.67
PH+10SA3	810	5.30	5.87
UV+PH+2SA3	388	3.6	3.9
UV+PH+3SA3	457	4.60	4.90
UV+PH+10SA3	940	7.30	7.71
2SA3+PH+3SA3	465	4.85	5.10

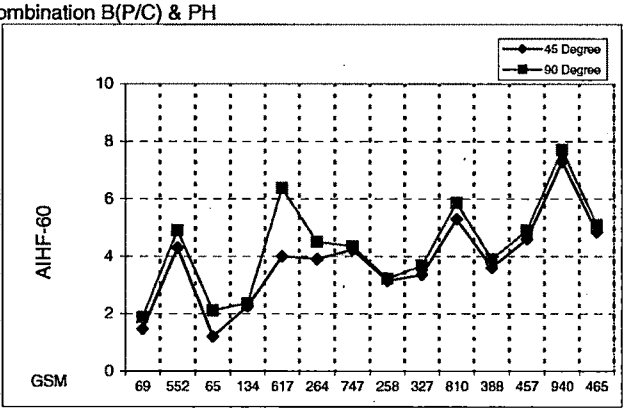

Figure 6.5a:P/V 33/67 Saree 1st Combination B(P) & PL

Combination	GSM	45	90
SA4	60	1.38	1.78
8SA4	480	4.10	4.56
B(P)	63	1.21	2.46
B(P)+SA4	123	2.79	3.10
B(P)+8SA4	543	4.26	4.60
B+B(P)+SA4	253	3.06	3.20
B+B(P)+8SA4	673	5.60	5.70
PL+2SA4	218	2.97	3.35
PL+3SA4	278	3.20	3.60
PL+10SA4	698	4.97	5.23
U.V.+PL+2SA4	348	3.50	3.90
U.V.+PL+3SA4	408	4.30	4.50
U.V.+PL+10SA4	828	5.90	6.20
2SA4+PL+3SA4	398	4.26	4.39

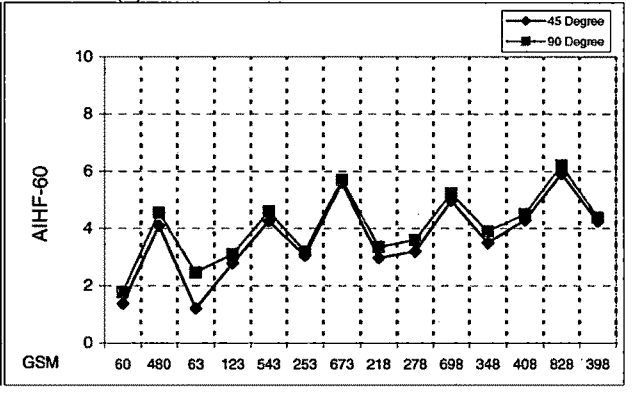

Figure 6.5b :P/V 33/67 Saree 2nd Combination B(C) & PL

Combination	GSM	45	90
SA4	60	1.38	1.78
8SA4	480	4.10	4.56
B(C)	65	1.73	1.77
B(C)+SA4	125	1.90	2.40
B(C)+8SA4	545	4.06	4.60
B+B(C)+SA4	255	3.45	3.80
B+B(C)+8SA4	675	5.34	5.80
PL+2SA4	218	2.97	3.35
PL+3SA4	278	3.20	3.60
PL+10SA4	698	4.97	5.23
U.V.+PL+2SA4	348	3.50	3.90
U.V.+PL+3SA4	408	4.30	4.50
U.V.+PL+10SA4	828	5.90	6.20
2SA4+PL+3SA4	398	4.26	4.39

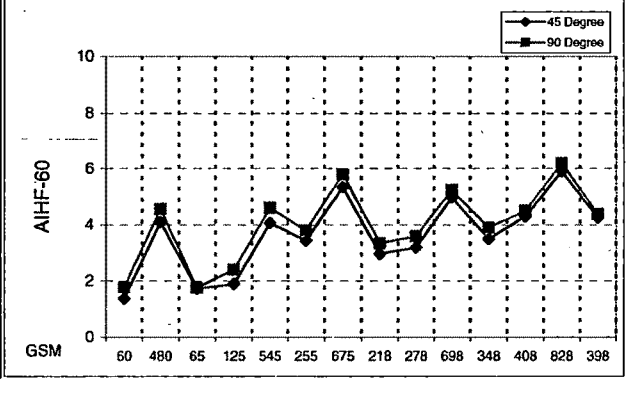

Figure 6.5c :P/V 33/67 Saree 3rd Combination B(P/C) & PL

Combination	GSM	45	90
SA4	60	1.38	1.78
8SA4	480	4.10	4.56
B(PC)	65	1.20	2.11
B(PC)+SA4	125	1.67	2.26
B(PC)+8SA4	545	5.62	5.90
B+B(PC)+8SA4	255	3.62	3.80
B+B(PC)+SA4	675	4.30	4.60
PL+2SA4	218	2.97	3.35
PL+3SA4	278	3.20	3.60
PL+10SA4	698	4.97	5.23
U.V.+PL+2SA4	348	3.50	3.90
U.V.+PL+3SA4	408	4.30	4.50
U.V.+PL+10SA4	828	5.90	6.20
2SA4+PL+3SA4	398	4.26	4.39

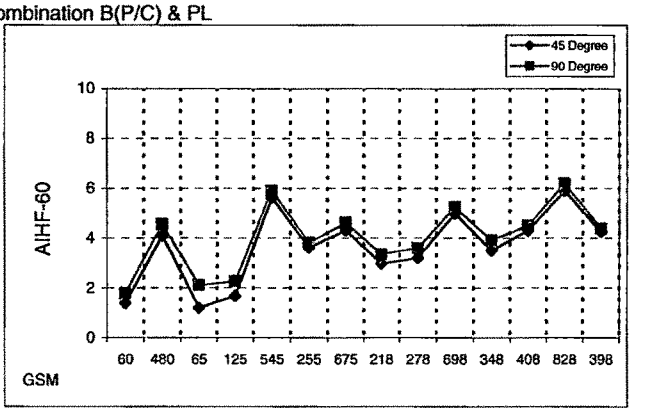

Figure 6.5d:P/V 33/67 Saree 4th Combination B(P) & PH

Combination	GSM	45	90
SA4	60	1.38	1.78
8SA4	480	4.10	4.56
B(P)	63	1.21	2.46
B(P)+SA4	123	2.79	3.10
B(P)+8SA4	543	4.26	4.60
B+B(P)+SA4	253	3.06	3.20
B+B(P)+8SA4	673	5.60	5.70
PH+2SA4	240	3.10	3.98
PH+3SA4	300	3.45	3.88
PH+10SA4	720	5.40	5.50
U.V.+PH+2SA4	370	3.66	4
U.V.+PH+3SA4	430	4.33	4.53
U.V.+PH+10SA4	850	6.73	7.60
2SA4+PH+3SA4	420	4.40	4.60

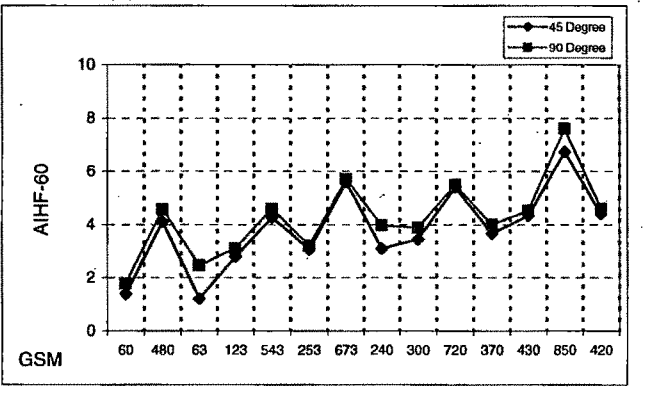

Figure 6.5e :P/V 33/67 Saree 5th Combination B(C) & PH

Combination	GSM	45	90
SA4	60	1.38	1.78
8SA4	480	4.10	4.56
B(C)	65	1.73	1.77
B(C)+SA4	125	1.90	2.40
B(C)+8SA4	545	4.06	4.60
B+B(C)+SA4	255	3.45	3.80
B+B(C)+8SA4	675	5.34	5.80
PH+2SA4	240	3.10	3.98
PH+3SA4	300	3.45	3.88
PH+10SA4	720	5.40	5.50
U.V.+PH+2SA4	370	3.66	4
U.V.+PH+3SA4	430	4.33	4.53
U.V.+PH+10SA4	850	6.73	7.60
2SA4+PH+3SA4	420	4.40	4.60

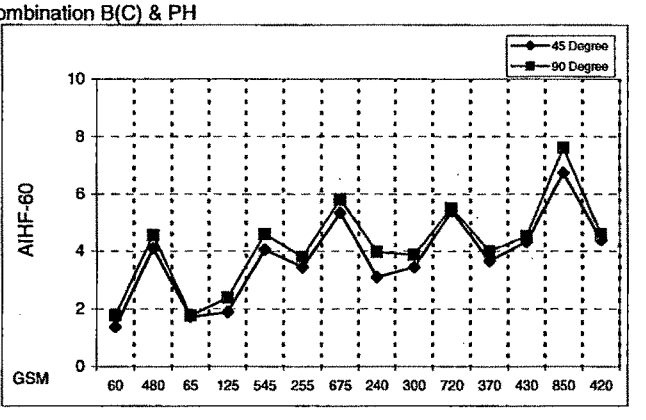

Figure 6.5f :P/V 33/67 Saree 6th Combination B(P/C) & PH

Combination	GSM	45	90
SA4	60	1.38	1.78
8SA4	480	4.10	4.56
B(PC)	65	1.20	2.11
B(PC)+SA4	125	1.67	2.26
B(PC)+8SA4	545	5.62	5.90
B+B(PC)+8SA4	255	3.62	3.80
B+B(PC)+SA4	675	4.30	4.60
PH+2SA4	240	3.10	3.98
PH+3SA4	300	3.45	3.88
PH+10SA4	720	5.40	5.50
U.V.+PH+2SA4	370	3.66	4
U.V.+PH+3SA4	430	4.33	4.53
U.V.+PH+10SA4	850	6.73	7.60
2SA4+PH+3SA4	420	4.40	4.60

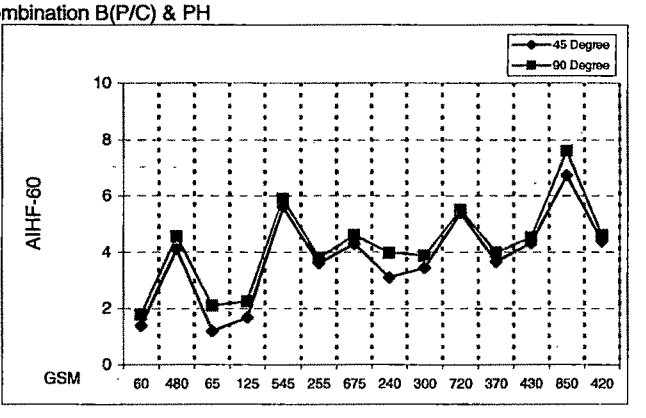

Figure 6.6a :P/C 67/33 Saree 1st Combination B(P) & PL

Combination	GSM	45	90
1SA5	56	1.29	1.42
8SA5	448	3.36	4.20
B(P)	63	1.21	2.46
B(P)+SA5	119	2.34	2.90
B(P)+8SA5	511	3.35	4.23
B+B(P)+1SA5	249	2.79	3.09
B+B(P)+8SA5	641	5.32	5.50
PL+2SA5	210	2.30	2.97
PL+3SA5	266	3.20	3.50
PL+10SA5	658	4.56	4.83
UV+PL+2SA5	340	3.76	3.95
UV+PL+3SA5	396	4.12	4.25
UV+PL+10SA5	788	5.80	6.10
2SA5+PL+3SA5	378	4.00	4.15

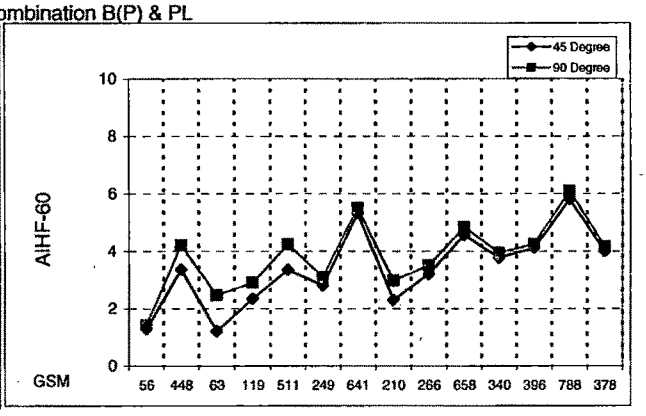

Figure 6.6b :P/C 67/33 Saree 2nd Combination B(C) & PL

Combination	GSM	45	90
1SA5	56	1.29	1.42
8SA5	448	3.36	4.20
B(C)	65	1.73	1.77
B(C)+SA5	121	2.21	2.46
B(C)+8SA5	513	3.65	3.97
B+B(C)+SA5	251	3.20	3.60
B+B(C)+8SA5	643	5.80	6.53
PL+2SA5	210	2.30	2.97
PL+3SA5	266	3.20	3.50
PL+10SA5	658	4.56	4.83
UV+PL+2SA5	340	3.76	3.95
UV+PL+3SA5	396	4.12	4.25
UV+PL+10SA5	788	5.80	6.10
2SA5+PL+3SA5	378	4.00	4.15

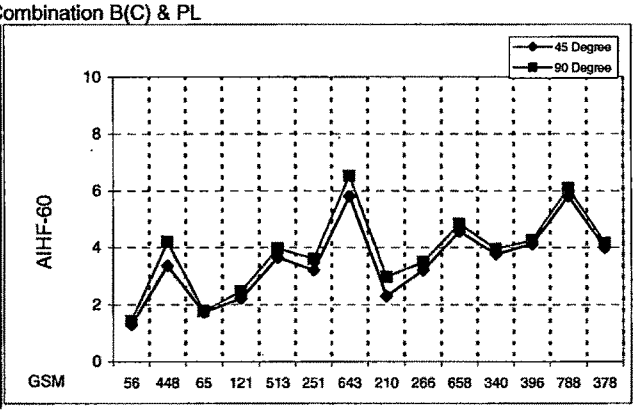

Figure 6.6c:P/C 67/33Saree 3rd Combination B(P/C) & PL

Combination	GSM	45	90
1SA5	56	1.29	1.42
8SA5	448	3.36	4.20
B(PC)	65	1.20	2.11
B(PC)+SA5	121	1.68	2.38
B(PC)+8SA5	513	4.84	5.44
B+B(PC)+SA5	251	2.61	3.05
B+B(PC)+8SA5	643	3.90	4.50
PL+2SA5	210	2.30	2.97
PL+3SA5	266	3.20	3.50
PL+10SA5	658	4.56	4.83
UV+PL+2SA5	340	3.76	3.95
UV+PL+3SA5	396	4.12	4.25
UV+PL+10SA5	788	5.80	6.10
2SA5+PL+3SA5	378	4.00	4.15

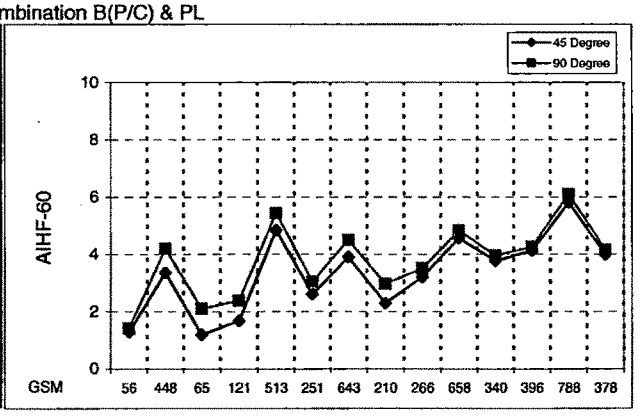

Figure 6.6d:P/C 67/33 Saree 4th Combination B(P) & PH

Combination	GSM	45	90
1SA5	56	1.29	1.42
8SA5	448	3.36	4.20
B(P)	63	1.21	2.46
B(P)+SA5	119	2.34	2.90
B(P)+8SA5	511	3.35	4.23
B+B(P)+1SA5	249	2.79	3.09
B+B(P)+8SA5	641	5.32	5.50
PH+2SA5	232	3.01	3.20
PH+3SA5	288	3.50	3.84
PH+10SA5	680	5.10	5.20
UV+PH+2SA5	362	4.20	4.40
UV+PH+3SA5	418	4.90	5.36
UV+PH+10SA5	810	7.20	7.40
2SA5+PH+3SA5	400	4.28	4.47

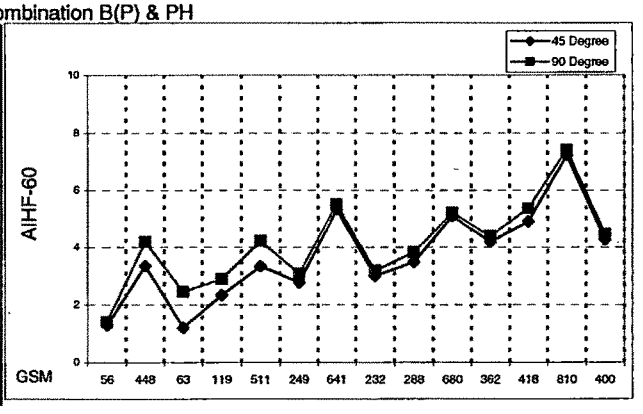

Figure 6.6e :P/C 67/33 Saree 5th Combination B(C) & PH

Combination	GSM	45	90
1SA5	56	1.29	1.42
8SA5	448	3.36	4.20
B(C)	65	1.73	1.77
B(C)+SA5	121	2.21	2.46
B(C)+8SA5	513	3.65	3.97
B+B(C)+SA5	251	3.20	3.60
B+B(C)+8SA5	643	5.80	6.53
PH+2SA5	232	3.01	3.20
PH+3SA5	288	3.50	3.84
PH+10SA5	680	5.10	5.20
UV+PH+2SA5	362	4.20	4.40
UV+PH+3SA5	418	4.90	5.36
UV+PH+10SA5	810	7.20	7.40
2SA5+PH+3SA5	400	4.28	4.47

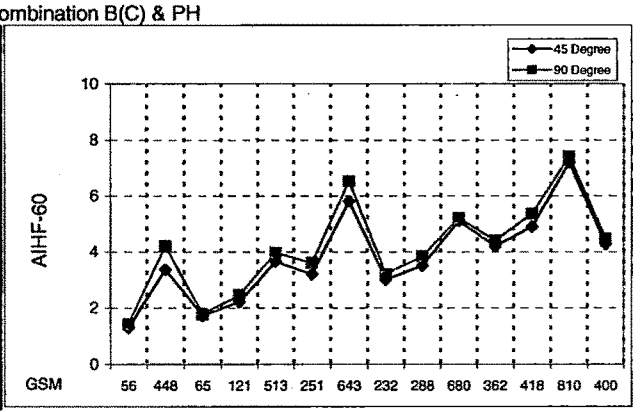

Figure 6.6f:P/C 67/33 Saree 6th Combination B(P/C) & PH

Combination	GSM	45	90
1SA5	56	1.29	1.42
8SA5	448	3.36	4.20
B(PC)	65	1.20	2.11
B(PC)+SA5	121	1.68	2.38
B(PC)+8SA5	513	4.84	5.44
B+B(PC)+SA5	251	2.61	3.05
B+B(PC)+8SA5	643	3.90	4.50
PH+2SA5	232	3.01	3.20
PH+3SA5	288	3.50	3.84
PH+10SA5	680	5.10	5.20
UV+PH+2SA5	362	4.20	4.40
UV+PH+3SA5	418	4.90	5.36
UV+PH+10SA5	810	7.20	7.40
2SA5+PH+3SA5	400	4.28	4.47

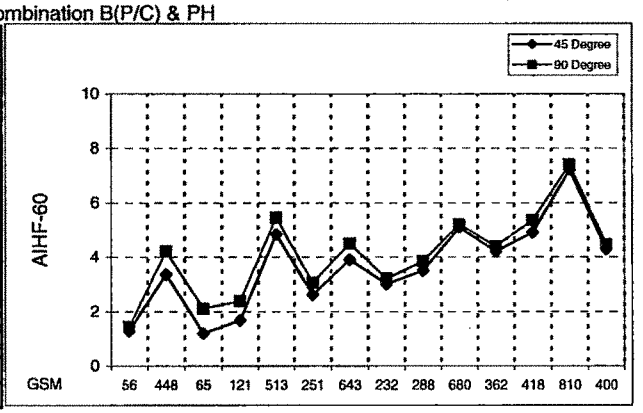

Figure 6.7a: Polyester saree 1st Combination B(P) & PL

Combination	GSM	45	90
1SA6	55	1.47	2.04
8SA6	440	4.24	4.69
B(P)	63	1.21	2.46
B(P)+SA6	118	1.87	3.19
B(P)+8SA6	503	4.58	4.89
B+B(P)+1SA6	248	2.90	3.42
B+B(P)+8SA6	633	6.06	6.44
PL+2SA6	208	2.70	3.94
PL+3SA6	263	3.84	4.10
PL+10SA6	648	5.63	5.71
UV+PL+2SA6	338	3.99	4.39
UV+PL+3SA6	393	3.91	4.88
UV+PL+10SA6	778	6.16	6.78
2SA6+PL+3SA6	373	4.77	5.24

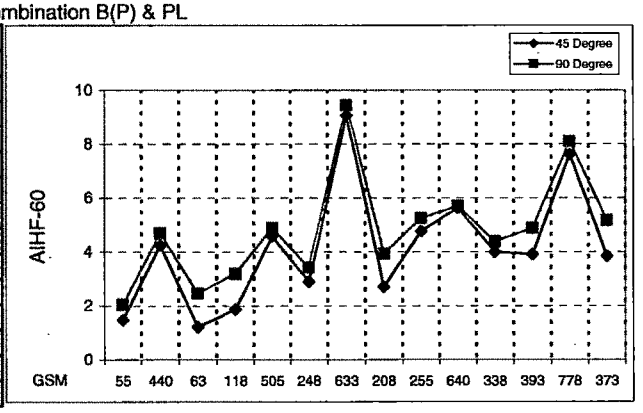

Figure 6.7b : Polyester Saree 2nd Combination B(C) & PL

Combination	GSM	45	90
1SA6	55	1.47	2.04
8SA6	440	4.24	4.69
B(C)	65	1.73	1.77
B(C)+SA6	120	1.76	2.80
B(C)+8SA6	505	5.12	5.28
B+B(C)+SA6	250	3.30	4.12
B+B(C)+8SA6	635	5.65	6.04
PL+2SA6	208	2.70	3.94
PL+3SA6	263	3.84	4.10
PL+10SA6	648	5.63	5.71
UV+PL+2SA6	338	3.99	4.39
UV+PL+3SA6	393	3.91	4.88
UV+PL+10SA6	778	6.16	6.78
2SA6+PL+3SA6	373	4.77	5.24

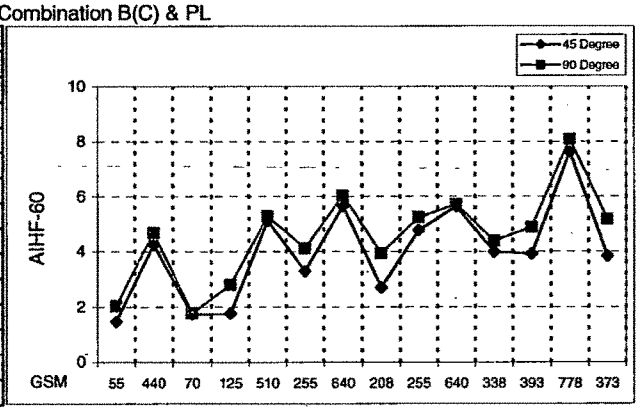

Figure 6.7c : Polyester saree 3rd Combination B(P/C) & PL

Combination	GSM	45	90
1SA6	55	1.47	2.04
8SA6	440	4.24	4.69
B(PC)	65	1.20	2.11
B(PC)+SA6	120	2.70	3.13
B(PC)+8SA6	505	4.60	6.40
B+B(PC)+SA6	250	4.10	4.70
B+B(PC)+8SA6	635	4.44	4.94
PL+2SA6	208	2.70	3.94
PL+3SA6	263	3.84	4.10
PL+10SA6	648	5.63	5.71
UV+PL+2SA6	338	3.99	4.39
UV+PL+3SA6	393	3.91	4.88
UV+PL+10SA6	778	6.16	6.78
2SA6+PL+3SA6	373	4.77	5.24

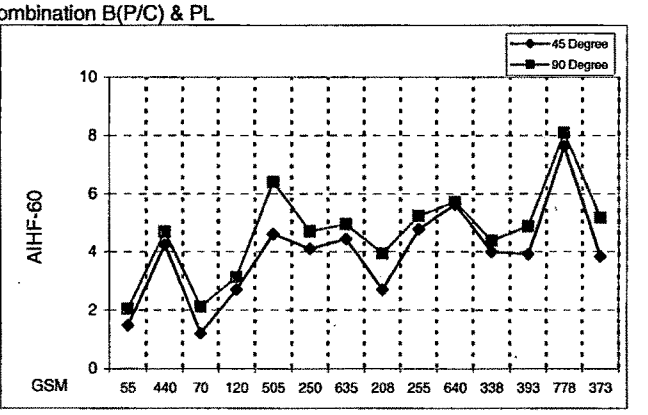

Figure 6.7d : Polyester Saree 4th Combination B(P) & PH

Combination	GSM	45	90
1SA6	55	1.47	2.04
8SA6	440	4.24	4.69
B(P)	63	1.21	2.46
B(P)+SA6	118	1.87	3.19
B(P)+8SA6	503	4.58	4.89
B+B(P)+1SA6	248	2.90	3.42
B+B(P)+8SA6	633	6.06	6.44
PH+2SA6	230	3.59	4.12
PH+3SA6	285	4.27	4.58
PH+10SA6	670	5.59	5.80
UV+PH+2SA6	360	4.88	4.86
UV+PH+3SA6	415	5.94	6.30
UV+PH+10SA6	800	7.62	8.09
2SA6+PH+3SA6	395	5.10	5.50

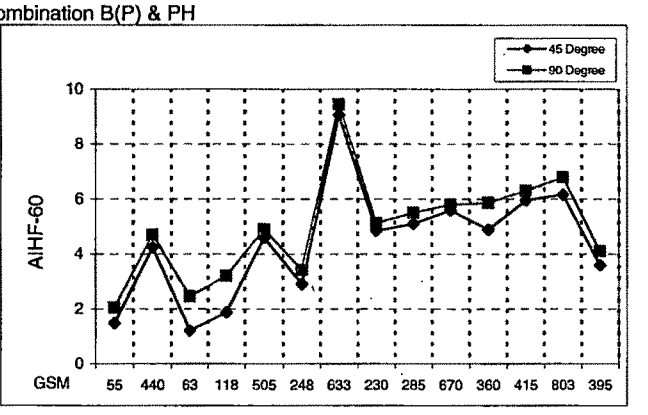

Figure 6.7e: Polyester saree 5th Combination B(C) & PH

Combination	GSM	45	90
1SA6	55	1.47	2.04
8SA6	440	4.24	4.69
B(C)	65	1.73	1.77
B(C)+SA6	120	1.76	2.80
B(C)+8SA6	505	5.12	5.28
B+B(C)+SA6	250	3.30	4.12
B+B(C)+8SA6	635	5.65	6.04
PH+2SA6	230	3.59	4.12
PH+3SA6	285	4.27	4.58
PH+10SA6	670	5.59	5.80
UV+PH+2SA6	360	4.88	4.86
UV+PH+3SA6	415	5.94	6.30
UV+PH+10SA6	800	7.62	8.09
2SA6+PH+3SA6	395	5.10	5.50

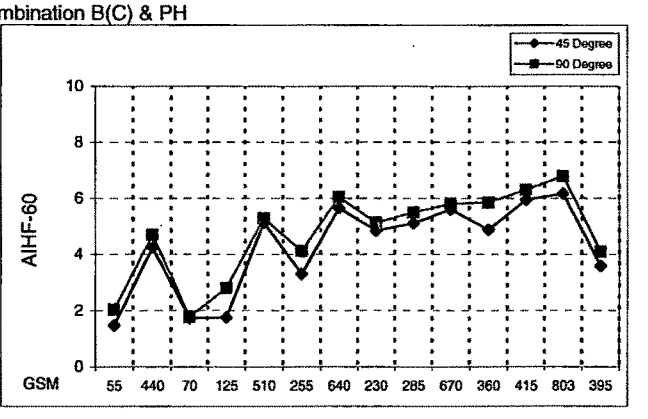

Figure 6.7f : Polyester saree 6th Combination B(P/C) & PH

Combination	GSM	45	90
1SA6	55	1.47	2.04
8SA6	440	4.24	4.69
B(PC)	65	1.20	2.11
B(PC)+SA6	120	2.70	3.13
B(PC)+8SA6	505	4.60	5.40
B+B(PC)+SA6	250	4.10	4.70
B+B(PC)+8SA6	635	4.44	4.94
PH+2SA6	230	3.59	4.12
PH+3SA6	285	4.27	4.58
PH+10SA6	670	5.59	5.80
UV+PH+2SA6	360	4.88	4.86
UV+PH+3SA6	415	5.94	6.30
UV+PH+10SA6	800	7.62	8.09
2SA6+PH+3SA6	395	5.10	5.50

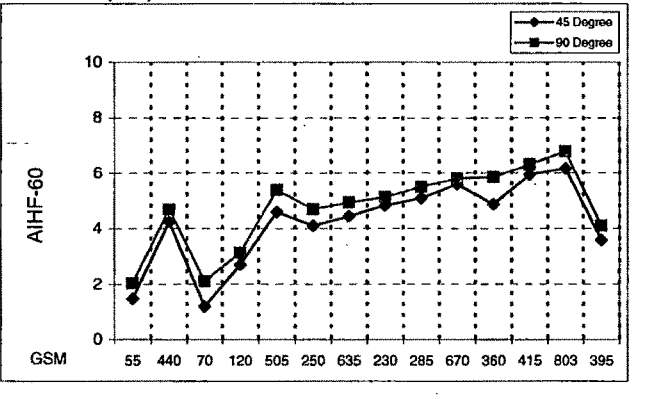

Figure 6.8a: Cotton Saree 1st Combination B(P) & PL

Combination	GSM	45	90
1SA7	53	0.51	0.57
8SA7	424	5.08	5.31
B(P)	63	1.21	2.46
B(P)+SA7	116	3.20	4.40
B(P)+8SA7	487	5.23	5.56
B+B(P)+1SA7	246	3.50	3.84
B+B(P)+8SA7	617	6.42	6.83
PL+2SA7	204	3.00	3.22
PL+3SA7	257	3.57	3.80
PL+10SA7	628	5.86	6.84
UV+PL+2SA7	334	4.22	4.52
UV+PL+3SA7	387	5.04	5.38
UV+PL+10SA7	758	6.25	6.38
2SA7+PL+3SA7	363	4.42	4.65

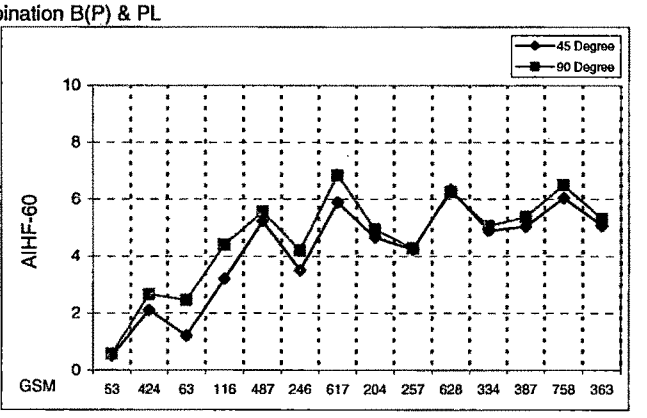

Figure 6.8b : Cotton Saree 2nd Combination B(C) & PL

Combination	GSM	45	90
1SA7	53	0.51	0.57
8SA7	424	5.08	5.31
B(C)	65	1.73	1.77
B(C)+SA7	118	2.90	3.80
B(C)+8SA7	489	4.92	5.16
B+B(C)+SA7	248	3.67	3.70
B+B(C)+8SA7	619	4.05	4.84
PL+2SA7	204	3.00	3.22
PL+3SA7	257	3.57	3.80
PL+10SA7	628	5.86	6.84
UV+PL+2SA7	334	4.22	4.52
UV+PL+3SA7	387	5.04	5.38
UV+PL+10SA7	758	6.25	6.38
2SA7+PL+3SA7	363	4.42	4.65

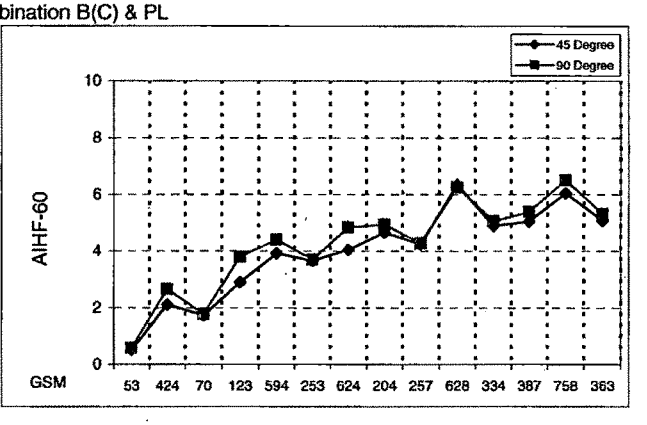

Figure 6.8c: Cotton Saree 3rd Combination B(P/C) & PL

Combination	GSM	45	90
1SA7	53	0.51	0.57
8SA7	424	5.08	5.31
B(PC)	65	1.20	2.11
B(PC)+SA7	118	2.90	3.16
B(PC)+8SA7	489	5.76	5.98
B+B(PC)+SA7	248	3.80	4.20
B+B(PC)+8SA7	619	5.88	6.20
PL+2SA7	204	3.00	3.22
PL+3SA7	257	3.57	3.80
PL+10SA7	628	5.86	6.84
UV+PL+2SA7	334	4.22	4.52
UV+PL+3SA7	387	5.04	5.38
UV+PL+10SA7	758	6.25	6.38
2SA7+PL+3SA7	363	4.42	4.65

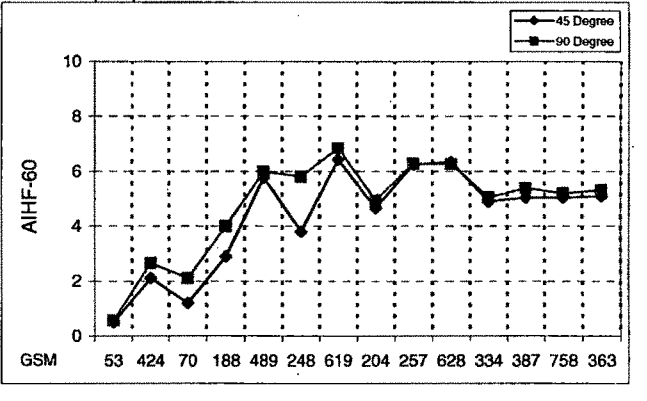

Figure 6.8d: Cotton Saree 4th Combination B(P) & PH

Combination	GSM	45	90
1SA7	53	0.51	0.57
8SA7	424	5.08	5.31
B(P)	63	1.21	2.46
B(P)+SA7	116	3.20	4.40
B(P)+8SA7	487	5.23	5.56
B+B(P)+1SA7	246	3.50	3.86
B+B(P)+8SA7	617	5.88	6.21
PH+2SA7	226	3.23	3.39
PH+3SA7	279	3.70	4.04
PH+10SA7	650	6.03	6.25
UV+PH+2SA7	356	4.36	4.78
UV+PH+3SA7	409	5.40	5.84
UV+PH+10SA7	780	6.33	6.84
2SA7+PH+3SA7	363	4.72	4.83

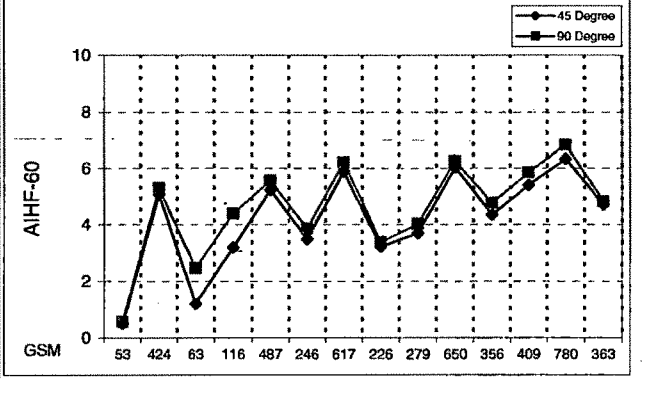

Figure 6.8e: Cotton Saree 5th Combination B(C) & PH

Combination	GSM	45	90
1SA7	53	0.51	0.57
8SA7	424	5.08	5.31
B(C)	65	1.73	1.77
B(C)+SA7	118	2.90	3.80
B(C)+8SA7	489	3.92	4.40
B+B(C)+SA7	248	6.67	6.70
B+B(C)+8SA7	619	4.05	4.84
PH+2SA7	226	3.23	3.39
PH+3SA7	279	3.70	4.04
PH+10SA7	650	6.03	6.25
UV+PH+2SA7	356	4.36	4.78
UV+PH+3SA7	409	5.40	5.84
UV+PH+10SA7	780	6.33	6.84
2SA7+PH+3SA7	363	4.72	4.83

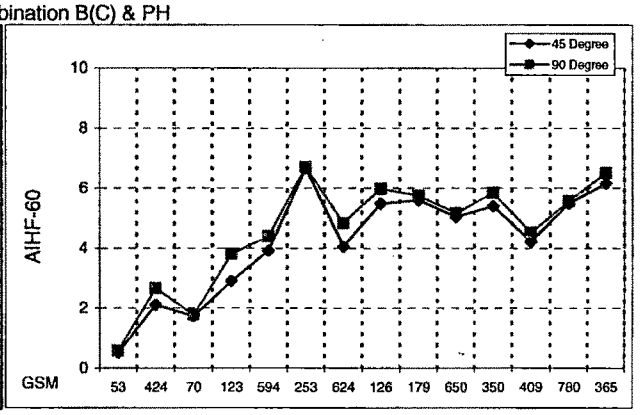

Figure 6.8f: Cotton Saree 6th Combination B(P/C) & PH

Combination	GSM	45	90
1SA7	53	0.51	0.57
8SA7	424	5.08	5.31
B(PC)	65	1.20	2.11
B(PC)+SA7	118	2.90	4.00
B(PC)+8SA7	489	5.76	5.98
B+B(PC)+SA7	248	3.80	5.80
B+B(PC)+8SA7	619	6.42	6.83
PH+2SA7	226	3.23	3.39
PH+3SA7	279	3.70	4.04
PH+10SA7	650	6.03	6.25
UV+PH+2SA7	356	4.36	4.78
UV+PH+3SA7	409	5.40	5.84
UV+PH+10SA7	780	6.33	6.84
2SA7+PH+3SA7	363	4.72	4.83

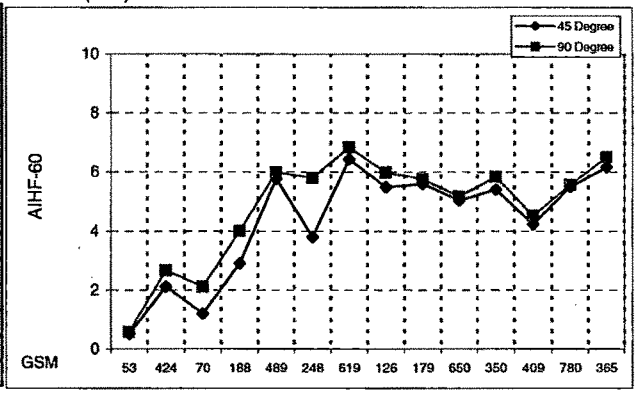

Figure 6.9a : P/C Saree 1st Combination B(P) & PL

Combination	GSM	45	90
1SA8	75	1.32	2.03
8SA8	600	4.12	4.95
B(P)	63	1.21	2.46
B(P)+SA8	138	3.80	4.23
B(P)+8SA8	663	5.08	5.56
B+B(P)+1SA8	268	2.55	3.45
B+B(P)+8SA8	793	6.21	7.20
PL+2SA8	248	2.83	3.48
PL+3SA8	323	3.35	3.48
PL+10SA8	848	5.81	5.98
UV+PL+2SA8	378	3.75	4.60
UV+PL+3SA8	453	4.20	4.79
UV+PL+10SA8	978	6.20	6.51
2SA8+PL+3SA8	473	3.90	4.65

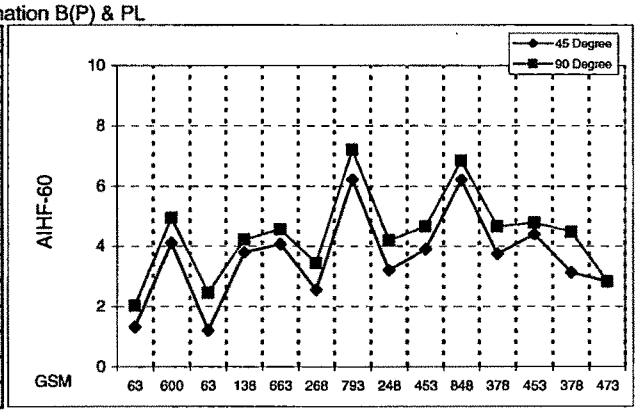

Figure 6.9b: P/C Saree 2nd Combination B(C) & PL

Combination	GSM	45	90
1SA8	75	1.32	2.03
8SA8	600	4.12	4.95
B(C)	65	1.73	1.77
B(C)+SA8	140	2.23	3.75
B(C)+8SA8	665	3.71	4.99
B+B(C)+SA8	270	2.35	3.24
B+B(C)+8SA8	795	3.85	5.96
PL+2SA8	248	2.83	3.48
PL+3SA8	323	3.35	3.48
PL+10SA8	848	5.81	5.98
UV+PL+2SA8	378	3.75	4.60
UV+PL+3SA8	453	4.20	4.79
UV+PL+10SA8	978	6.20	6.51
2SA8+PL+3SA8	473	3.90	4.65

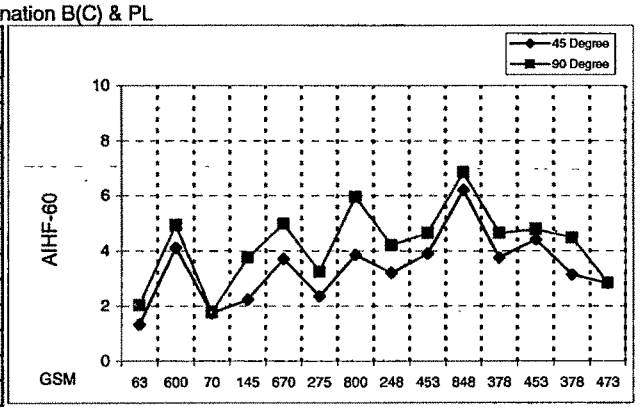

Figure 6.9c: P/C Saree 3rd Combination B(P) & PL

Combination	GSM	45	90
1SA8	75	1.32	2.03
8SA8	600	4.12	4.95
B(PC)	65	1.20	2.11
B(PC)+SA8	140	1.92	2.52
B(PC)+8SA8	665	4.77	4.87
B+B(PC)+SA8	270	3.25	3.85
B+B(PC)+8SA8	795	5.66	5.86
PL+2SA8	248	2.83	3.48
PL+3SA8	323	3.35	3.48
PL+10SA8	848	5.81	5.98
UV+PL+2SA8	378	3.75	4.60
UV+PL+3SA8	453	4.20	4.79
UV+PL+10SA8	978	6.20	6.51
2SA8+PL+3SA8	473	3.90	4.65

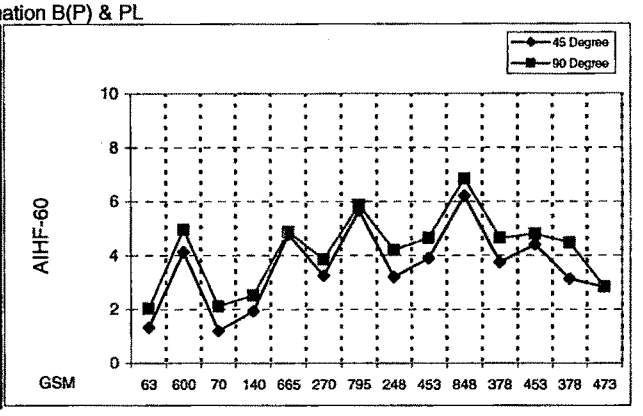

Figure 6.9d: P/C Saree 4th Combination B(P) & PH

Combination	GSM	45	90
1SA8	75	1.32	2.03
8SA8	600	4.12	4.95
B(P)	63	1.21	2.46
B(P)+8SA8	663	5.08	5.56
B(P)+8SA8	663	4.08	4.56
B+B(P)+1SA8	268	2.55	3.45
B+B(P)+8SA8	793	6.21	7.20
PH+2SA8	270	3.35	4.20
PH+3SA8	345	4.07	5.04
PH+10SA8	870	6.27	6.84
UV+PH+2SA8	400	3.76	4.70
UV+PH+3SA8	475	4.44	5.12
UV+PH+10SA8	1000	7.35	7.80
2SA8+PH+3SA8	495	4.63	5.44

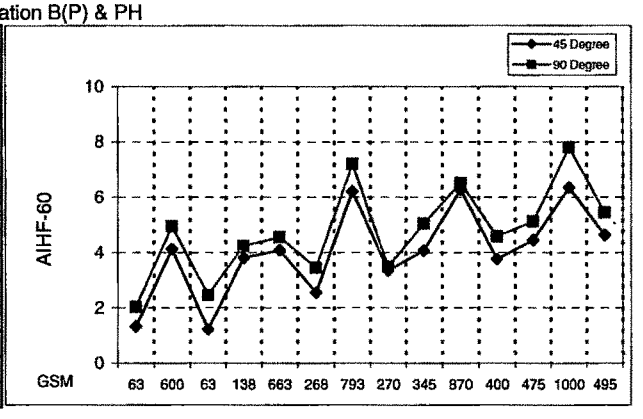

Figure 6.9e: P/C Saree 5th Combination B(C) & PH

Combination	GSM	45	90
1SA8	75	1.32	2.03
8SA8	600	4.12	4.95
B(C)	65	1.73	1.77
B(C)+SA8	140	2.23	3.75
B(C)+8SA8	665	3.71	4.99
B+B(C)+SA8	270	2.35	3.24
B+B(C)+8SA8	795	3.85	5.96
PH+2SA8	270	3.35	4.20
PH+3SA8	345	4.07	5.04
PH+10SA8	870	6.27	6.84
UV+PH+2SA8	400	3.76	4.70
UV+PH+3SA8	475	4.44	5.12
UV+PH+10SA8	1000	7.35	7.80
2SA8+PH+3SA8	495	4.63	5.44

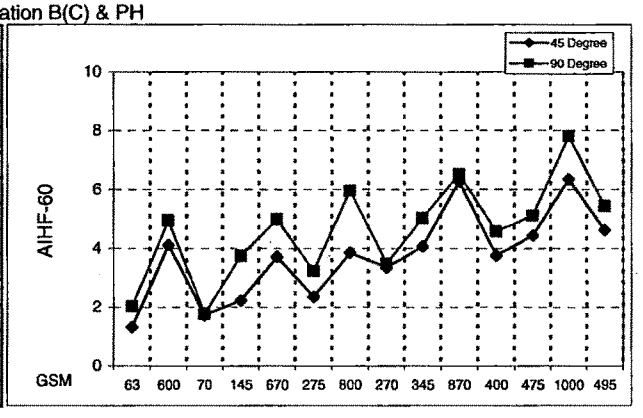

Figure 6.9f: P/C Saree 6th Combination B(P/C) & PH

Combination	GSM	45	90
1SA8	75	1.32	2.03
8SA8	600	4.12	4.95
B(PC)	65	1.20	2.11
B(PC)+SA8	140	1.92	2.52
B(PC)+8SA8	665	4.77	4.87
B+B(PC)+SA8	270	3.25	3.85
B+B(PC)+8SA8	795	5.66	5.86
PH+2SA8	270	3.35	4.20
PH+3SA8	345	4.07	5.04
PH+10SA8	870	6.27	6.84
UV+PH+2SA8	400	3.76	4.70
UV+PH+3SA8	475	4.44	5.12
UV+PH+10SA8	1000	7.35	7.80
2SA8+PH+3SA8	495	4.63	5.44

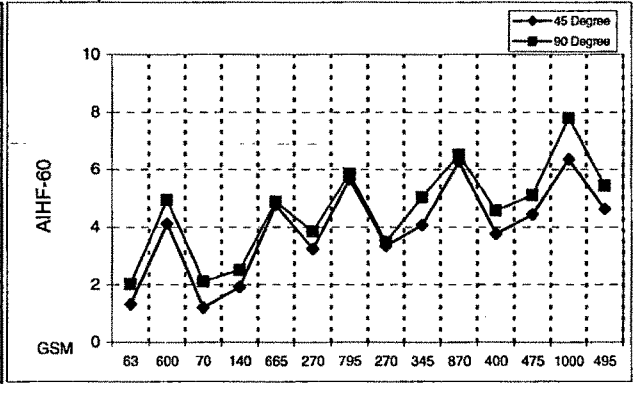

Figure 6.10a: P/V Saree 1st Combination B(P) & PL

Combination	GSM	45	90
1SA9	71	1.20	1.69
8SA9	568	5.23	5.80
B(P)	63	1.21	2.46
B(P)+SA9	134	1.72	2.15
B(P)+8SA9	631	5.97	6.81
B+B(P)+1SA9	264	3.89	4.04
B+B(P)+8SA9	761	7.19	7.60
PL+2SA9	240	2.47	2.98
PL+3SA9	311	2.73	3.43
PL+10SA9	808	7.35	8.14
UV+PL+2SA9	370	3.95	4.30
UV+PL+3SA9	441	4.30	4.70
UV+PL+10SA9	938	8.06	9.16
2SA9+PL+3SA9	453	4.21	5.06

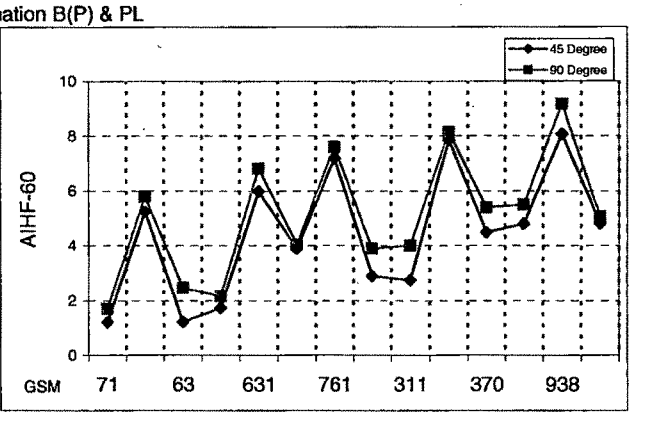

Figure 6.10b: P/V Saree 2nd Combination B(C) & PL

Combination	GSM	45	90
1SA9	71	1.20	1.69
8SA9	568	5.23	5.80
B(C)	65	1.73	1.77
B(C)+SA9	136	3.07	3.63
B(C)+8SA9	633	6.05	6.26
B+B(C)+SA9	266	3.07	4.28
B+B(C)+8SA9	763	6.64	8.58
PL+2SA9	240	2.47	2.98
PL+3SA9	311	2.73	3.43
PL+10SA9	808	7.35	8.14
UV+PL+2SA9	370	3.95	4.30
UV+PL+3SA9	441	4.30	4.70
UV+PL+10SA9	938	8.06	9.16
2SA9+PL+3SA9	453	4.21	5.06

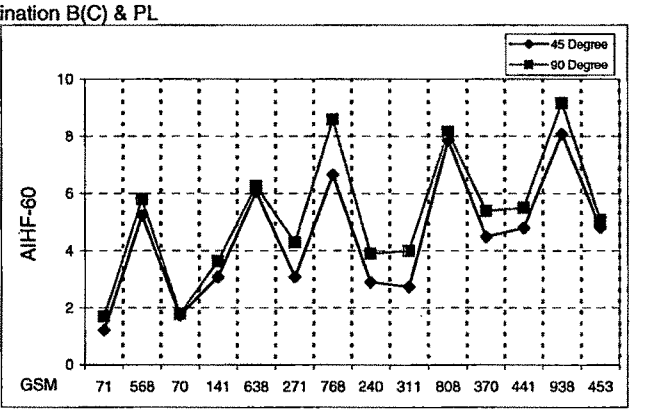

Figure 6.10c: P/V Saree 3rd Combination B(P/C) & PL

Combination	GSM	45	90
1SA9	71	1.20	1.69
8SA9	568	5.23	5.80
B(PC)	65	1.20	2.11
B(PC)+SA9	136	2.18	3.10
B(PC)+8SA9	633	5.80	6.60
B+B(PC)+SA9	266	2.60	3.85
B+B(PC)+8SA9	763	7.52	7.80
PL+2SA9	240	2.47	2.98
PL+3SA9	311	2.73	3.43
PL+10SA9	808	7.35	8.14
UV+PL+2SA9	370	3.95	4.30
UV+PL+3SA9	441	4.30	4.70
UV+PL+10SA9	938	8.06	9.16
2SA9+PL+3SA9	453	4.21	5.06

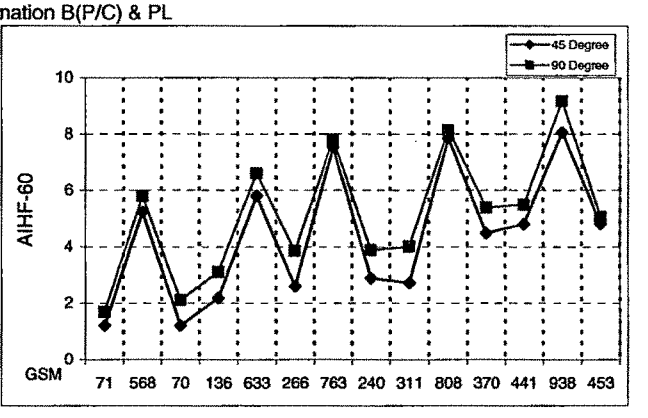

Figure 6.10d: P/V Saree 4th combination B(P) & PH

Combination	GSM	45	90
1SA9	71	1.20	1.69
8SA9	568	5.23	5.80
B(P)	63	1.21	2.46
B(P)+SA9	134	1.72	2.15
B(P)+8SA9	631	5.97	6.81
B+B(P)+1SA9	264	3.89	4.04
B+B(P)+8SA9	761	7.19	7.60
PH+2SA9	262	2.89	3.89
PH+3SA9	333	3.00	4.00
PH+10SA9	830	7.85	8.32
UV+PH+2SA9	392	4.48	5.39
UV+PH+3SA9	463	4.80	5.49
UV+PH+10SA9	960	9.01	9.61
2SA9+PH+3SA9	475	4.81	5.27

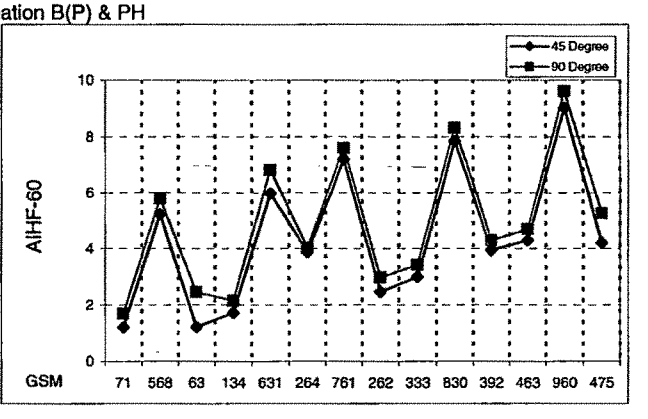

Figure 6.10e: P/V Saree 5th Combination B(C) & PH

Combination	GSM	45	90
1SA9	71	1.20	1.69
8SA9	568	5.23	5.80
B(C)	65	1.73	1.77
B(C)+SA9	136	3.07	3.63
B(C)+8SA9	633	6.05	6.26
B+B(C)+SA9	266	3.07	4.28
B+B(C)+8SA9	763	6.64	8.58
PH+2SA9	262	2.89	3.89
PH+3SA9	333	3.00	4.00
PH+10SA9	830	7.85	8.32
UV+PH+2SA9	392	4.48	5.39
UV+PH+3SA9	463	4.80	5.49
UV+PH+10SA9	960	9.01	9.61
2SA9+PH+3SA9	475	4.81	5.27

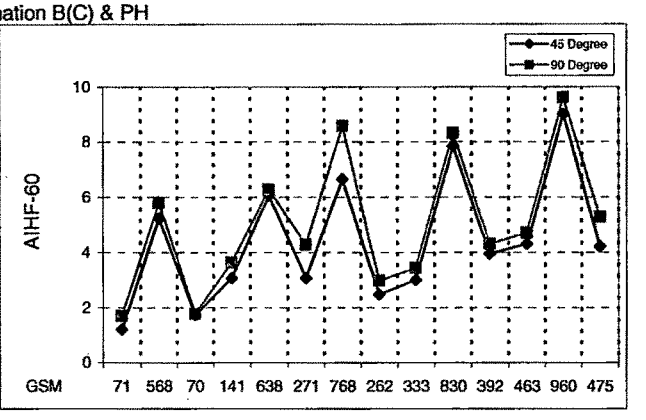

Figure 6.10f : P/VSaree 6th Combination B(P/C) & PH

Combination	GSM	45	90
1SA9	71	1.20	1.69
8SA9	568	5.23	5.80
B(PC)	65	1.20	2.11
B(PC)+SA9	136	2.18	3.10
B(PC)+8SA9	633	7.58	7.62
B+B(PC)+SA9	266	2.60	3.85
B+B(PC)+8SA9	763	7.52	7.80
PH+2SA9	262	2.89	3.89
PH+3SA9	333	3.00	4.00
PH+10SA9	830	7.85	8.32
UV+PH+2SA9	392	4.48	5.39
UV+PH+3SA9	463	4.80	5.49
UV+PH+10SA9	960	9.01	9.61
2SA9+PH+3SA9	475	4.81	5.27

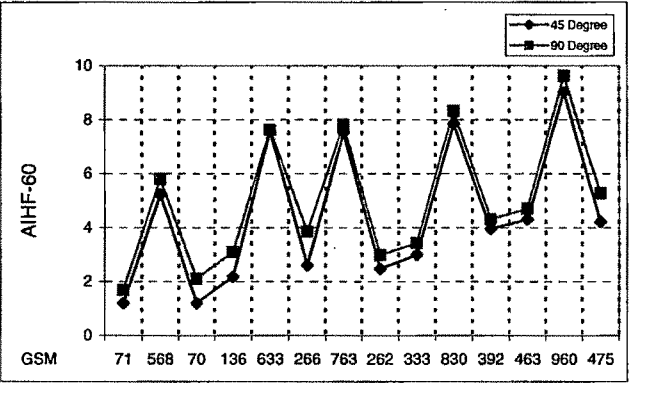

Figure 6.10g: AIHF Comparision of Nylon Saree SA1 Combinations

AIHF 60	45 Degree Test Nylon Saree						90 Degree Test Nylon Saree					
Combination	1st	2nd	3rd	4th	5 th	6 th	1st	2nd	3rd	4th	5 th	6 th
1SA1	0.86	0.86	0.86	0.86	0.86	0.86	1.12	1.12	1.12	1.12	1.12	1.12
8SA1	2.92	2.92	2.92	2.92	2.92	2.92	3.82	3.82	3.82	3.82	3.82	3.82
B(P)	1.21	1.73	1.20	1.21	1.21	1.20	2.46	1.77	2.11	2.46	2.46	2.11
B(P)+1SA1	1.41	1.53	1.73	1.41	1.41	1.73	1.86	2.78	2.69	1.86	1.86	2.69
B(P)+8SA1	5.04	5.00	5.31	5.08	5.08	5.31	5.60	6.05	7.60	6.72	6.72	7.60
B+B(P)+1SA1	2.03	2.30	2.10	2.00	2.00	2.10	2.57	2.80	3.20	2.44	2.44	3.20
B+B(P)+8SA1	6.40	5.74	2.40	2.40	2.40	5.70	7.80	6.94	3.50	3.50	3.50	7.50
PL+2SA1	2.21	2.21	2.21	2.40	2.40	2.40	3.32	3.32	3.32	3.50	3.50	3.50
PL+3SA1	2.52	2.52	2.52	2.65	2.65	2.65	3.54	3.54	3.54	3.64	3.64	3.64
PL+10SA1	6.21	6.21	6.21	6.40	6.40	6.40	6.87	6.87	6.87	7.05	7.05	7.05
UV+PL+2SA1	3.70	3.70	3.70	3.76	3.76	3.76	3.87	3.87	3.87	4.00	4.00	4.00
UV+PL+3SA1	4.32	4.32	4.32	4.55	4.55	4.55	4.43	4.43	4.43	4.76	4.76	4.76
UV+PL+10SA1	7.00	7.00	7.00	7.20	7.20	7.20	7.76	7.76	7.76	8.16	8.16	8.16
2SA2+PL+3SA1	4.30	4.30	4.30	4.48	4.48	4.48	4.35	4.35	4.35	4.68	4.68	4.68

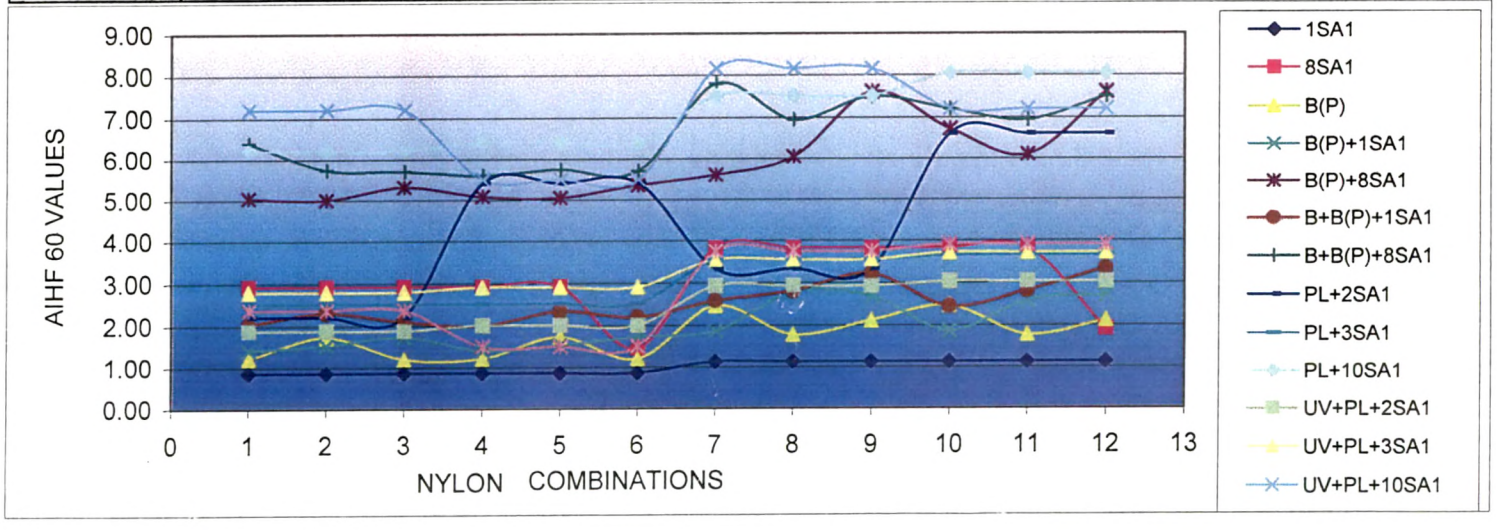

Figure 6.10h: AIHF Comparision of P/C 33 /67 Saree SA2 Combinations

AIHF 60	45 Degree Test P/C 33/ 67 Saree						90 Degree Test P/C 33/ 67 Saree					
Combination	1st	2nd	3rd	4th	5 th	6 th	1st	2nd	3rd	4th	5 th	6 th
1SA2	1.16	1.16	1.16	1.16	1.16	1.16	1.66	1.66	1.66	1.66	1.66	1.66
8SA2	3.20	3.20	3.20	3.20	3.20	3.20	3.79	3.79	3.79	3.79	3.79	3.79
B(P)	1.21	1.73	1.20	1.21	1.73	1.20	2.46	1.77	2.11	2.46	1.77	2.11
B(P)+1SA2	1.98	1.70	1.68	1.98	1.70	1.68	2.54	1.90	2.10	2.54	1.90	2.10
B(P)+8SA2	4.50	3.35	3.45	4.50	3.35	3.45	4.80	4.20	4.30	4.80	4.20	4.30
B+B(P)+1SA2	2.14	2.36	2.89	2.14	2.36	2.89	2.80	2.68	3.30	2.80	2.68	3.30
B+B(P)+8SA2	5.28	5.45	4.15	5.28	5.45	4.15	5.45	5.75	4.35	5.45	5.75	4.35
PL+2SA2	1.90	1.90	1.90	2.54	2.54	2.54	2.11	2.11	2.11	2.68	2.68	2.68
PL+3SA2	3.09	3.09	3.09	3.18	3.18	3.18	3.20	3.20	3.20	3.56	3.56	3.56
PL+10SA2	5.60	5.60	5.60	5.86	5.86	5.86	5.70	5.70	5.70	6.32	6.32	6.32
UV+PL+2SA2	3.20	3.20	3.20	4.10	4.10	4.10	3.50	3.50	3.50	4.30	4.30	4.30
UV+PL+3SA2	3.97	3.97	3.97	4.70	4.70	4.70	4.20	4.20	4.20	4.98	4.98	4.98
UV+PL+10SA2	6.54	6.54	6.54	6.90	6.90	6.90	6.86	6.86	6.86	7.01	7.01	7.01
2SA2+PL+3SA2	3.90	3.90	3.90	4.59	4.59	4.59	4.13	4.13	4.13	4.87	4.87	4.87

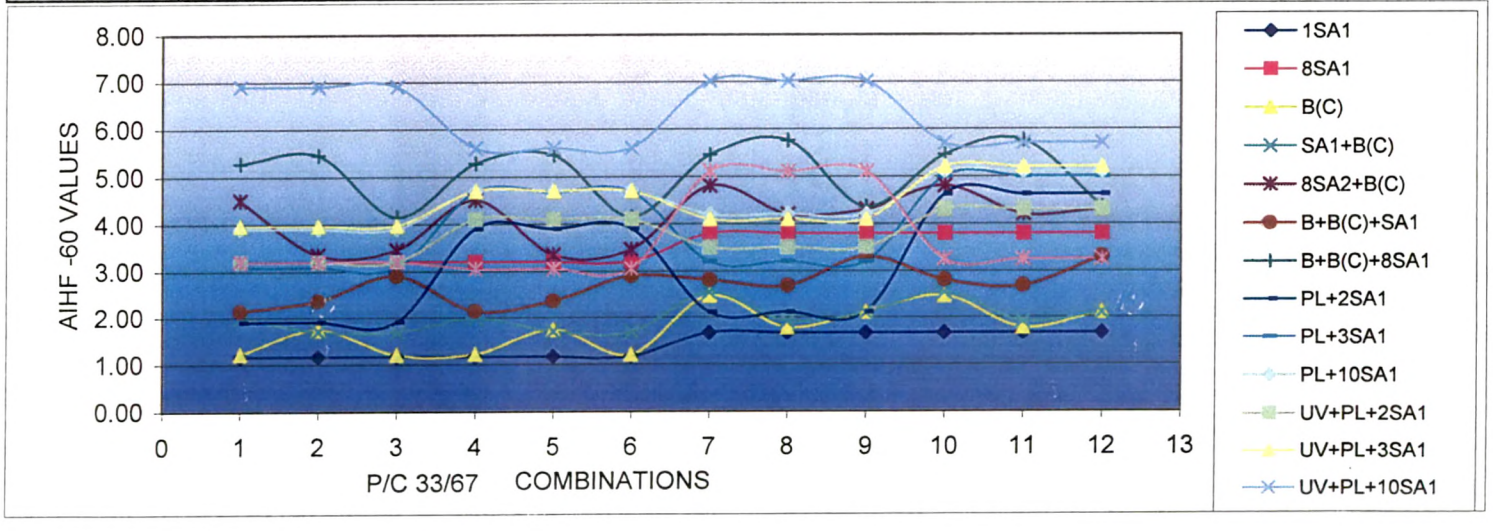

Figure 6.10i: AIHF Comparision of P/V 67/33 SA3 Saree Combinations

AIHF 60	45 Degree Test P/V 67/33 Saree						90 Degree Test P/V 67/33 Saree					
Combination	1st	2nd	3rd	4th	5 th	6 th	1st	2nd	3rd	4th	5 th	6 th
1SA3	1.45	1.45	1.45	1.45	1.45	1.45	1.87	1.87	1.87	1.87	1.87	1.87
8SA3	4.30	4.30	4.30	4.30	4.30	4.30	4.90	4.90	4.90	4.90	4.90	4.90
B(P)	1.21	1.73	1.20	1.21	1.73	1.20	2.46	1.77	2.11	2.46	1.77	2.11
B(P)+SA3	2.10	1.57	2.25	2.10	1.57	2.25	3.20	2.45	2.36	3.20	2.45	2.36
B(P)+8SA3	4.98	5.20	4.00	4.98	5.20	4.00	5.20	5.40	6.38	5.20	5.40	6.38
B+B(P)+1SA3	2.97	3.50	3.90	2.97	3.50	3.90	3.20	3.90	4.50	3.20	3.90	4.50
B+B(P)+8SA3	7.20	5.36	4.23	7.20	5.36	4.23	7.90	5.90	4.35	7.90	5.90	4.35
PL+2SA3	3.00	3.00	3.00	3.14	3.14	3.14	3.26	3.26	3.26	3.22	3.22	3.22
PL+3SA3	3.20	3.20	3.20	3.36	3.36	3.36	3.47	3.47	3.47	3.67	3.67	3.67
PL+10SA3	5.23	5.23	5.23	5.30	5.30	5.30	5.46	5.46	5.46	5.87	5.87	5.87
UV+PL+2SA3	3.58	3.58	3.58	3.6	3.6	3.6	3.78	3.78	3.78	3.9	3.9	3.9
UV+PL+3SA3	4.20	4.20	4.20	4.60	4.60	4.60	4.36	4.36	4.36	4.90	4.90	4.90
UV+PL+10SA3	6.21	6.21	6.21	7.30	7.30	7.30	6.35	6.35	6.35	7.71	7.71	7.71
2SA3+PL+3SA3	4.37	4.37	4.37	4.85	4.85	4.85	4.66	4.66	4.66	5.10	5.10	5.10

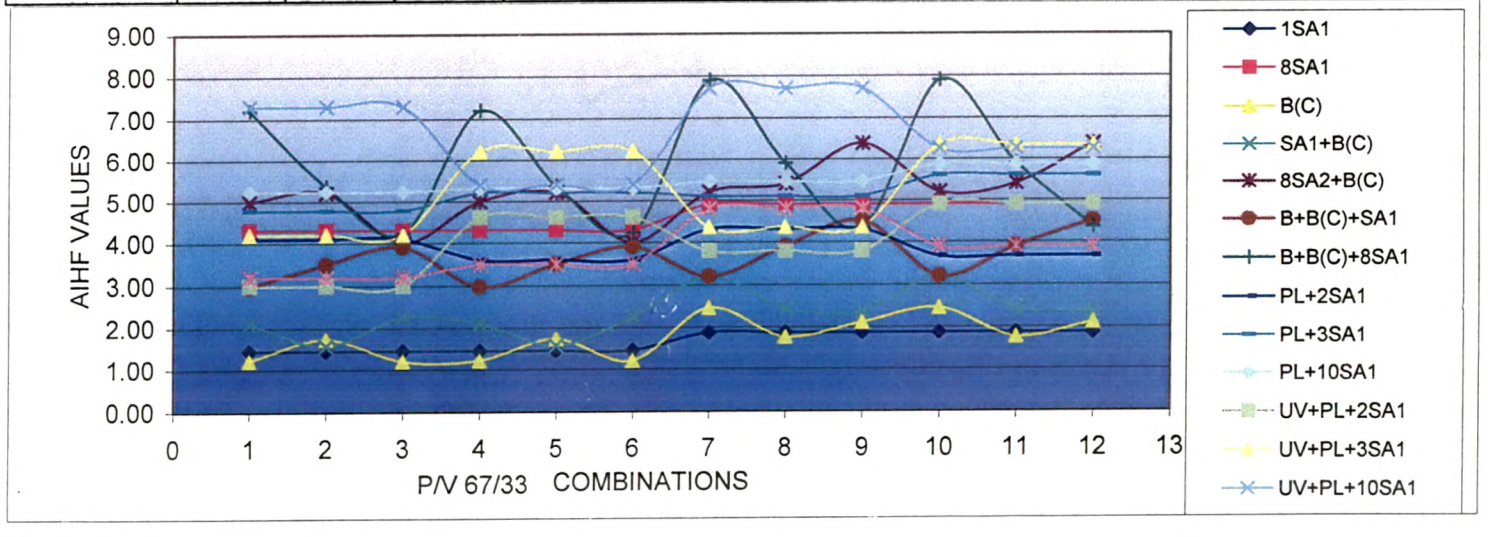

Figure 6.10j: AIHF Comparision of P/V 33/67 Saree SA4 Combinations

AIHF 60	45 Degree Test P/V 33/ 67 Saree						90 Degree Test P/V 33/ 67 Saree					
Combination	1st	2nd	3rd	4th	5 th	6 th	1st	2nd	3rd	4th	5 th	6 th
1SA5	1.29	1.29	1.29	1.29	1.29	1.29	1.42	1.42	1.42	1.42	1.42	1.42
8SA5	3.36	3.36	3.36	3.36	3.36	3.36	4.20	4.20	4.20	4.20	4.20	4.20
B(P)	1.21	1.73	1.20	1.21	1.73	1.20	2.46	1.77	2.11	2.46	1.77	2.11
B(P)+SA5	2.34	2.21	1.68	2.34	2.21	1.68	2.90	2.46	2.38	2.90	2.46	2.38
B(P)+8SA5	3.35	3.65	4.84	3.35	3.65	4.84	4.23	3.97	5.44	4.23	3.97	5.44
B+B(P)+1SA5	2.79	3.20	2.61	2.79	3.20	2.61	3.09	3.60	3.05	3.09	3.60	3.05
B+B(P)+8SA5	5.32	5.80	3.90	5.32	5.80	3.90	5.50	6.53	4.50	5.50	6.53	4.50
PL+2SA5	2.30	2.30	2.30	3.01	3.01	3.01	2.97	2.97	2.97	3.20	3.20	3.20
PL+3SA5	3.20	3.20	3.20	3.50	3.50	3.50	3.50	3.50	3.50	3.84	3.84	3.84
PL+10SA5	4.56	4.56	4.56	5.10	5.10	5.10	4.83	4.83	4.83	5.20	5.20	5.20
UV+PL+2SA5	3.76	3.76	3.76	4.20	4.20	4.20	3.95	3.95	3.95	4.40	4.40	4.40
UV+PL+3SA5	4.12	4.12	4.12	4.90	4.90	4.90	4.25	4.25	4.25	5.36	5.36	5.36
UV+PL+10SA5	5.80	5.80	5.80	7.20	7.20	7.20	6.10	6.10	6.10	7.40	7.40	7.40
2SA5+PL+3SA5	4.00	4.00	4.00	4.28	4.28	4.28	4.15	4.15	4.15	4.47	4.47	4.47

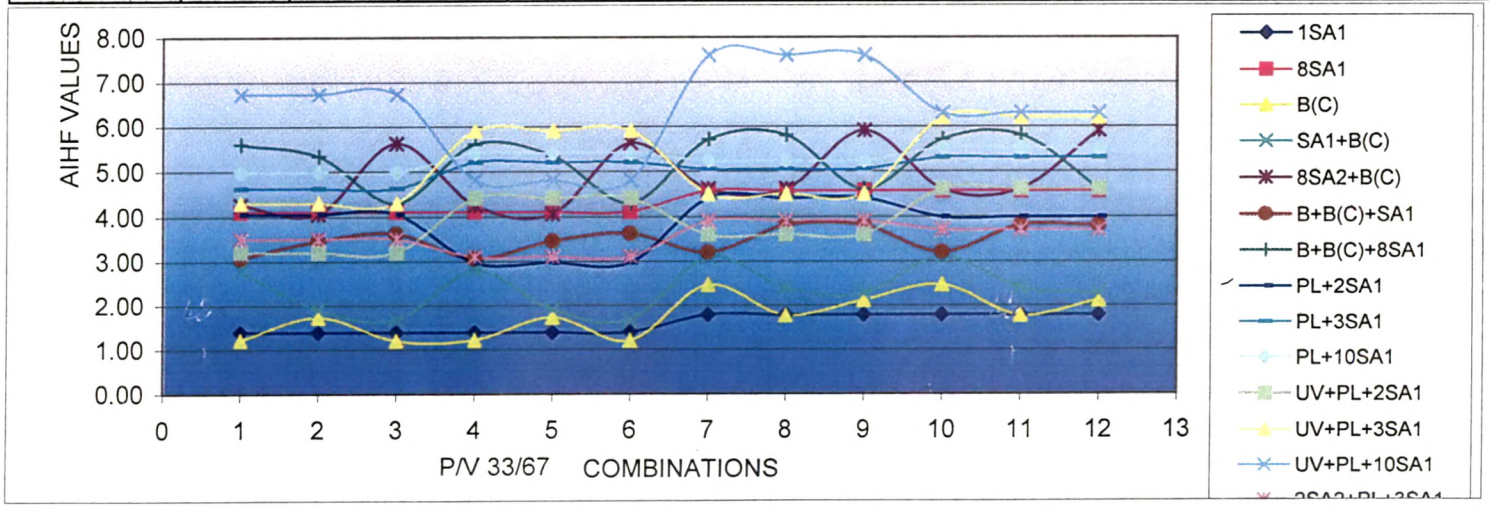

Figure 6.10k: AIHF Comparision of P/C 67/33 Saree SA5 Combinations

AIHF 60	45 Degree Test P/C 67/33 Saree						90 Degree Test P/C 67/33 Saree					
Combination	1st	2nd	3rd	4th	5 th	6 th	1st	2nd	3rd	4th	5 th	6 th
SA4	1.38	1.38	1.38	1.38	1.38	1.38	1.78	1.78	1.78	1.78	1.78	1.78
8SA4	4.10	4.10	4.10	4.10	4.10	4.10	4.56	4.56	4.56	4.56	4.56	4.56
B(P)	1.21	1.73	1.20	1.21	1.73	1.20	2.46	1.77	2.11	2.46	1.77	2.11
B(P)+SA4	2.79	1.90	1.67	2.79	1.90	1.67	3.10	2.40	2.26	3.10	2.40	2.26
B(P)`+8SA4	4.26	4.06	5.62	4.26	4.06	5.62	4.60	4.60	5.90	4.60	4.60	5.90
B+B(P)+SA4	3.06	3.45	3.62	3.06	3.45	3.62	3.20	3.80	3.80	3.20	3.80	3.80
B+B(P)+8SA4	5.60	5.34	4.30	5.60	5.34	4.30	5.70	5.80	4.60	5.70	5.80	4.60
PL+2SA4	2.97	2.97	2.97	3.10	3.10	3.10	3.35	3.35	3.35	3.98	3.98	3.98
PL+3SA4	3.20	3.20	3.20	3.45	3.45	3.45	3.60	3.60	3.60	3.88	3.88	3.88
PL+10SA4	4.97	4.97	4.97	5.40	5.40	5.40	5.23	5.23	5.23	5.50	5.50	5.50
U.V.+PL+2SA4	3.50	3.50	3.50	3.66	3.66	3.66	3.90	3.90	3.90	4	4	4
U.V.+PL+3SA4	4.30	4.30	4.30	4.33	4.33	4.33	4.50	4.50	4.50	4.53	4.53	4.53
U.V.+PL+10SA4	5.90	5.90	5.90	6.73	6.73	6.73	6.20	6.20	6.20	7.60	7.60	7.60
2SA4+PL+3SA4	4.26	4.26	4.26	4.40	4.40	4.40	4.39	4.39	4.39	4.60	4.60	4.60

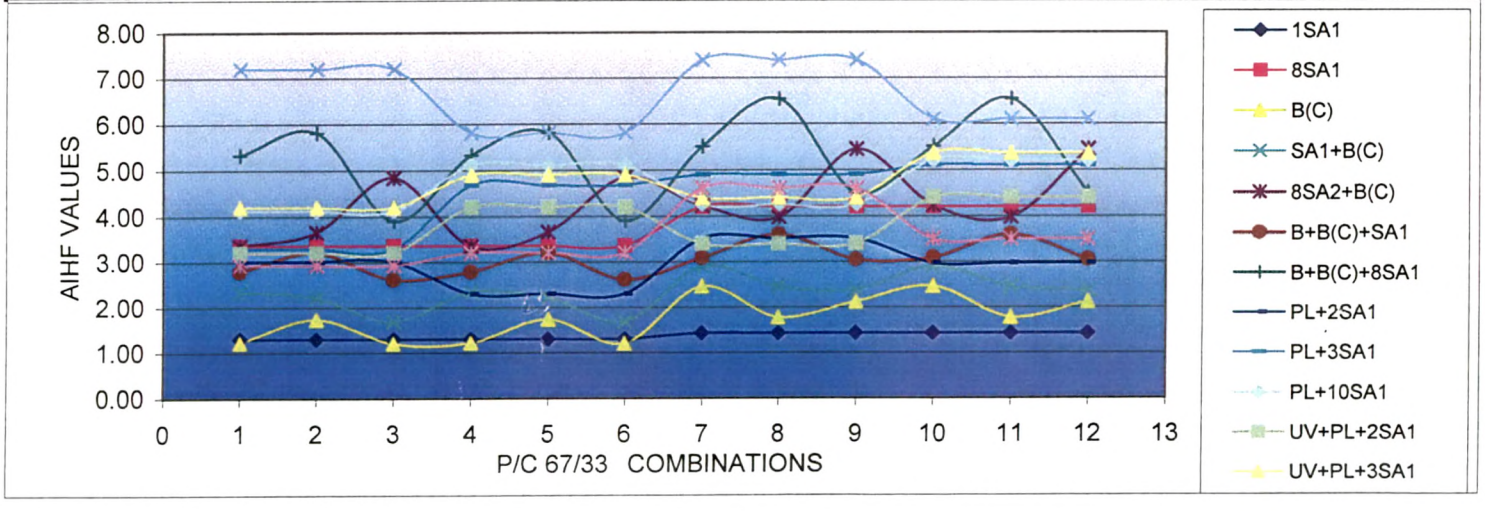

Figure 6.10l: AIHF Comparision of Polyester Saree SA6 Combinations

AIHF 60	45 Degree Test Polyester Saree						90 Degree Test Polyester Saree					
Combination	1st	2nd	3rd	4th	5 th	6 th	1st	2nd	3rd	4th	5 th	6 th
1SA6	1.47	1.47	1.47	1.47	1.47	1.47	2.04	2.04	2.04	2.04	2.04	2.04
8SA6	4.24	4.24	4.24	4.24	4.24	4.24	4.69	4.69	4.69	4.69	4.69	4.69
B(P)	1.21	1.73	1.20	1.21	1.73	1.20	2.46	1.77	2.11	2.46	1.77	2.11
B(P)+SA6	1.87	1.76	2.70	1.87	1.76	2.70	3.19	2.80	3.13	3.19	2.80	3.13
B(P)+8SA6	4.58	5.12	4.60	4.58	5.12	4.60	4.89	5.28	6.40	4.89	5.28	5.40
B+B(P)+1SA6	2.90	3.30	4.10	2.90	3.30	4.10	3.42	4.12	4.70	3.42	4.12	4.70
B+B(P)+8SA6	6.06	5.65	4.44	6.06	5.65	4.44	6.44	6.04	4.94	6.44	6.04	4.94
PL+2SA6	2.70	2.70	2.70	3.59	3.59	3.59	3.94	3.94	3.94	4.12	4.12	4.12
PL+3SA6	3.84	3.84	3.84	4.27	4.27	4.27	4.10	4.10	4.10	4.58	4.58	4.58
PL+10SA6	5.63	5.63	5.63	5.59	5.59	5.59	5.71	5.71	5.71	5.80	5.80	5.80
UV+PL+2SA6	3.99	3.99	3.99	4.88	4.88	4.88	4.39	4.39	4.39	4.86	4.86	4.86
UV+PL+3SA6	3.91	3.91	3.91	5.94	5.94	5.94	4.88	4.88	4.88	6.30	6.30	6.30
UV+PL+10SA6	6.16	6.16	6.16	7.62	7.62	7.62	6.78	6.78	6.78	8.09	8.09	8.09
2SA6+PL+3SA6	4.77	4.77	4.77	5.10	5.10	5.10	5.24	5.24	5.24	5.50	5.50	5.50

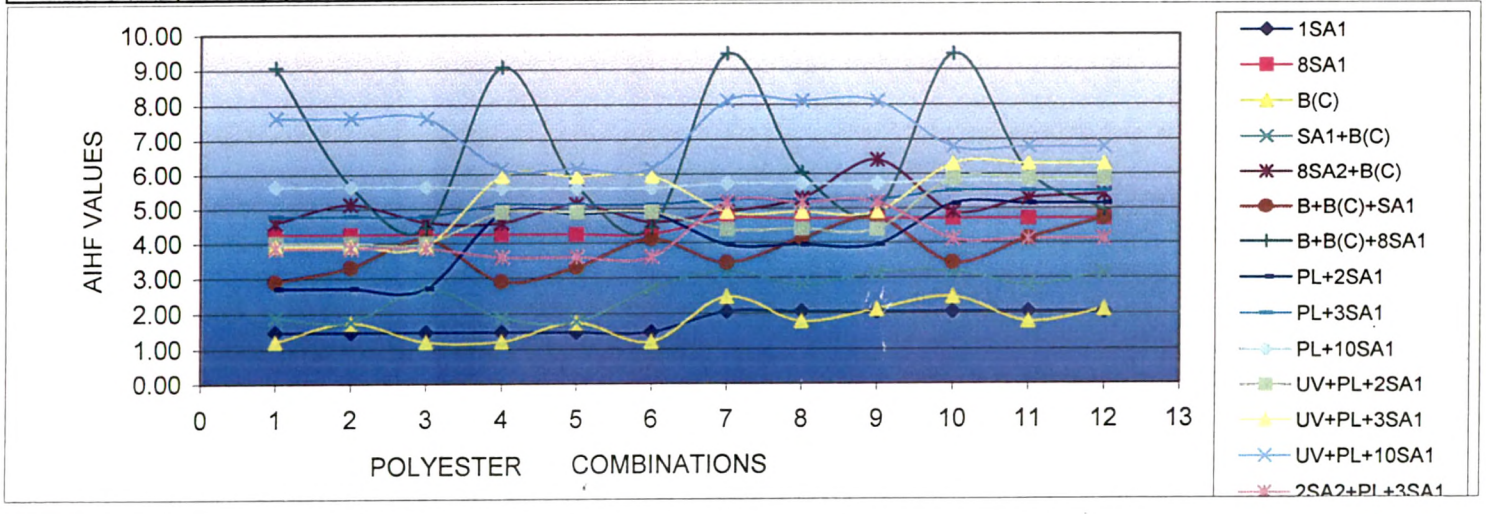

Figure 6.10m: AIHF Comparision of Cotton Saree SA7 Combinations

AIHF 60	45 Degree Test Cotton Saree						90 Degree Test Cotton Saree					
Combination	1st	2nd	3rd	4th	5 th	6 th	1st	2nd	3rd	4th	5 th	6 th
1SA7	0.51	0.51	0.51	0.51	0.51	0.51	0.57	0.57	0.57	0.57	0.57	0.57
8SA7	5.08	5.08	5.08	5.08	5.08	5.08	5.31	5.31	5.31	5.31	5.31	5.31
B(P)	1.21	1.73	1.20	1.21	1.73	1.20	2.46	1.77	2.11	2.46	1.77	2.11
B(P)+SA7	3.20	2.90	2.90	3.20	2.90	2.90	4.40	3.80	3.16	4.40	3.80	4.00
B(P)+8SA7	5.23	4.92	5.76	5.23	3.92	5.76	5.56	5.16	5.98	5.56	4.40	5.98
B+B(P)+1SA7	3.50	3.67	3.80	3.50	6.67	3.80	3.84	3.70	4.20	3.86	6.70	5.80
B+B(P)+8SA7	6.42	4.05	5.88	5.88	4.05	6.42	6.83	4.84	6.20	6.21	4.84	6.83
PL+2SA7	3.00	3.00	3.00	3.23	3.23	3.23	3.22	3.22	3.22	3.39	3.39	3.39
PL+3SA7	3.57	3.57	3.57	3.70	3.70	3.70	3.80	3.80	3.80	4.04	4.04	4.04
PL+10SA7	5.86	5.86	5.86	6.03	6.03	6.03	6.84	6.84	6.84	6.25	6.25	6.25
UV+PL+2SA7	4.22	4.22	4.22	4.36	4.36	4.36	4.52	4.52	4.52	4.78	4.78	4.78
UV+PL+3SA7	5.04	5.04	5.04	5.40	5.40	5.40	5.38	5.38	5.38	5.84	5.84	5.84
UV+PL+10SA7	6.25	6.25	6.25	6.33	6.33	6.33	6.38	6.38	6.38	6.84	6.84	6.84
2SA7+PL+3SA7	4.42	4.42	4.42	4.72	4.72	4.72	4.65	4.65	4.65	4.83	4.83	4.83

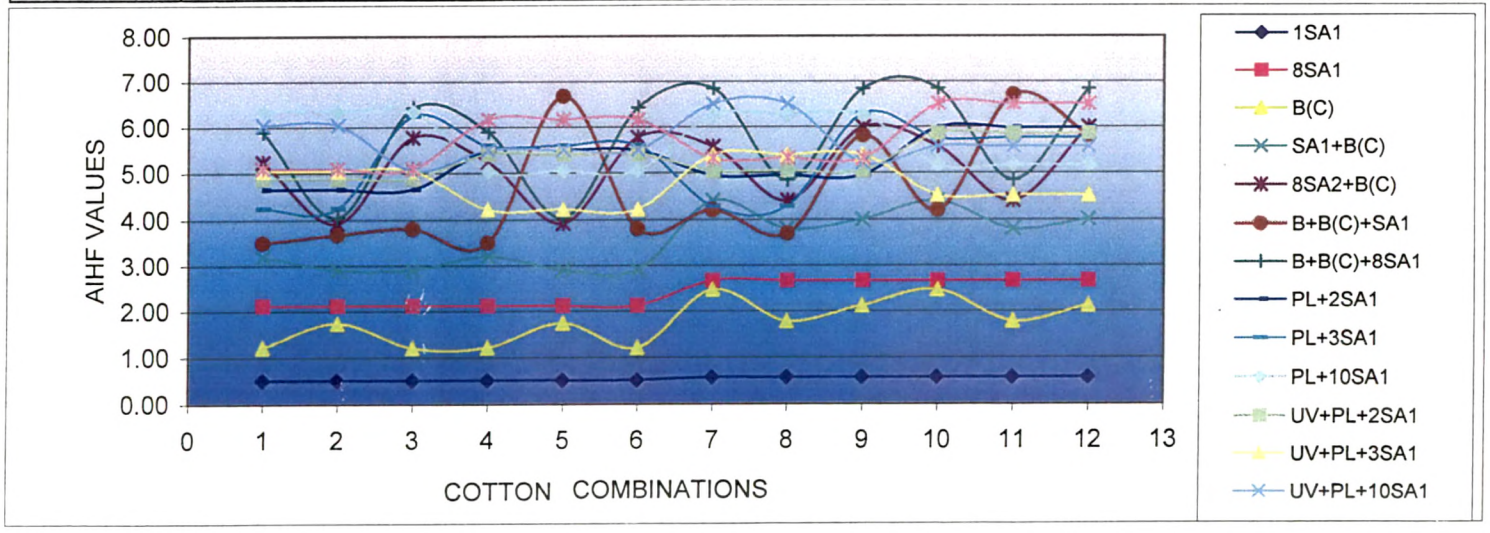

Figure 6.10n: AIHF Comparision of P/C 50/50 Saree SA8 Combinations

AIHF 60	45 Degree Test P/C 50/50 Saree						90 Degree Test P/C 50/50 Saree					
Combination	1st	2nd	3rd	4th	5 th	6 th	1st	2nd	3rd	4th	5 th	6 th
1SA8	1.32	1.32	1.32	1.32	1.32	1.32	2.03	2.03	2.03	2.03	2.03	2.03
8SA8	4.12	4.12	4.12	4.12	4.12	4.12	4.95	4.95	4.95	4.95	4.95	4.95
B(P)	1.21	1.73	1.20	1.21	1.73	1.20	2.46	1.77	2.11	2.46	1.77	2.11
B(P)+SA8	5.08	2.23	1.92	5.08	2.23	1.92	5.56	3.75	2.52	5.56	3.75	2.52
B(P)+8SA8	4.08	3.71	4.77	4.08	3.71	4.77	4.56	4.99	4.87	4.56	4.99	4.87
B+B(P)+1SA8	2.55	2.35	3.25	2.55	2.35	3.25	3.45	3.24	3.85	3.45	3.24	3.85
B+B(P)+8SA8	6.21	3.85	5.66	6.21	3.85	5.66	7.20	5.96	5.86	7.20	5.96	5.86
PL+2SA8	2.83	2.83	2.83	3.35	3.35	3.35	3.48	3.48	3.48	4.20	4.20	4.20
PL+3SA8	3.35	3.35	3.35	4.07	4.07	4.07	3.48	3.48	3.48	5.04	5.04	5.04
PL+10SA8	5.81	5.81	5.81	6.27	6.27	6.27	5.98	5.98	5.98	6.84	6.84	6.84
UV+PL+2SA8	3.75	3.75	3.75	3.76	3.76	3.76	4.60	4.60	4.60	4.70	4.70	4.70
UV+PL+3SA8	4.20	4.20	4.20	4.44	4.44	4.44	4.79	4.79	4.79	5.12	5.12	5.12
UV+PL+10SA8	6.20	6.20	6.20	7.35	7.35	7.35	6.51	6.51	6.51	7.80	7.80	7.80
2SA8+PL+3SA8	3.90	3.90	3.90	4.63	4.63	4.63	4.65	4.65	4.65	5.44	5.44	5.44

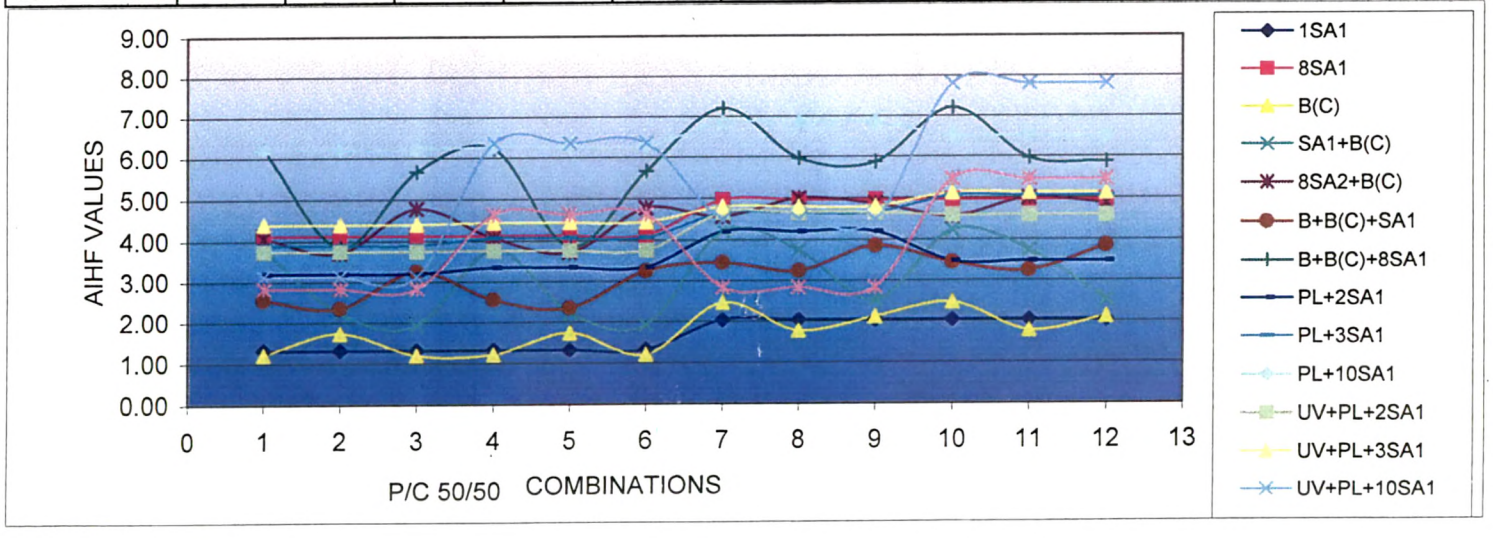

Figure 6.10o: AIHF Comparision of P/V 50/50 Saree SA9 Combinations

AIHF 60	45 Degree Test P/V 50/50 Saree						90 Degree Test P/V 50/50 Saree					
Combination	1st	2nd	3rd	4th	5 th	6 th	1st	2nd	3rd	4th	5 th	6 th
1SA9	1.20	1.20	1.20	1.20	1.20	1.20	1.69	1.69	1.69	1.69	1.69	1.69
8SA9	5.23	5.23	5.23	5.23	5.23	5.23	5.80	5.80	5.80	5.80	5.80	5.80
B(P)	1.21	1.73	1.20	1.21	1.73	1.20	2.46	1.77	2.11	2.46	1.77	2.11
B(P)+SA9	1.72	3.07	2.18	1.72	3.07	2.18	2.15	3.63	3.10	2.15	3.63	3.10
B(P)+8SA9	5.97	6.05	5.80	5.97	6.05	7.58	6.81	6.26	6.60	6.81	6.26	7.62
B+B(P)+1SA9	3.89	3.07	2.60	3.89	3.07	2.60	4.04	4.28	3.85	4.04	4.28	3.85
B+B(P)+8SA9	7.19	6.64	7.52	7.19	6.64	7.52	7.60	8.58	7.80	7.60	8.58	7.80
PL+2SA9	2.47	2.47	2.47	2.89	2.89	2.89	2.98	2.98	2.98	3.89	3.89	3.89
PL+3SA9	2.73	2.73	2.73	3.00	3.00	3.00	3.43	3.43	3.43	4.00	4.00	4.00
PL+10SA9	7.35	7.35	7.35	7.85	7.85	7.85	8.14	8.14	8.14	8.32	8.32	8.32
UV+PL+2SA9	3.95	3.95	3.95	4.48	4.48	4.48	4.30	4.30	4.30	5.39	5.39	5.39
UV+PL+3SA9	4.30	4.30	4.30	4.80	4.80	4.80	4.70	4.70	4.70	5.49	5.49	5.49
UV+PL+10SA9	8.06	8.06	8.06	9.01	9.01	9.01	9.16	9.16	9.16	9.61	9.61	9.61
2SA9+PL+3SA9	4.21	4.21	4.21	4.81	4.81	4.81	5.06	5.06	5.06	5.27	5.27	5.27

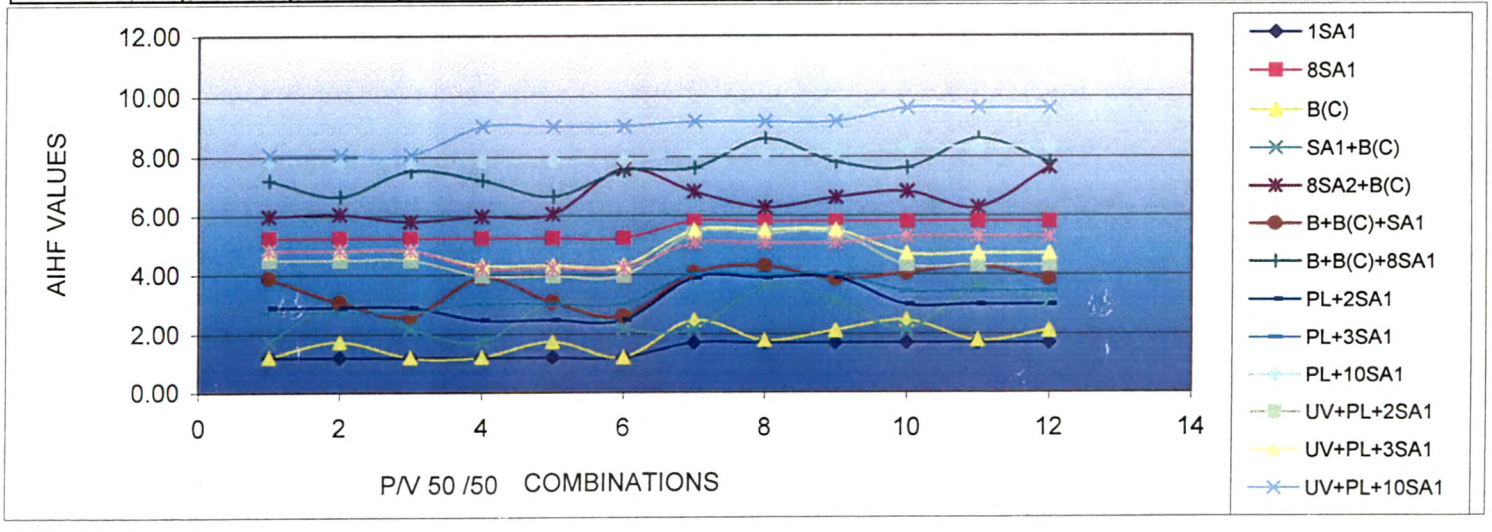

Fig. 6.10p AIHF 60 values for all saree along with B (P) and PL - 45

Combination	Nylon	P/C33/67	P/V67/33	P/V/33/67	P/C67/33	P 100%	C 100%	P/C50/50	P/V50/50
1SA	0.86	1.16	1.45	1.29	1.38	1.47	0.51	1.32	1.20
8SA	2.92	3.20	4.30	3.36	4.10	4.24	5.08	4.12	5.23
B(P)	1.21	1.21	1.21	1.21	1.21	1.21	1.21	1.21	1.21
B(P)+1SA	1.41	1.98	2.10	2.34	2.79	1.87	3.20	3.80	1.72
B(P)+8SA	5.04	4.50	4.98	3.35	4.26	4.58	5.23	4.08	5.97
B+B(P)+1SA	2.03	2.14	2.97	2.79	3.06	2.90	3.50	2.55	3.89
B+B(P)+8SA	6.40	5.28	7.20	5.32	5.60	6.06	6.42	6.21	7.19
PL+2SA	2.21	1.90	3.00	2.30	2.97	2.70	3.00	2.83	2.47
PL+3SA	2.52	3.09	3.20	3.20	3.20	3.84	3.57	3.35	2.73
PL+10SA	6.21	5.60	5.23	4.56	4.97	5.63	5.86	5.81	7.35
UV+PL+2SA	3.70	3.20	3.58	3.76	3.50	3.99	4.22	3.75	3.95
UV+PL+3SA	4.32	3.97	4.20	4.12	4.30	3.91	5.04	4.20	4.30
UV+PL+10SA	7.00	6.54	6.21	5.80	5.90	6.16	6.25	6.20	8.06
2SA+PL+3SA	4.30	3.90	4.37	4.00	4.26	4.77	4.42	3.90	4.21

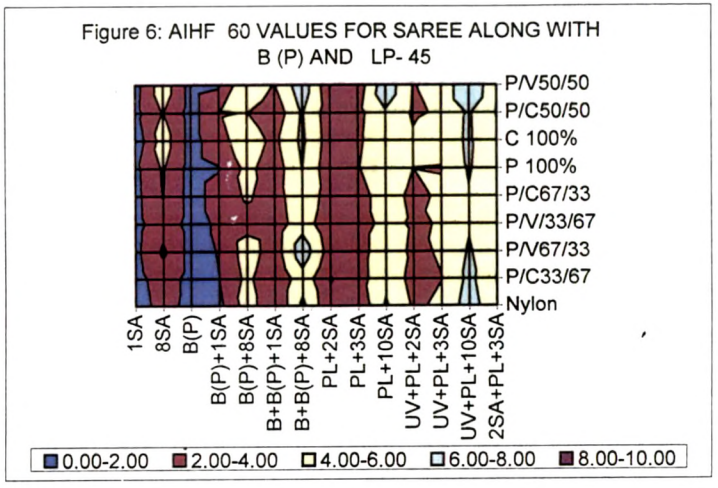

Fig. 6.10q AIHF 60 values for saree along with B (C) and PL - 45

Combination	Nylon	P/C33/67	P/V67/33	P/V/33/67	P/C67/33	P 100%	C 100%	P/C50/50	P/V50/50
1SA	0.86	1.16	1.45	1.29	1.38	1.47	0.51	1.32	1.20
8SA	2.92	3.20	4.30	3.36	4.10	4.24	5.08	4.12	5.23
B(C)	1.73	1.73	1.73	1.73	1.73	1.73	1.73	1.73	1.73
B(C)+1SA	1.53	1.70	1.57	2.21	1.90	1.76	2.90	2.23	3.07
B(C)+8SA	5.00	3.35	5.20	3.65	4.06	5.12	4.92	3.71	6.05
B+B(C)+1SA	2.30	2.36	3.50	3.20	3.45	3.30	3.67	2.35	3.07
B+B(C)+8SA	5.74	5.45	5.36	5.80	5.34	5.65	4.05	3.85	6.64
PL+2SA	2.21	1.90	3.00	2.30	2.97	2.70	3.00	2.83	2.47
PL+3SA	2.52	3.09	3.20	3.20	3.20	3.84	3.57	3.35	2.73
PL+10SA	6.21	5.60	5.23	4.56	4.97	5.63	5.86	5.81	7.35
UV+PL+2SA	3.70	3.20	3.58	3.76	3.50	3.99	4.22	3.75	3.95
UV+PL+3SA	4.32	3.97	4.20	4.12	4.30	3.91	5.04	4.20	4.30
UV+PL+10SA	7.00	6.54	6.21	5.80	5.90	6.16	6.25	6.20	8.06
2SA+PL+3SA	4.30	3.90	4.37	4.00	4.26	4.77	4.42	3.90	4.21

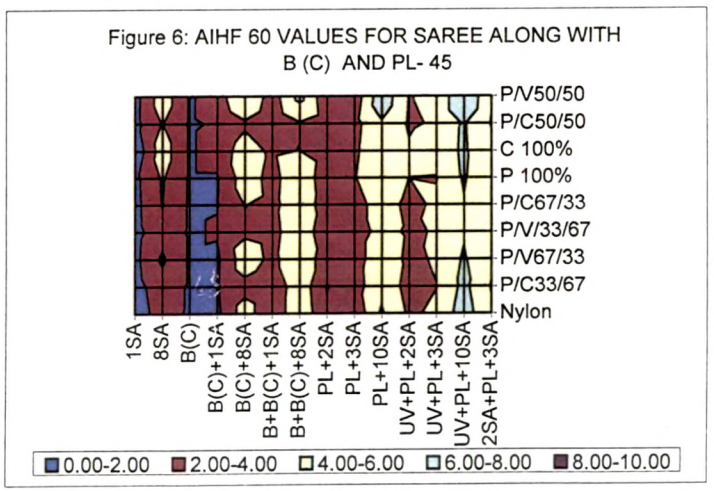

Fig. 6.10r: AIHF 60 values for saree along with B (PC) and PL - 45

Combination	Nylon	P/C33/67	P/V67/33	P/V/33/67	P/C67/33	P 100%	C 100%	P/C50/50	P/V50/50
1SA	0.86	1.16	1.45	1.29	1.38	1.47	0.51	1.32	1.20
8SA	2.92	3.20	4.30	3.36	4.10	4.24	5.08	4.12	5.23
B(PC)	1.20	1.20	1.20	1.20	1.20	1.20	1.20	1.20	1.20
B(P)+1SA	1.73	1.68	2.25	1.68	1.67	2.70	2.90	1.92	2.18
B(PC)+8SA	5.31	3.45	4.00	4.84	5.62	4.60	5.76	4.77	5.80
B+B(PC)+1SA	2.10	2.89	3.90	2.61	3.62	4.10	3.80	3.25	2.60
B+B(PC)+8SA	2.40	4.15	4.23	3.90	4.30	4.44	5.88	5.66	7.52
PL+2SA	2.21	1.90	3.00	2.30	2.97	2.70	3.00	2.83	2.47
PL+3SA	2.52	3.09	3.20	3.20	3.20	3.84	3.57	3.35	2.73
PL+10SA	6.21	5.60	5.23	4.56	4.97	5.63	5.86	5.81	7.35
UV+PL+2SA	3.70	3.20	3.58	3.76	3.50	3.99	4.22	3.75	3.95
UV+PL+3SA	4.32	3.97	4.20	4.12	4.30	3.91	5.04	4.20	4.30
UV+PL+10SA	7.00	6.54	6.21	5.80	5.90	6.16	6.25	6.20	8.06
2SA+PL+3SA	4.30	3.90	4.37	4.00	4.26	4.77	4.42	3.90	4.21

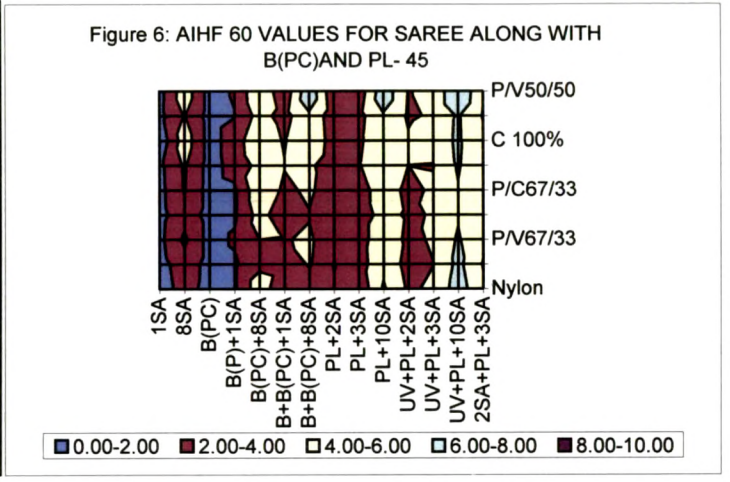

Fig. 6.10s: AIHF 60 values for saree along with B (P) and HL - 45

Combination	Nylon	P/C33/67	P/V67/33	P/V/33/67	P/C67/33	P 100%	C 100%	P/C50/50	P/V50/50
1SA	0.86	1.16	1.45	1.29	1.38	1.47	0.51	1.32	1.20
8SA	2.92	3.20	4.30	3.36	4.10	4.24	5.08	4.12	5.23
B(P)	1.21	1.21	1.21	1.21	1.21	1.21	1.21	1.21	1.21
B(P)+1SA	1.41	1.98	2.10	2.34	2.79	1.87	3.20	3.80	1.72
B(P)+8SA	5.08	4.50	4.98	3.35	4.26	4.58	5.23	4.08	5.97
B+B(P)+1SA	2.00	2.14	2.97	2.79	3.06	2.90	3.50	2.55	3.89
B+B(P)+8SA	2.40	5.28	7.20	5.32	5.60	6.06	5.88	6.21	7.19
PH+2SA	2.40	2.54	3.14	3.01	3.10	3.59	3.23	3.35	2.89
PH+3SA	2.65	3.18	3.36	3.50	3.45	4.27	3.70	4.07	3.00
PH+10SA	6.40	5.86	5.30	5.10	5.40	5.59	6.03	6.27	7.85
UV+PH+2SA	3.76	4.10	3.6	4.20	3.66	4.88	4.36	3.76	4.48
UV+PH+3SA	4.55	4.70	4.60	4.90	4.33	5.94	5.40	4.44	4.80
UV+PH+10SA	7.20	6.90	7.30	7.20	6.73	7.62	6.33	7.35	9.01
2SA+PH+3SA	4.48	4.59	4.85	4.28	4.40	5.10	4.72	4.63	4.81

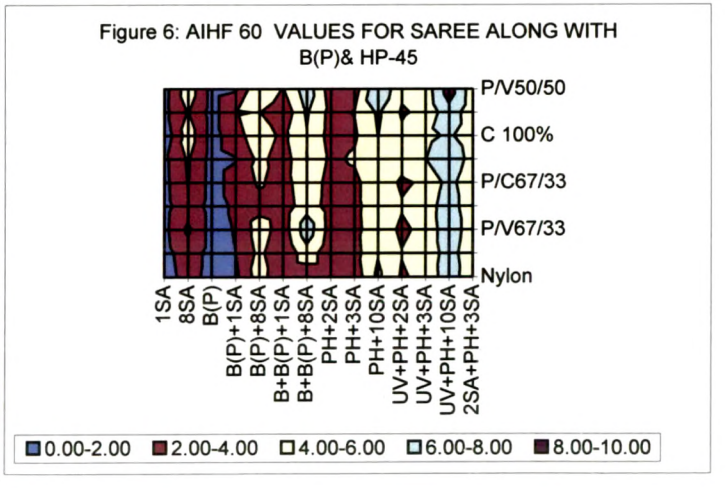

Fig. 6.10t: AIHF 60 values for saree along with B (C) and PH - 45

Combination	Nylon	P/C33/67	P/V67/33	P/V/33/67	P/C67/33	P 100%	C 100%	P/C50/50	P/V50/50
1SA	0.86	1.16	1.45	1.29	1.38	1.47	0.51	1.32	1.20
8SA	2.92	3.20	4.30	3.36	4.10	4.24	5.08	4.12	5.23
B(C)	1.21	1.73	1.73	1.73	1.73	1.73	1.73	1.73	1.73
B(C)+1SA	1.41	1.70	1.57	2.21	1.90	1.76	2.90	2.23	3.07
B(C)+8SA	5.08	3.35	5.20	3.65	4.06	5.12	3.92	3.71	6.05
B+B(C)+1SA	2.00	2.36	3.50	3.20	3.45	3.30	6.67	2.35	3.07
B+B(C)+8SA	2.40	5.45	5.36	5.80	5.34	5.65	4.05	3.85	6.64
PH+2SA	2.40	2.54	3.14	3.01	3.10	3.59	3.23	3.35	2.89
PH+3SA	2.65	3.18	3.36	3.50	3.45	4.27	3.70	4.07	3.00
PH+10SA	6.40	5.86	5.30	5.10	5.40	5.59	6.03	6.27	7.85
UV+PH+2SA	3.76	4.10	3.6	4.20	3.66	4.88	4.36	3.76	4.48
UV+PH+3SA	4.55	4.70	4.60	4.90	4.33	5.94	5.40	4.44	4.80
UV+PH+10SA	7.20	6.90	7.30	7.20	6.73	7.62	6.33	7.35	9.01
2SA+PH+3SA	4.48	4.59	4.85	4.28	4.40	5.10	4.72	4.63	4.81

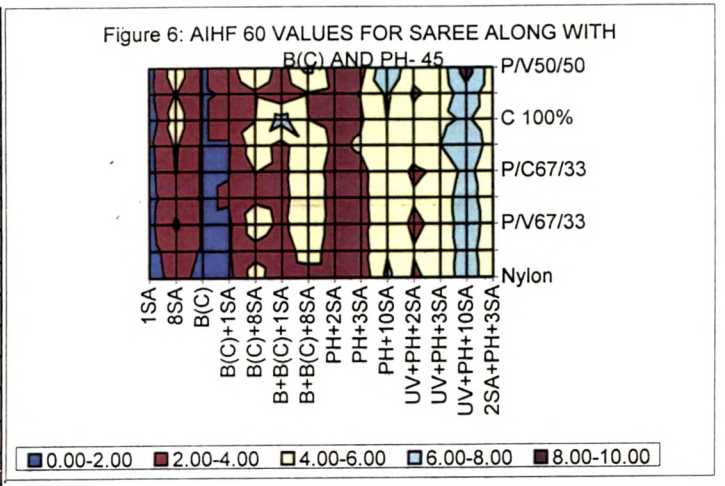

Fig. 6.10u: AIHF 60 values for saree along with B (PC) and PH - 45

Combination	Nylon	P/C33/67	P/V67/33	P/V/33/67	P/C67/33	P 100%	C 100%	P/C50/50	P/V50/50
1SA	0.86	1.16	1.45	1.29	1.38	1.47	0.51	1.32	1.20
8SA	2.92	3.20	4.30	3.36	4.10	4.24	5.08	4.12	5.23
B(PC)	1.20	1.20	1.20	1.20	1.20	1.20	1.20	1.20	1.20
B(P)+1SA	1.73	1.68	2.25	1.68	1.67	2.70	2.90	1.92	2.18
B(PC)+8SA	5.31	3.45	4.00	4.84	5.62	4.60	5.76	4.77	7.58
B+B(PC)+1SA	2.10	2.89	3.90	2.61	3.62	4.10	3.80	3.25	2.60
B+B(PC)+8SA	5.70	4.15	4.23	3.90	4.30	4.44	6.42	5.66	7.52
PH+2SA	2.40	2.54	3.14	3.01	3.10	3.59	3.23	3.35	2.89
PH+3SA	2.65	3.18	3.36	3.50	3.45	4.27	3.70	4.07	3.00
PH+10SA	6.40	5.86	5.30	5.10	5.40	5.59	6.03	6.27	7.85
UV+PH+2SA	3.76	4.10	3.6	4.20	3.66	4.88	4.36	3.76	4.48
UV+PH+3SA	4.55	4.70	4.60	4.90	4.33	5.94	5.40	4.44	4.80
UV+PH+10SA	7.20	6.90	7.30	7.20	6.73	7.62	6.33	7.35	9.01
2SA+PH+3SA	4.48	4.59	4.85	4.28	4.40	5.10	4.72	4.63	4.81

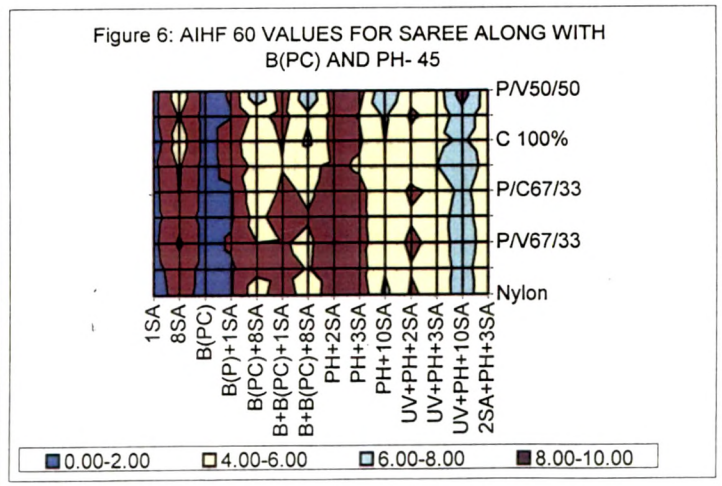

Fig. 6.10v: AIHF 60 values for saree along with B (P) and PL - 90

Combination	Nylon	P/C33/67	P/V67/33	P/V/33/67	P/C67/33	P 100%	C 100%	P/C50/50	P/V50/50
1SA	1.12	1.66	1.87	1.42	1.78	2.04	0.57	2.03	1.69
8SA	3.82	3.79	4.90	4.20	4.56	4.69	5.31	4.95	5.80
B(P)	2.46	2.46	2.46	2.46	2.46	2.46	2.46	2.46	2.46
B(P)+1SA	1.86	2.54	3.20	2.90	3.10	3.19	4.40	4.23	2.15
B(P)+8SA	5.60	4.80	5.20	4.23	4.60	4.89	5.56	4.56	6.81
B+B(P)+1SA	2.57	2.80	3.20	3.09	3.20	3.42	3.84	3.45	4.04
B+B(P)+8SA	7.80	5.45	7.90	5.50	5.70	6.44	6.83	7.20	7.60
PL+2SA	3.32	2.11	3.26	2.97	3.35	3.94	3.22	3.48	2.98
PL+3SA	3.54	3.20	3.47	3.50	3.60	4.10	3.80	3.48	3.43
PL+10SA	6.87	5.70	5.46	4.83	5.23	5.71	6.84	5.98	8.14
UV+PL+2SA	3.87	3.50	3.78	3.95	3.90	4.39	4.52	4.60	4.30
UV+PL+3SA	4.43	4.20	4.36	4.25	4.50	4.88	5.38	4.79	4.70
UV+PL+10SA	7.76	6.86	6.35	6.10	6.20	6.78	6.38	6.51	9.16
2SA+PL+3SA	4.35	4.13	4.66	4.15	4.39	5.24	4.65	4.65	5.06

Figure 6: AIHF 60 VALUES FOR SAREE ALONG WITH B(P)AND PL- 90

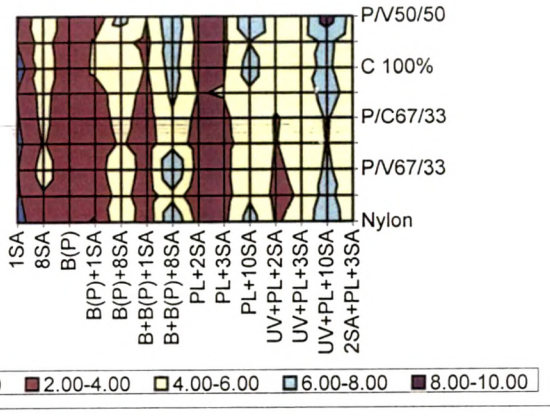

Fig. 6.10w: AIHF 60 values for saree along with B (C) and PL - 90

Combination	Nylon	P/C33/67	P/V67/33	P/V/33/67	P/C67/33	P 100%	C 100%	P/C50/50	P/V50/50
1SA	1.12	1.66	1.87	1.42	1.78	2.04	0.57	2.03	1.69
8SA	3.82	3.79	4.90	4.20	4.56	4.69	5.31	4.95	5.80
B(P)	1.77	1.77	1.77	1.77	1.77	1.77	1.77	1.77	1.77
B(C)	2.78	1.90	2.45	2.46	2.40	2.80	3.80	3.75	3.63
B(C)+1SA	6.05	4.20	5.40	3.97	4.60	5.28	5.16	4.99	6.26
B(C)+8SA	2.80	2.68	3.90	3.60	3.80	4.12	3.70	3.24	4.28
B+B(C)+1SA	6.94	5.75	5.90	6.53	5.80	6.04	4.84	5.96	8.58
B+B(C)+8SA	3.32	2.11	3.26	2.97	3.35	3.94	3.22	3.48	2.98
PL+3SA	3.54	3.20	3.47	3.50	3.60	4.10	3.80	3.48	3.43
PL+10SA	6.87	5.70	5.46	4.83	5.23	5.71	6.84	5.98	8.14
UV+PL+2SA	3.87	3.50	3.78	3.95	3.90	4.39	4.52	4.60	4.30
UV+PL+3SA	4.43	4.20	4.36	4.25	4.50	4.88	5.38	4.79	4.70
UV+PL+10SA	7.76	6.86	6.35	6.10	6.20	6.78	6.38	6.51	9.16
2SA+PL+3SA	4.35	4.13	4.66	4.15	4.39	5.24	4.65	4.65	5.06

Figure 6: AIHF 60 VALUES FOR SAREE ALONG WITH B(C) AND PL- 90

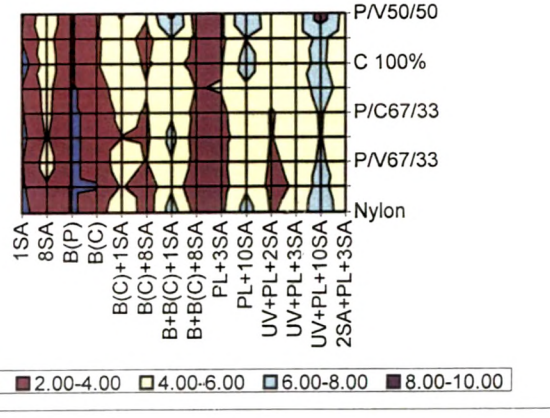

Fig. 6.10x AIHF 60 values for saree along with B (PC) and PL - 90

Combination	Nylon	P/C33/67	P/V67/33	P/V/33/67	P/C67/33	P 100%	C 100%	P/C50/50	P/V50/50
1SA	1.12	1.66	1.87	1.42	1.78	2.04	0.57	2.03	1.69
8SA	3.82	3.79	4.90	4.20	4.56	4.69	5.31	4.95	5.80
B(P)	2.11	2.11	2.11	2.11	2.11	2.11	2.11	2.11	2.11
B(PC)	2.69	2.10	2.36	2.38	2.26	3.13	3.16	2.52	3.10
B(P)+1SA	7.60	4.30	6.38	5.44	5.90	6.40	5.98	4.87	6.60
B(PC)+8SA	3.20	3.30	4.50	3.05	3.80	4.70	4.20	3.85	3.85
B+B(PC)+1SA	3.50	4.35	4.35	4.50	4.60	4.94	6.20	5.86	7.80
B+B(PC)+8SA	3.32	2.11	3.26	2.97	3.35	3.94	3.22	3.48	2.98
PL+3SA	3.54	3.20	3.47	3.50	3.60	4.10	3.80	3.48	3.43
PL+10SA	6.87	5.70	5.46	4.83	5.23	5.71	6.84	5.98	8.14
UV+PL+2SA	3.87	3.50	3.78	3.95	3.90	4.39	4.52	4.60	4.30
UV+PL+3SA	4.43	4.20	4.36	4.25	4.50	4.88	5.38	4.79	4.70
UV+PL+10SA	7.76	6.86	6.35	6.10	6.20	6.78	6.38	6.51	9.16
2SA+PL+3SA	4.35	4.13	4.66	4.15	4.39	5.24	4.65	4.65	5.06

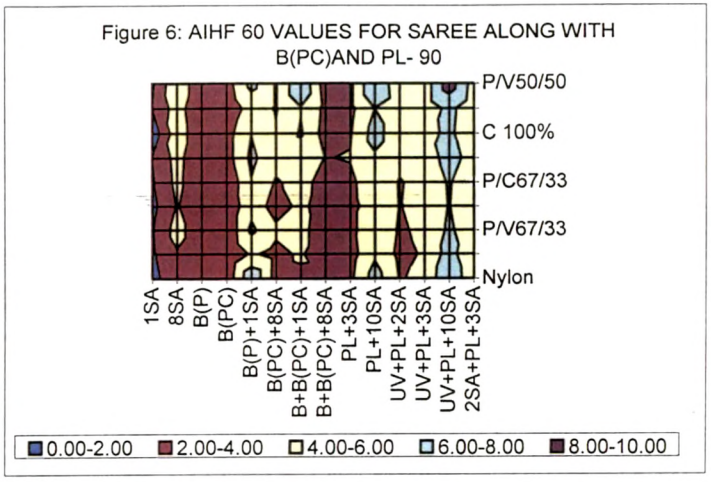

Fig. 6.10y: AIHF 60 values for saree along with B (P) and PH - 90

Combination	Nylon	P/C33/67	P/V67/33	P/V/33/67	P/C67/33	P 100%	C 100%	P/C50/50	P/V50/50
1SA	1.12	1.66	1.87	1.42	1.78	2.04	0.57	2.03	1.69
8SA	3.82	3.79	4.90	4.20	4.56	4.69	5.31	4.95	5.80
B(P)	2.46	2.46	2.46	2.46	2.46	2.46	2.46	2.46	2.46
B(P)+1SA	1.86	2.54	3.20	2.90	3.10	3.19	4.40	4.23	2.15
B(P)+8SA	6.72	4.80	5.20	4.23	4.60	4.89	5.56	4.56	6.81
B+B(P)+1SA	2.44	2.80	3.20	3.09	3.20	3.42	3.86	3.45	4.04
B+B(P)+8SA	3.50	5.45	7.90	5.50	5.70	6.44	6.21	7.20	7.60
PH+2SA	3.50	2.68	3.22	3.20	3.98	4.12	3.39	4.20	3.89
PH+3SA	3.64	3.56	3.67	3.84	3.88	4.58	4.04	5.04	4.00
PH+10SA	7.05	6.32	5.87	5.20	5.50	5.80	6.25	6.84	8.32
UV+PH+2SA	4.00	4.30	3.9	4.40	4	4.86	4.78	4.70	5.39
UV+PH+3SA	4.76	4.98	4.90	5.36	4.53	6.30	5.84	5.12	5.49
UV+PH+10SA	8.16	7.01	7.71	7.40	7.60	8.09	6.84	7.80	9.61
2SA+PH+3SA	4.68	4.87	5.10	4.47	4.60	5.50	4.83	5.44	5.27

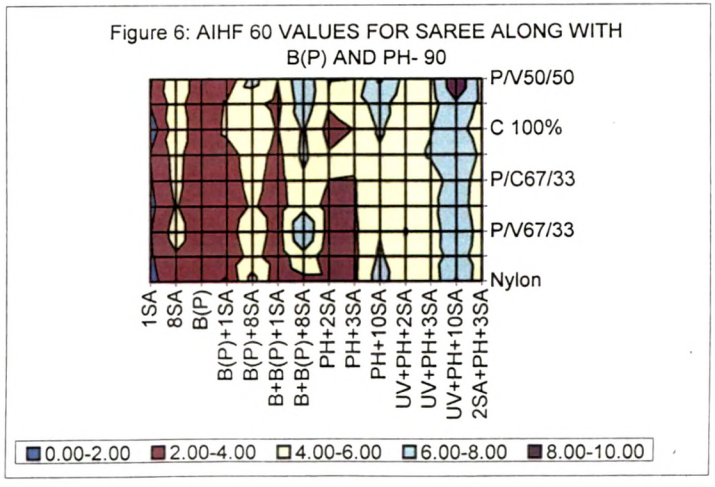

Fig. 6.10z: AIHF 60 values for saree along with B (C) and PH - 90

Combination	Nylon	P/C33/67	P/V67/33	P/V/33/67	P/C67/33	P 100%	C 100%	P/C50/50	P/V50/50
1SA	1.12	1.66	1.87	1.42	1.78	2.04	0.57	2.03	1.69
8SA	3.82	3.79	4.90	4.20	4.56	4.69	5.31	4.95	5.80
B(C)	2.46	1.77	1.77	1.77	1.77	1.77	1.77	1.77	1.77
B(C)+1SA	1.86	1.90	2.45	2.46	2.40	2.80	3.80	3.75	3.63
B(C)+8SA	6.72	4.20	5.40	3.97	4.60	5.28	4.40	4.99	6.26
B+B(C)+1SA	2.44	2.68	3.90	3.60	3.80	4.12	6.70	3.24	4.28
B+B(C)+8SA	3.50	5.75	5.90	6.53	5.80	6.04	4.84	5.96	8.58
PH+2SA	3.50	2.68	3.22	3.20	3.98	4.12	3.39	4.20	3.89
PH+3SA	3.64	3.56	3.67	3.84	3.88	4.58	4.04	5.04	4.00
PH+10SA	7.05	6.32	5.87	5.20	5.50	5.80	6.25	6.84	8.32
UV+PH+2SA	4.00	4.30	3.9	4.40	4	4.86	4.78	4.70	5.39
UV+PH+3SA	4.76	4.98	4.90	5.36	4.53	6.30	5.84	5.12	5.49
UV+PH+10SA	8.16	7.01	7.71	7.40	7.60	8.09	6.84	7.80	9.61
2SA+PH+3SA	4.68	4.87	5.10	4.47	4.60	5.50	4.83	5.44	5.27

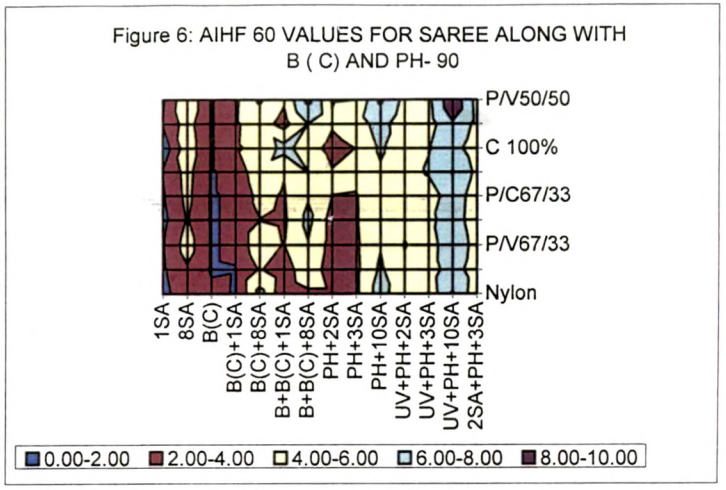

Fig. 6.10zz: AIHF 60 values for saree along with B (PC) and PH - 90

Combination	Nylon	P/C33/67	P/V67/33	P/V/33/67	P/C67/33	P 100%	C 100%	P/C50/50	P/V50/50
1SA	1.12	1.66	1.87	1.42	1.78	2.04	0.57	2.03	1.69
8SA	3.82	3.79	4.90	4.20	4.56	4.69	5.31	4.95	5.80
B(P)	2.11	2.11	2.11	2.11	2.11	2.11	2.11	2.11	2.11
B(P)+1SA	2.69	2.10	2.36	2.38	2.26	3.13	4.00	2.52	3.10
B(P)+8SA	7.60	4.30	6.38	5.44	5.90	5.40	5.98	4.87	7.62
B+B(P)+1SA	3.20	3.30	4.50	3.05	3.80	4.70	5.80	3.85	3.85
B+B(P)+8SA	7.50	4.35	4.35	4.50	4.60	4.94	6.83	5.86	7.80
PH+2SA	3.50	2.68	3.22	3.20	3.98	4.12	3.39	4.20	3.89
PH+3SA	3.64	3.56	3.67	3.84	3.88	4.58	4.04	5.04	4.00
PH+10SA	7.05	6.32	5.87	5.20	5.50	5.80	6.25	6.84	8.32
UV+PH+2SA	4.00	4.30	3.9	4.40	4	4.86	4.78	4.70	5.39
UV+PH+3SA	4.76	4.98	4.90	5.36	4.53	6.30	5.84	5.12	5.49
UV+PH+10SA	8.16	7.01	7.71	7.40	7.60	8.09	6.84	7.80	9.61
2SA+PH+3SA	4.68	4.87	5.10	4.47	4.60	5.50	4.83	5.44	5.27

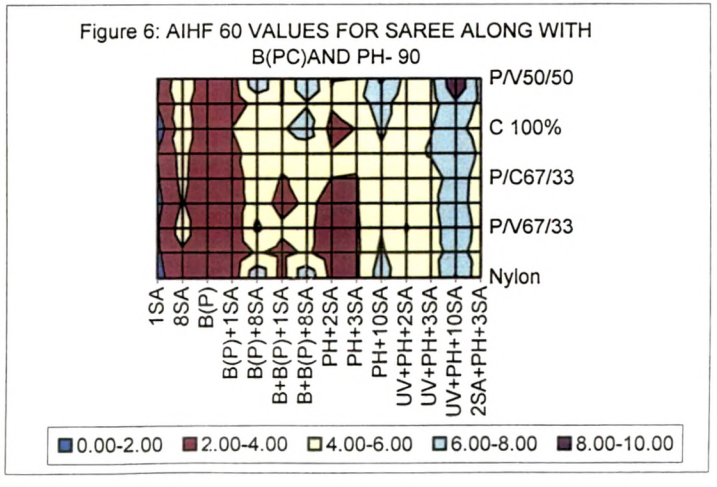

Figure 6.11a:GSM VS IgnitionTime for Fibres

GSM	100 C	100N	100 P	100V
50	1.08	2.98	1.76	1.3
100	1.18	3.04	2.1	1.54
150	1.28	3.09	2.1	1.67
200	1.33	3.24	2.4	1.78
250	1.38	3.32	2.6	1.91
300	1.43	3.48	2.68	2.1
350	1.48	3.55	2.68	2.2
400	1.51	3.56	2.8	2.35
450	1.53	3.56	3.2	2.4
500	1.58	3.67	3.38	2.8
550	1.66	3.92	3.42	2.88
600	1.74	3.95	3.53	3.13
650	1.87	3.98	3.68	3.13
700	2.02	4.02	3.7	3.21
750	2.12	4.02	3.72	3.25
800	2.22	4.07	3.76	3.27
850	2.33	4.08	3.8	3.27
900	2.45	4.1	3.9	3.28
950	2.55	4.38	4	3.38
1000	2.58	4.5	4.23	3.63

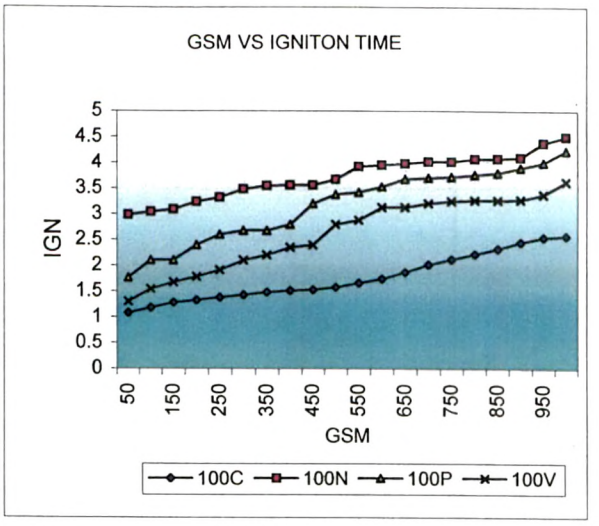

Figure 6.11b:GSM VS Ignition Time for C/P Combinations

GSM	100 C	75C/25P	50C/50P	25C/75P
50	1.08	1.23	1.4	1.56
100	1.18	1.44	1.48	1.52
150	1.28	1.67	1.99	2.08
200	1.33	1.6	1.94	2.35
250	1.38	1.84	2.22	2.46
300	1.43	2.3	2.43	2.54
350	1.48	2.42	2.5	2.6
400	1.51	2.29	2.5	2.6
450	1.53	2.38	2.58	2.68
500	1.58	2.43	2.68	2.7
550	1.66	2.33	3.04	3.36
600	1.74	2.32	3.04	3.38
650	1.87	2.43	3.13	3.4
700	2.02	2.5	3.23	3.4
750	2.12	2.56	3.29	3.5
800	2.22	2.59	3.3	3.56
850	2.33	2.6	3.24	3.6
900	2.45	2.62	3.34	3.62
950	2.55	2.65	3.4	3.68
1000	2.58	2.67	3.4	3.68

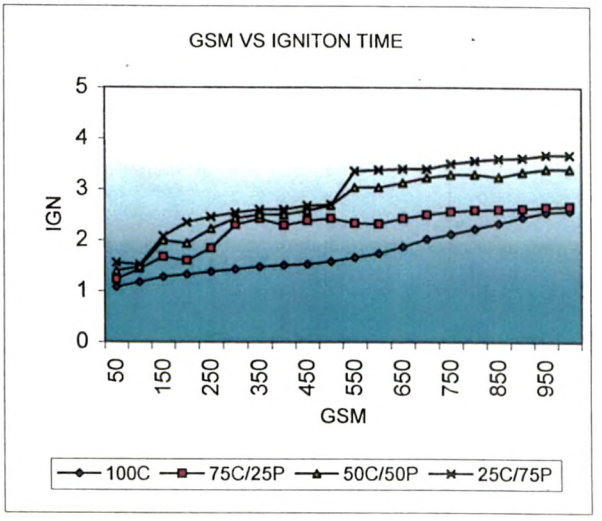

Figure 6.11c:GSM VS Ignition Time for N /C Blends Combinations

GSM	100 C	75C/25N	50C/50N	25C/75N
50	1.08	1.66	1.64	2.9
100	1.18	1.82	1.84	3.18
150	1.28	1.82	1.79	3.18
200	1.33	1.84	1.81	3.31
250	1.38	2.24	1.93	3.31
300	1.43	2.36	2.19	3.6
350	1.48	2.6	2.08	3.78
400	1.51	2.65	2.08	3.87
450	1.53	2.69	2.33	3.98
500	1.58	2.7	2.57	4.03
550	1.66	2.77	2.61	3.98
600	1.74	2.78	2.69	4.12
650	1.87	2.77	2.61	3.95
700	2.02	2.78	2.67	4.31
750	2.12	2.72	2.74	4.33
800	2.22	2.63	2.62	4.34
850	2.33	2.67	2.71	4.33
900	2.45	2.63	2.92	4.35
950	2.55	2.65	3.06	4.33
1000	2.58	2.8	3.13	4.33

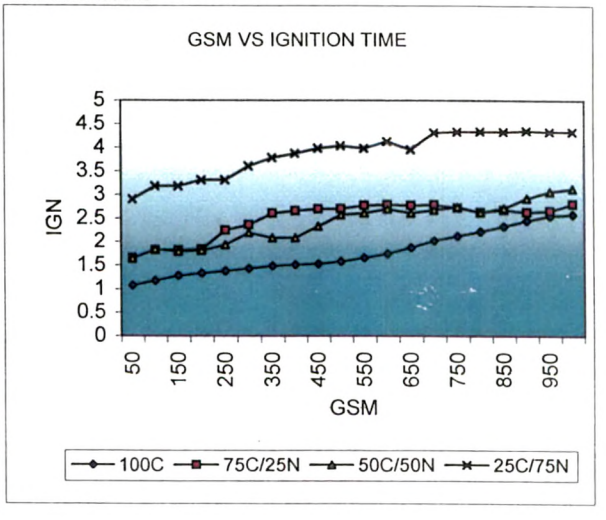

Figure 6.11d:GSM VS Ignition Time for C/V Combinations

GSM	100 C	75C/25V	50C/50V	25C/75V
50	1.08	1.04	1.47	2.21
100	1.18	1.33	1.64	2.24
150	1.28	1.63	1.94	2.25
200	1.33	1.72	2.12	2.47
250	1.38	1.94	2.36	2.61
300	1.43	2.04	2.22	2.79
350	1.48	2.04	2.24	2.79
400	1.51	2.32	2.38	2.84
450	1.53	2.36	2.56	3
500	1.58	2.43	2.51	3.12
550	1.66	2.43	2.5	3.22
600	1.74	2.39	2.59	3.27
650	1.87	2.36	2.71	3.31
700	2.02	2.48	2.65	3.28
750	2.12	2.55	2.64	3.27
800	2.22	2.58	2.65	3.28
850	2.33	2.58	2.65	3.28
900	2.45	2.59	2.65	3.28
950	2.55	2.59	2.66	3.28
1000	2.58	2.6	2.67	3.29

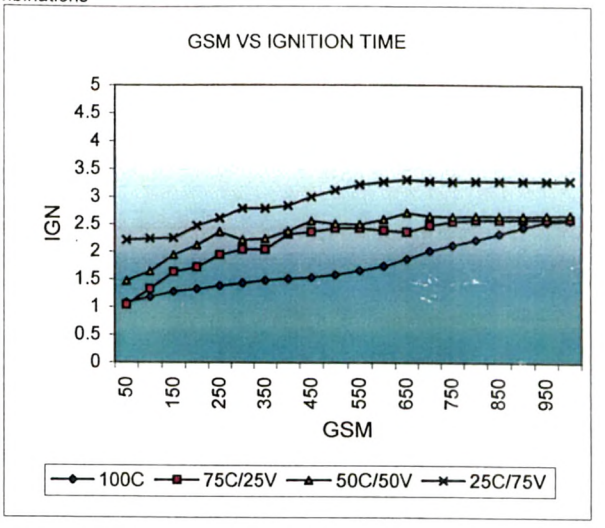

Figure 6.11e:GSM VS Ignition Time for P/C Combinations

GSM	100 P	75P/25C	50P/50C	25P/75C
50	1.76	1.56	1.4	1.08
100	2.1	1.52	1.48	1.44
150	2.1	2.08	1.99	1.67
200	2.4	2.35	1.94	1.6
250	2.57	2.46	2.22	1.84
300	2.68	2.54	2.43	2.3
350	2.68	2.6	2.5	2.42
400	2.8	2.6	2.5	2.29
450	3.2	2.68	2.58	2.38
500	3.38	2.7	2.68	2.43
550	3.42	3.36	3.04	2.33
600	3.53	3.38	3.04	2.32
650	3.68	3.4	3.13	2.43
700	3.7	3.4	3.23	2.5
750	3.72	3.5	3.29	2.56
800	3.76	3.56	3.3	2.59
850	3.8	3.6	3.24	2.6
900	3.9	3.62	3.34	2.62
950	4	3.68	3.4	2.65
1000	4.23	3.68	3.4	2.67

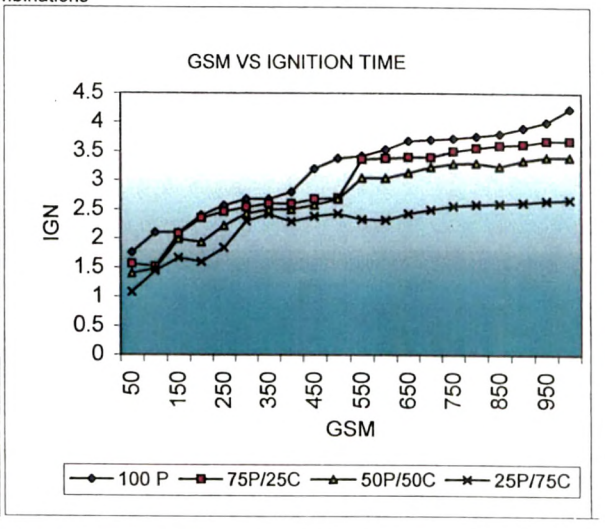

Figure 6.11f:GSM VS Ignition Time for N/P Combinations

GSM	100N	75N/25P	50N/50P	25N/75P
50	2.98	2.62	2.4	1.6
100	3.04	2.98	2.49	1.88
150	3.09	2.98	2.6	1.88
200	3.24	3.09	2.83	2.07
250	3.32	3.01	2.81	2.43
300	3.48	3.08	2.84	2.4
350	3.55	3.08	2.95	2.42
400	3.56	3.15	3	2.53
450	3.56	3.2	3.07	2.6
500	3.67	3.6	3.1	2.82
550	3.92	3.73	3.18	2.65
600	3.95	3.65	3.04	2.76
650	3.98	3.67	3.12	2.8
700	4.02	3.54	3.07	2.7
750	4.02	3.54	3.15	2.82
800	4.07	3.9	3.04	2.76
850	4.08	4	3.47	2.98
900	4.1	4	3.92	3.45
950	4.38	4.3	3.84	3.5
1000	4.5	4.35	3.95	3.78

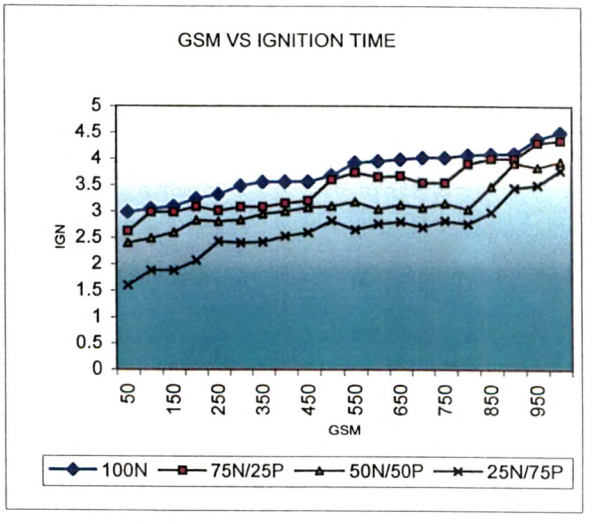

Figure 6.11g:GSM VS Ignition Time for N/C Combinations

GSM	100N	75N/25C	50N/50C	25N/75C
50	2.98	2.9	1.64	1.66
100	3.04	3.18	1.84	1.82
150	3.09	3.18	1.79	1.82
200	3.24	3.31	1.81	1.84
250	3.32	3.31	1.93	2.24
300	3.48	3.6	2.19	2.36
350	3.55	3.78	2.08	2.6
400	3.56	3.87	2.08	2.65
450	3.56	3.98	2.33	2.69
500	3.67	4.03	2.57	2.7
550	3.92	3.98	2.61	2.77
600	3.95	4.12	2.69	2.78
650	3.98	3.95	2.61	2.77
700	4.02	4.31	2.67	2.78
750	4.02	4.33	2.74	2.72
800	4.07	4.34	2.62	2.63
850	4.08	4.33	2.71	2.67
900	4.1	4.35	2.92	2.63
950	4.38	4.33	3.06	2.65
1000	4.5	4.33	3.13	2.8

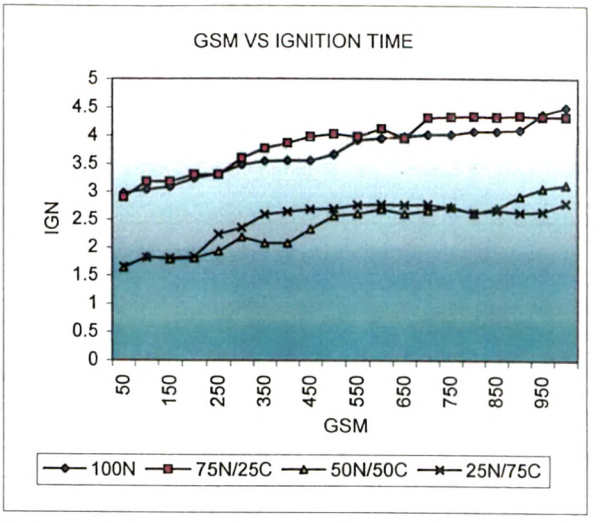

Figure 6.11h:GSM VS Ignition Time for N/V Combinations

GSM	100N	75N/25V	50N/50V	25N/75V
50	2.98	2.29	1.71	1.6
100	3.04	2.34	2	1.86
150	3.09	2.54	2	1.89
200	3.24	2.75	2.07	1.9
250	3.32	2.75	2.28	1.96
300	3.48	2.8	2.17	2.43
350	3.55	2.88	2.58	2.6
400	3.56	2.99	2.58	2.63
450	3.56	3.18	2.59	2.63
500	3.67	3.35	2.61	2.64
550	3.92	3.3	2.64	2.65
600	3.95	3.32	2.68	2.68
650	3.98	3.34	2.75	2.76
700	4.02	3.42	2.9	2.92
750	4.02	3.56	3.11	3.11
800	4.07	3.56	3.23	3.21
850	4.08	3.89	3.28	3.25
900	4.1	4.21	3.3	3.27
950	4.38	4.27	3.31	3.28
1000	4.5	4.29	3.32	3.28

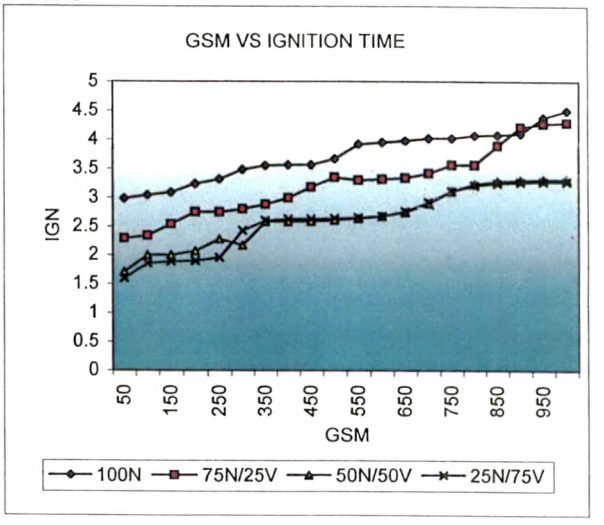

Figure 6.11i:GSM VS Ignition Time for V/P Combinations

GSM	100V	75V/25P	50V/50P	25V/75P
50	1.3	1.17	1.5	1.65
100	1.54	1.13	1.43	1.8
150	1.67	1.29	1.8	1.8
200	1.78	1.75	2.17	2.24
250	1.91	1.87	2	2.26
300	2.1	1.96	2.1	2.36
350	2.2	2.3	2.36	2.43
400	2.35	2.45	2.63	2.74
450	2.4	2.7	2.91	3.06
500	2.8	2.69	2.76	3.2
550	2.88	2.69	2.79	3.25
600	3.13	2.71	2.7	3.3
650	3.13	2.75	2.75	3.36
700	3.21	2.86	2.87	3.42
750	3.25	3.05	3.06	3.62
800	3.27	3.19	3.22	3.68
850	3.27	3.25	3.31	3.73
900	3.28	3.27	3.37	3.78
950	3.38	3.27	3.42	3.8
1000	3.63	3.28	3.46	3.86

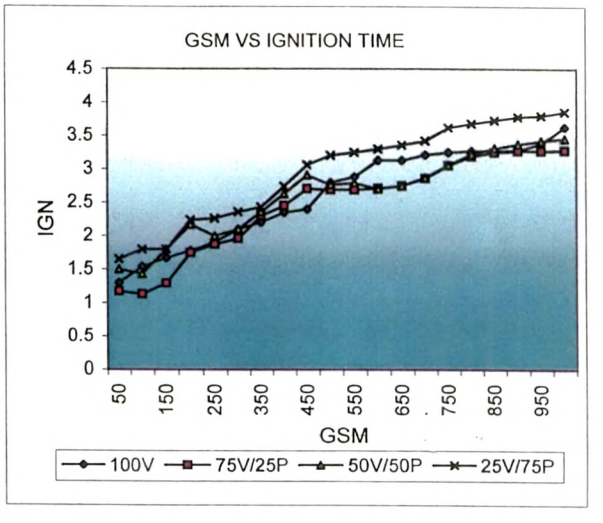

Figure 6.11j:GSM VS Ignition Time for V/N Combinations

GSM	100V	75V/25N	50V/50N	25V/75N
50	1.3	2.05	1.71	2.29
100	1.54	2.06	2	2.34
150	1.67	1.89	2	2.54
200	1.78	1.8	2.07	2.75
250	1.91	1.96	2.28	2.75
300	2.1	2.43	2.17	2.8
350	2.2	2.6	2.58	2.88
400	2.35	2.63	2.58	2.99
450	2.4	2.63	2.59	3.18
500	2.8	2.64	2.61	3.35
550	2.88	2.65	2.64	3.3
600	3.13	2.68	2.68	3.32
650	3.13	2.76	2.75	3.34
700	3.21	2.92	2.9	3.42
750	3.25	3.11	3.11	3.56
800	3.27	3.21	3.23	3.56
850	3.27	3.25	3.28	3.89
900	3.28	3.27	3.3	4.21
950	3.38	3.28	3.31	4.27
1000	3.63	3.28	3.32	4.29

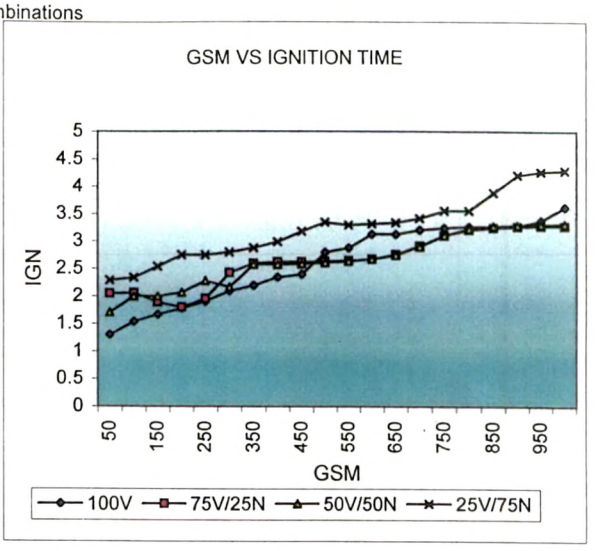

Figure 6.11k:GSM VS Ignition Time for V/C Combinations

GSM	100V	75V/25C	50V/50C	25V/75C
50	1.3	2.21	1.47	1.04
100	1.54	2.24	1.64	1.33
150	1.67	2.25	1.94	1.63
200	1.78	2.47	2.12	1.72
250	1.91	2.61	2.36	1.94
300	2.1	2.79	2.22	2.04
350	2.2	2.79	2.24	2.04
400	2.35	2.84	2.38	2.32
450	2.4	3	2.56	2.36
500	2.8	3.12	2.51	2.43
550	2.88	3.22	2.5	2.43
600	3.13	3.27	2.59	2.39
650	3.13	3.31	2.71	2.36
700	3.21	3.28	2.65	2.48
750	3.25	3.27	2.64	2.55
800	3.27	3.28	2.65	2.58
850	3.27	3.28	2.65	2.58
900	3.28	3.28	2.65	2.59
950	3.38	3.28	2.66	2.59
1000	3.63	3.29	2.67	2.6

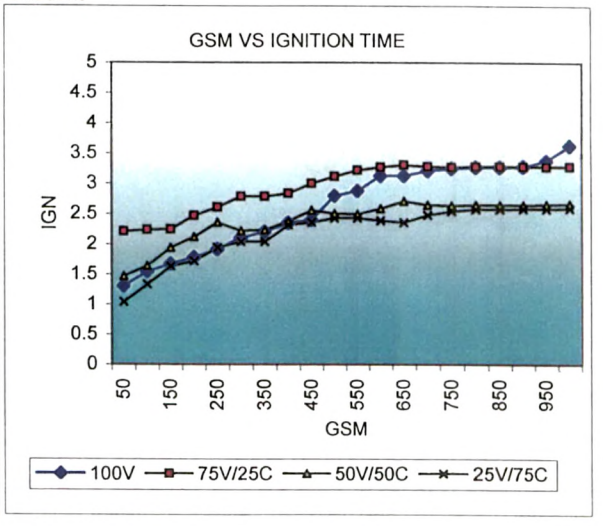

Figure 6.11l:GSM VS Ignition Time for P/V Combinations

GSM	100 P	75P/25V	50P/50V	25P/75V
50	1.76	1.65	1.5	1.17
100	2.1	1.8	1.43	1.13
150	2.1	1.8	1.8	1.29
200	2.4	2.24	2.17	1.75
250	2.6	2.26	2	1.87
300	2.68	2.36	2.1	1.96
350	2.68	2.43	2.36	2.3
400	2.8	2.74	2.63	2.45
450	3.2	3.06	2.91	2.7
500	3.38	3.2	2.76	2.69
550	3.42	3.25	2.79	2.69
600	3.53	3.3	2.7	2.71
650	3.68	3.36	2.75	2.75
700	3.7	3.42	2.87	2.86
750	3.72	3.62	3.06	3.05
800	3.76	3.68	3.22	3.19
850	3.8	3.73	3.31	3.25
900	3.9	3.78	3.37	3.27
950	4	3.8	3.42	3.27
1000	4.23	3.86	3.46	3.28

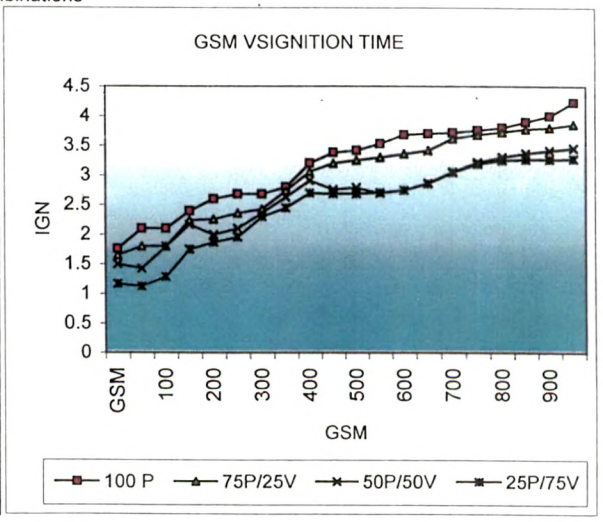

Figure 6.12a:FPR VS AIHF 60 - Cotton Test 45

GSM	AIHF 60	FPR
50	1.28	1.68
100	1.87	1.77
150	2.43	1.85
200	2.67	1.87
250	2.80	1.94
300	2.90	2.31
350	2.95	3.06
400	2.98	3.30
450	3.15	3.35
500	4.27	3.32
550	4.55	3.32
600	5.00	3.49
650	4.93	4.56
700	4.89	4.81
750	4.83	5.06
800	4.76	5.78
850	5.00	6.33
900	5.00	6.58
950	5.00	6.69
1000	5.00	6.73

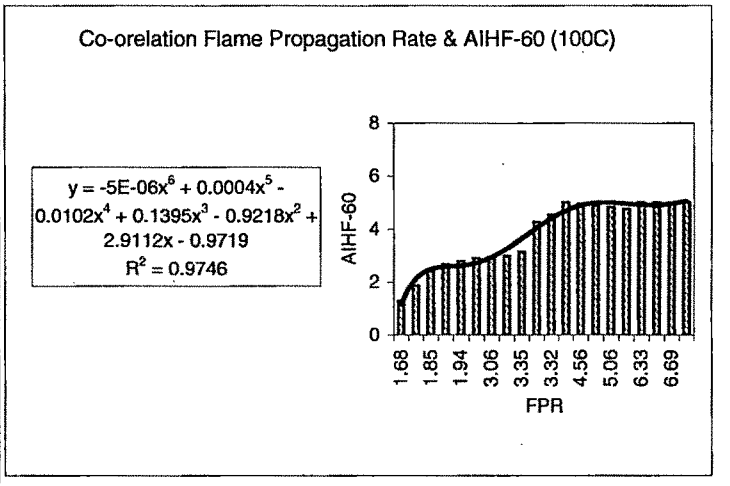

Figure 6.12b:FPR VS AIHF 60 - Polyester Test 45

GSM	AIHF 60	FPR
50	1.01	0.89
100	1.01	0.89
150	1.03	0.89
200	1.07	0.89
250	1.17	0.91
300	1.36	0.91
350	1.89	1.81
400	2.13	3.37
450	2.76	3.92
500	3.70	4.01
550	5.03	4.18
600	5.49	4.55
650	6.30	5.14
700	6.64	5.79
750	7.24	5.89
800	7.27	6.51
850	7.29	6.61
900	7.31	6.64
950	7.33	6.65
1000	7.35	6.66

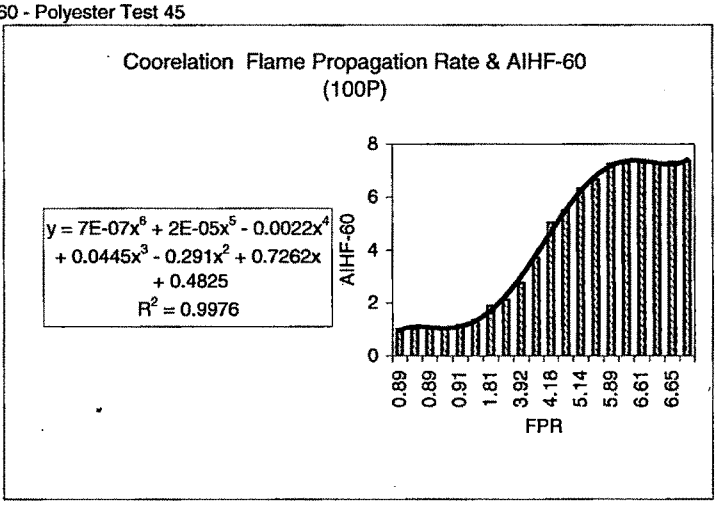

Figure 6.12c:FPR VS AIHF 60 - Nylon Test 45

GSM	AIHF 60	FPR
50	1.04	0.90
100	1.40	0.92
150	2.39	1.07
200	2.83	2.23
250	2.87	3.35
300	2.89	3.26
350	2.94	3.34
400	2.97	3.33
450	3.07	3.28
500	3.26	3.17
550	3.61	3.00
600	4.18	2.84
650	4.85	2.81
700	5.35	2.96
750	5.64	3.31
800	5.79	3.79
850	5.86	4.24
900	5.87	4.61
950	5.84	4.86
1000	5.97	5.40

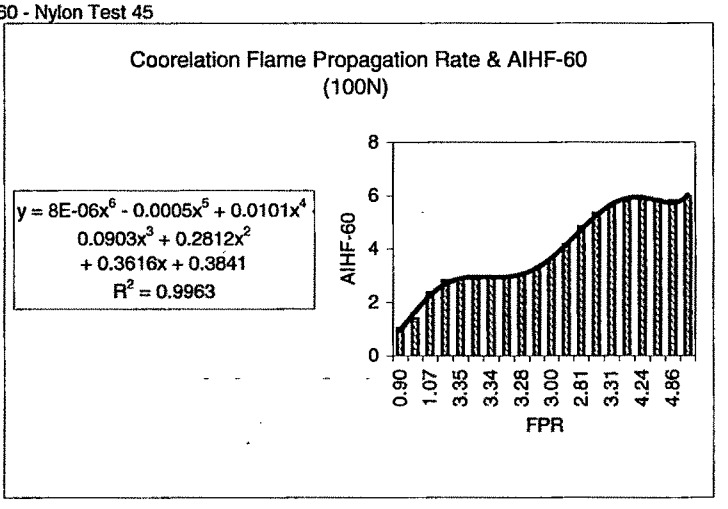

Figure 6.12d:FPR VS AIHF 60 - Viscose Test 45

GSM	AIHF 60	FPR
50	1.57	0.90
100	1.71	0.90
150	1.91	0.90
200	2.17	0.90
250	2.46	0.90
300	2.74	0.89
350	2.98	0.92
400	3.20	1.18
450	3.45	2.30
500	3.77	3.01
550	4.17	3.25
600	4.63	3.34
650	5.04	3.38
700	5.36	3.38
750	5.56	3.43
800	5.70	3.49
850	5.81	3.57
900	5.94	3.68
950	6.19	3.81
1000	6.55	3.96

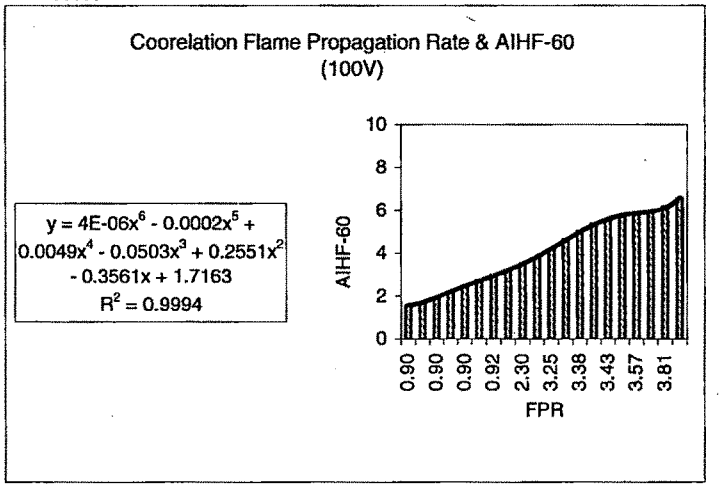

Figure 6.12e:FPR VS AIHF 60 - 50C/50P Test 45

GSM	AIHF 60	FPR
50	1.05	1.14
100	1.21	1.19
150	1.66	1.34
200	2.23	1.70
250	2.61	2.27
300	2.94	3.70
350	3.35	3.78
400	3.74	2.71
450	4.05	2.48
500	4.22	2.40
550	4.26	2.44
600	4.22	3.26
650	4.77	5.32
700	5.66	5.84
750	6.95	5.97
800	7.27	6.04
850	7.76	6.11
900	7.77	6.39
950	7.77	6.64
1000	7.78	6.81

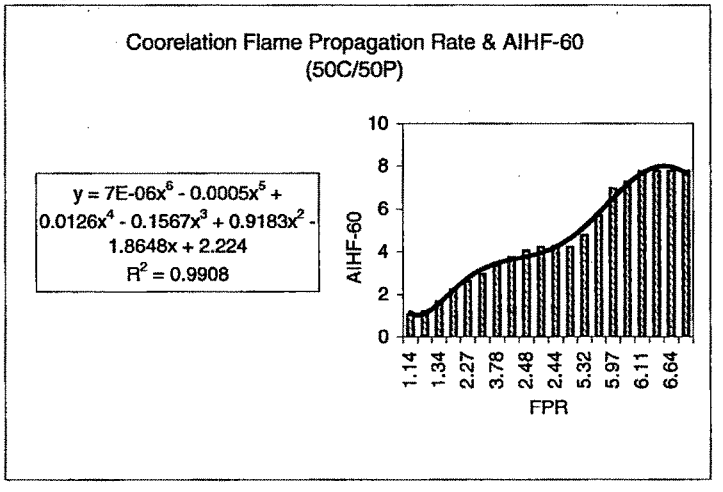

Figure 6.12f:FPR VS AIHF 60 - 50C/50N Test 45

GSM	AIHF 60	FPR
50	1.15	1.58
100	1.45	1.63
150	1.63	1.71
200	1.96	1.84
250	2.20	1.97
300	2.30	2.14
350	2.11	2.39
400	2.49	2.59
450	2.63	2.70
500	3.20	2.84
550	3.47	3.10
600	4.23	3.19
650	4.82	3.32
700	5.31	4.51
750	5.63	5.15
800	5.82	5.63
850	5.93	6.16
900	6.02	6.45
950	6.79	6.59
1000	7.56	6.66

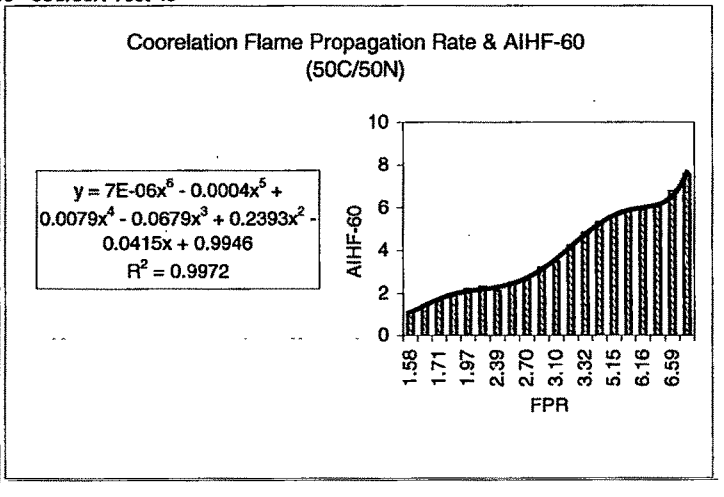

Figure 6.12g:FPR VS AIHF 60 - 50C/50V Test 45

GSM	AIHF 60	FPR
50	1.03	1.00
100	1.24	1.02
150	1.87	1.03
200	2.58	1.04
250	3.05	1.06
300	3.48	1.10
350	3.90	1.21
400	4.37	1.44
450	4.89	1.81
500	5.54	2.41
550	6.48	3.02
600	6.92	3.66
650	7.24	4.20
700	7.62	4.52
750	7.51	4.70
800	7.27	4.80
850	7.32	4.86
900	7.34	4.90
950	7.34	4.94
1000	7.35	4.98

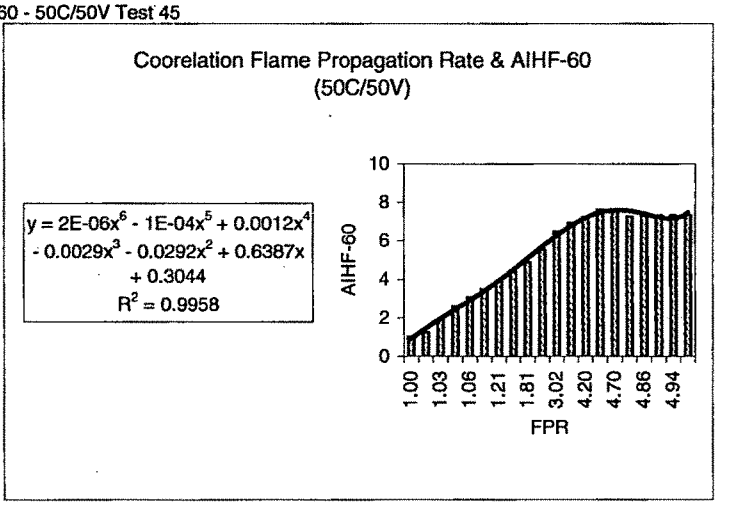

Figure 6.12h:FPR VS AIHF 60 - 75C/25P Test 45

GSM	AIHF 60	FPR
50	1.03	1.41
100	1.20	1.49
150	1.68	1.69
200	2.24	2.02
250	2.52	2.35
300	2.83	2.70
350	2.57	2.91
400	2.70	3.00
450	3.33	3.10
500	3.80	3.23
550	4.56	3.10
600	4.82	2.09
650	4.52	2.44
700	4.77	3.07
750	5.80	3.58
800	6.45	4.27
850	6.80	5.44
900	6.56	6.38
950	6.00	6.71
1000	5.91	6.82

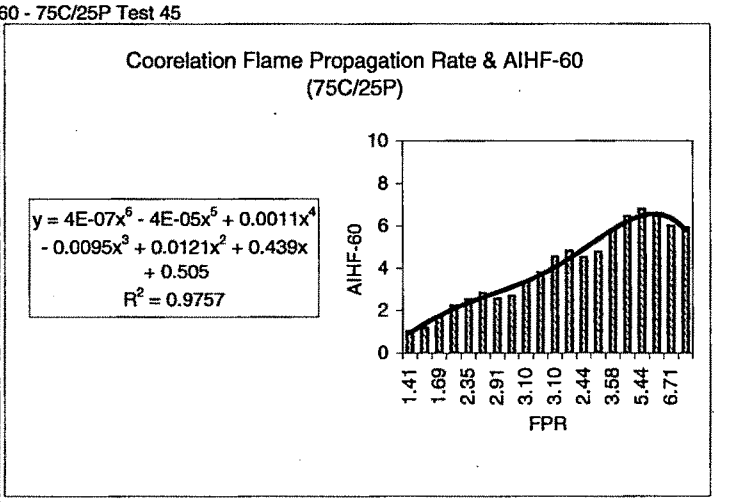

Figure 6.12i:FPR VS AIHF 60 - 75C/25N Test 45

GSM	AIHF 60	FPR
50	1.19	1.54
100	1.61	1.61
150	2.21	1.72
200	2.53	1.87
250	2.67	1.97
300	2.78	2.14
350	2.85	2.42
400	2.91	2.76
450	3.29	3.11
500	3.84	3.27
550	4.28	3.27
600	4.24	3.26
650	4.53	3.49
700	4.56	4.91
750	4.79	5.14
800	4.78	5.78
850	4.81	6.31
900	4.88	6.56
950	4.95	6.66
1000	4.83	6.71

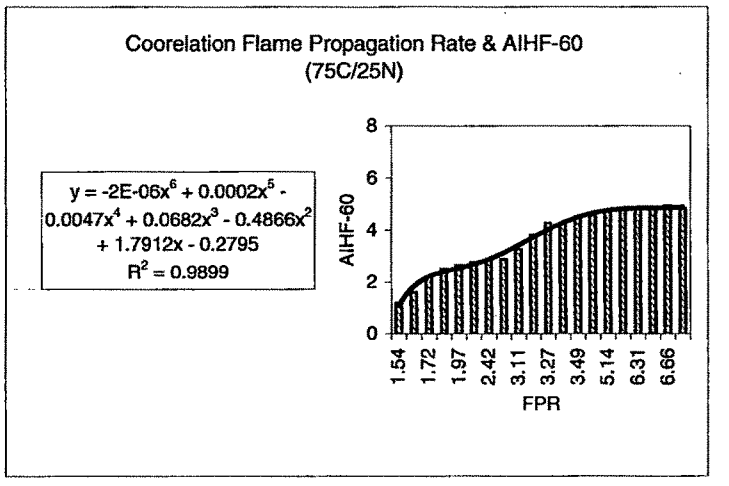

Figure 6.12j:FPR VS AIHF 60 - 25C/75V Test 45

GSM	AIHF 60	FPR
50	1.66	1.40
100	1.86	1.42
150	2.14	1.48
200	2.49	1.63
250	2.86	1.91
300	3.16	2.20
350	3.38	2.52
400	3.57	2.76
450	3.79	2.85
500	4.06	2.85
550	4.39	2.82
600	4.79	2.85
650	5.16	3.14
700	5.48	3.51
750	5.76	4.11
800	6.10	3.36
850	6.63	3.14
900	6.70	3.41
950	6.22	3.99
1000	6.67	4.99

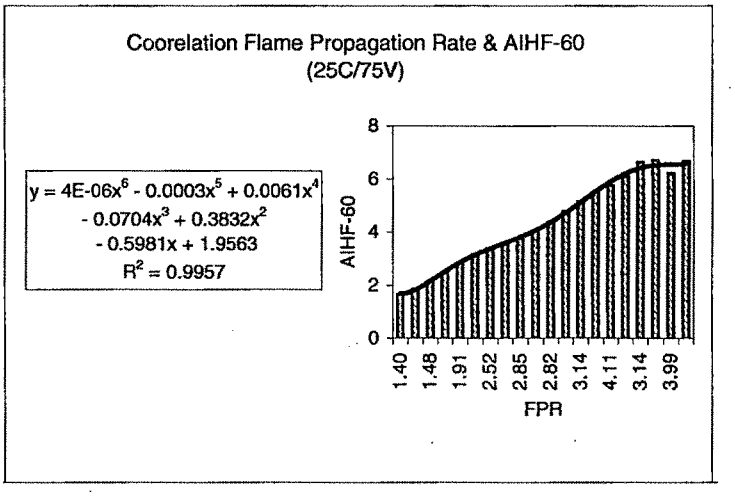

Figure 6.13a:FPR VS AIHF 60 - Cotton Test 90

GSM	AIHF 60	FPR
50	1.72	2.03
100	2.27	2.12
150	2.92	2.21
200	3.32	2.27
250	3.74	2.37
300	4.27	2.79
350	4.73	3.68
400	5.06	4.12
450	5.30	4.25
500	5.50	4.29
550	5.65	4.31
600	5.73	4.69
650	5.70	5.22
700	5.62	5.26
750	5.53	5.48
800	5.48	6.18
850	5.45	6.70
900	5.44	6.94
950	5.45	7.04
1000	5.47	7.09

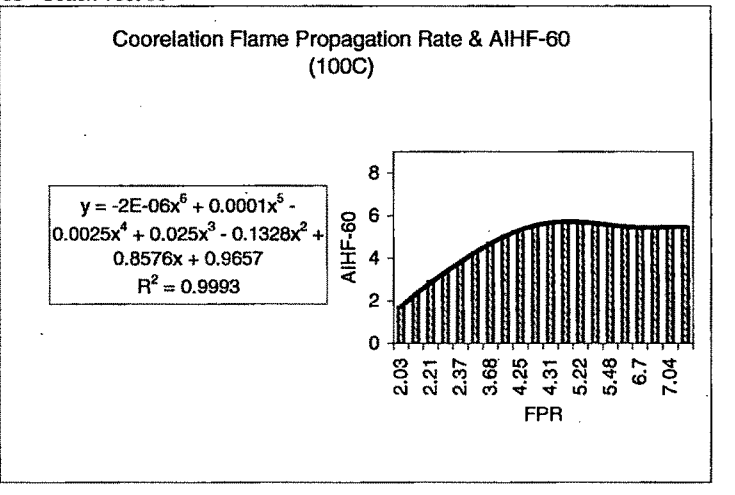

Figure 6.13b:FPR VS AIHF 60 - Polyester Test 90

GSM	AIHF 60	FPR
50	1.73	1.16
100	1.74	1.18
150	1.81	1.36
200	1.91	2.61
250	2.07	3.22
300	2.31	3.77
350	2.61	3.85
400	2.98	3.84
450	3.36	3.79
500	3.78	3.69
550	4.09	3.53
600	4.44	3.37
650	4.78	3.40
700	5.14	3.51
750	5.55	3.86
800	6.04	4.34
850	6.58	4.83
900	7.00	5.14
950	7.19	5.38
1000	6.61	5.55

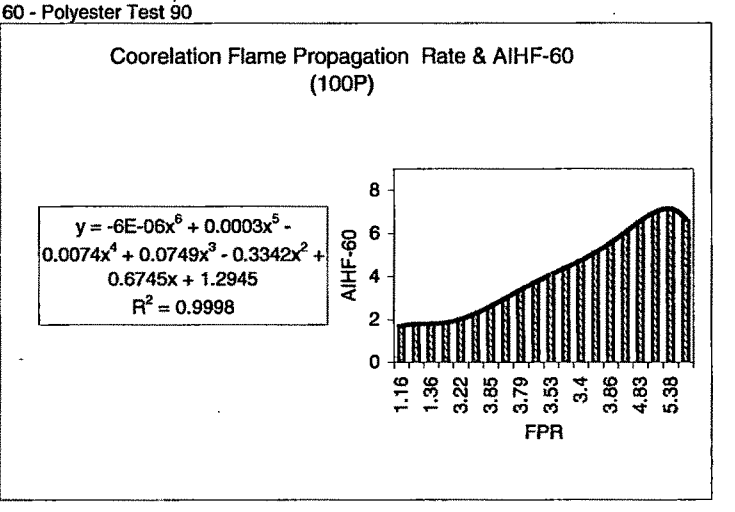

Figure 6.13c:FPR VS AIHF 60 - Nylon Test 90

GSM	AIHF 60	FPR
50	1.79	1.14
100	1.9	1.14
150	2.05	1.14
200	2.23	1.15
250	2.47	1.18
300	2.73	1.33
350	3.02	2.24
400	3.31	3.91
450	3.54	4.49
500	4.13	4.59
550	5.84	4.74
600	7.12	5.09
650	7.73	5.63
700	7.93	5.66
750	8	6.22
800	8.03	6.87
850	8.05	6.96
900	8.05	7.01
950	8.06	7.01
1000	8.06	7.03

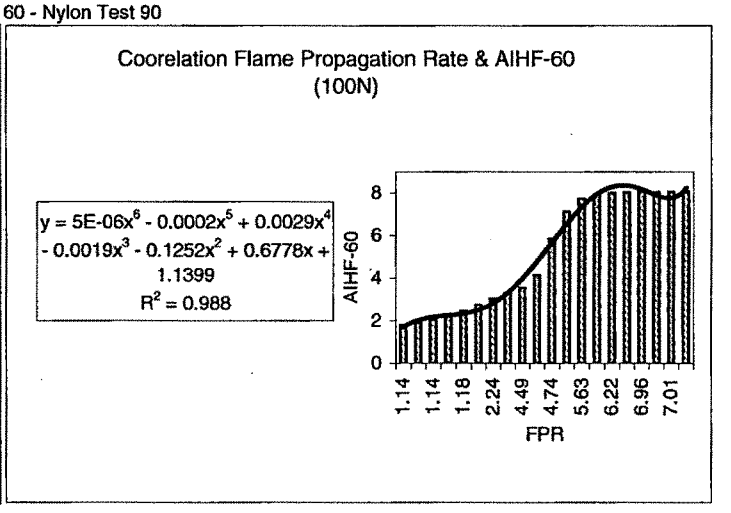

Figure 6.13d:FPR VS AIHF 60 - Viscose Test 90

GSM	AIHF 60	FPR
50	5.13	1.16
100	4.98	1.16
150	4.34	1.16
200	3.11	1.16
250	3.00	1.16
300	4.31	1.16
350	5.22	1.18
400	5.59	1.15
450	5.75	2.67
500	5.84	3.44
550	5.91	3.72
600	5.96	3.82
650	6.01	3.88
700	6.06	3.88
750	6.14	3.92
800	6.24	3.97
850	6.40	4.04
900	6.65	4.15
950	6.97	4.24
1000	7.30	4.43

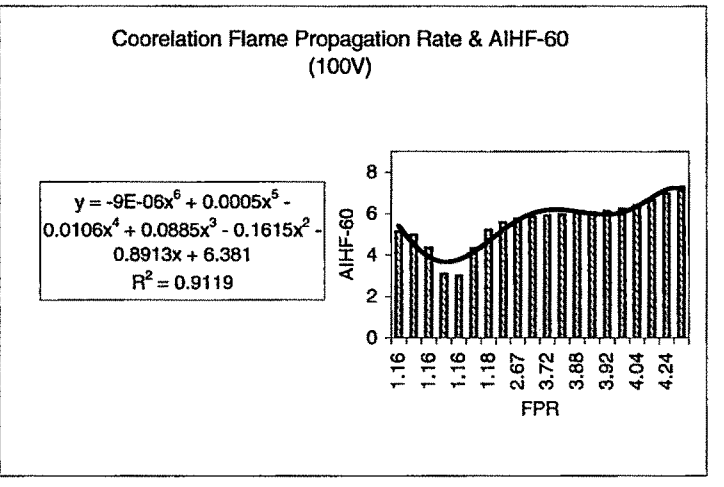

Figure 6.13e:FPR VS AIHF 60 - 50C/50P Test 90

GSM	AIHF 60	FPR
50	1.73	1.45
100	2.06	1.52
150	2.53	1.70
200	3.02	2.16
250	3.46	2.84
300	3.83	4.35
350	4.12	4.35
400	4.43	3.32
450	4.72	3.06
500	5.11	2.94
550	5.74	2.97
600	6.52	3.84
650	6.15	5.79
700	5.31	6.28
750	6.67	6.21
800	7.57	6.48
850	7.90	6.59
900	7.99	6.79
950	8.01	7.01
1000	8.03	7.15

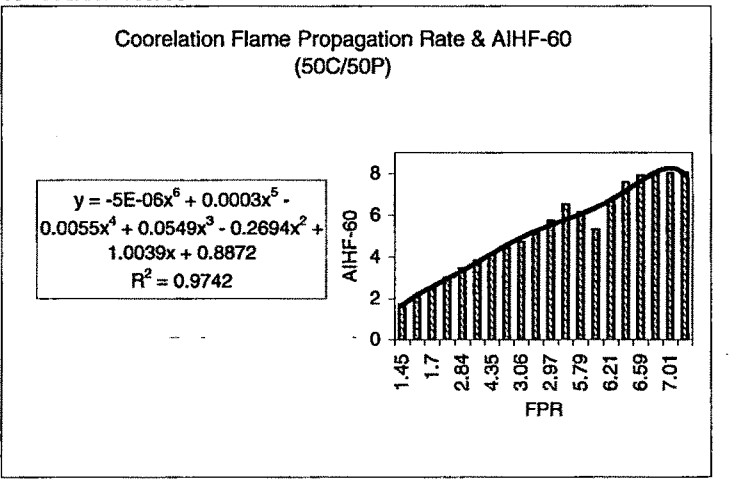

Figure 6.13f:FPR VS AIHF 60 - 50C/50N Test 90

GSM	AIHF 60	FPR
50	1.60	1.91
100	1.83	1.97
150	2.19	2.06
200	2.64	2.20
250	3.09	2.37
300	3.43	2.54
350	3.62	2.89
400	3.67	3.11
450	3.64	3.23
500	3.61	3.40
550	3.68	3.74
600	3.39	4.04
650	3.55	4.80
700	3.99	5.18
750	7.48	5.53
800	7.90	6.00
850	8.00	6.53
900	8.03	6.81
950	8.04	6.95
1000	8.05	7.02

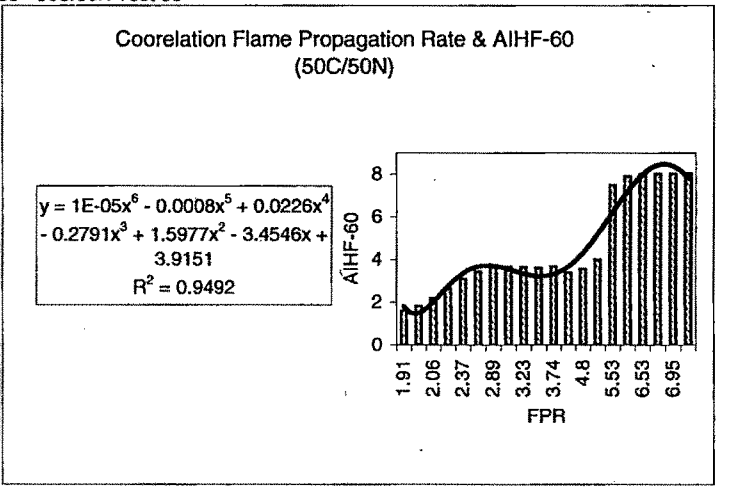

Figure 6.13g:FPR VS AIHF 60 - 50C/50V Test 90

GSM	AIHF 60	FPR
50	1.83	1.38
100	2.13	1.39
150	2.58	1.40
200	3.03	1.43
250	3.37	1.51
300	3.59	1.74
350	3.78	2.22
400	3.99	2.76
450	4.25	3.06
500	4.55	2.97
550	4.89	2.39
600	5.25	2.97
650	5.73	2.74
700	6.53	3.74
750	6.87	4.38
800	6.87	4.98
850	6.66	5.35
900	6.99	5.70
950	7.17	6.04
1000	7.25	6.37

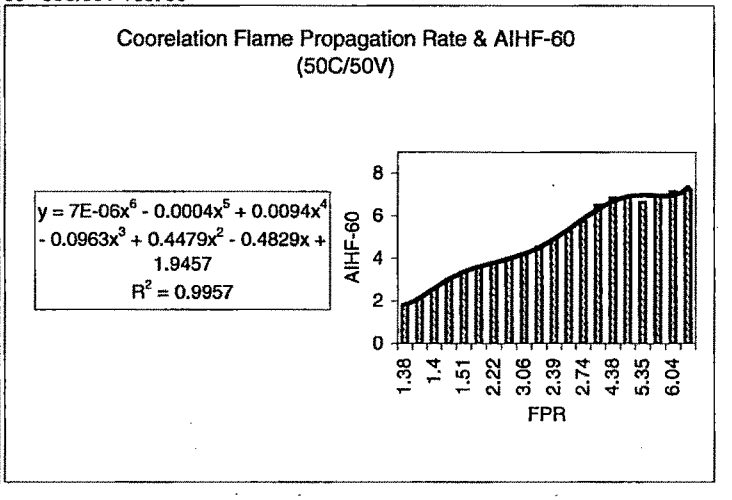

Figure 6.13h:FPR VS AIHF 60 - 75C/25P Test 90

GSM	AIHF 60	FPR
50	2.10	1.73
100	2.34	1.82
150	2.63	2.04
200	2.98	2.41
250	3.37	2.81
300	3.78	3.20
350	4.34	3.43
400	4.90	3.55
450	4.90	3.62
500	4.66	3.71
550	4.56	3.54
600	4.63	2.48
650	4.65	2.85
700	3.78	3.58
750	2.37	4.12
800	2.23	4.85
850	2.92	5.95
900	4.58	6.79
950	6.81	7.09
1000	7.70	7.18

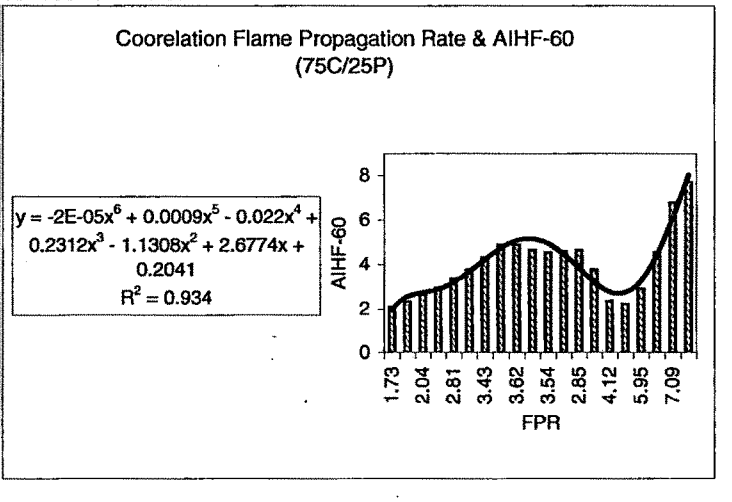

Figure 6.13i:FPR VS AIHF 60 - 75C/25N Test 90

GSM	AIHF 60	FPR
50	1.50	1.87
100	1.59	1.94
150	1.75	2.07
200	2.06	2.24
250	2.58	2.38
300	3.07	2.60
350	3.35	2.92
400	3.60	3.29
450	4.15	3.71
500	4.97	4.00
550	5.59	4.14
600	5.87	4.23
650	5.94	4.47
700	5.91	5.91
750	5.85	5.56
800	5.80	6.15
850	5.92	6.69
900	5.90	6.78
950	6.10	7.02
1000	6.30	7.01

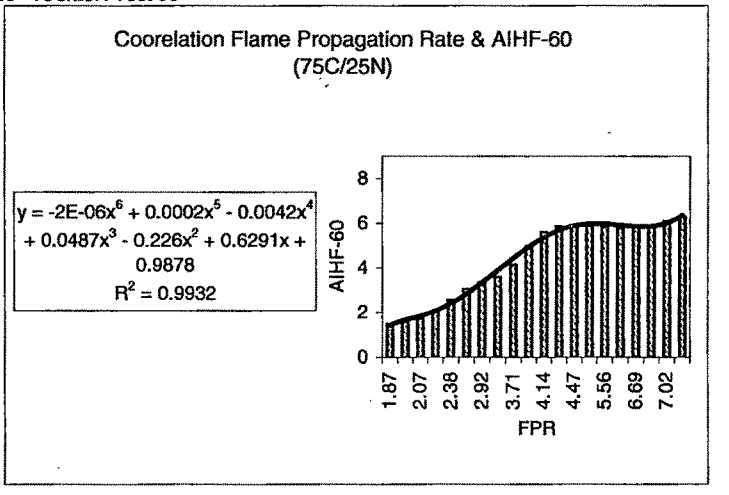

Figure 6.13j:FPR VS AIHF 60 - 75C/25V Test 90

GSM	AIHF 60	FPR
50	1.66	1.29
100	1.86	1.30
150	2.14	1.32
200	2.49	1.34
250	2.86	1.36
300	3.16	1.41
350	3.38	1.56
400	3.57	1.83
450	3.79	2.25
500	4.06	2.88
550	4.39	3.51
600	4.79	4.15
650	5.16	4.66
700	5.48	4.96
750	5.76	5.13
800	6.10	5.22
850	6.63	5.26
900	6.70	5.32
950	6.22	5.36
1000	6.67	5.40

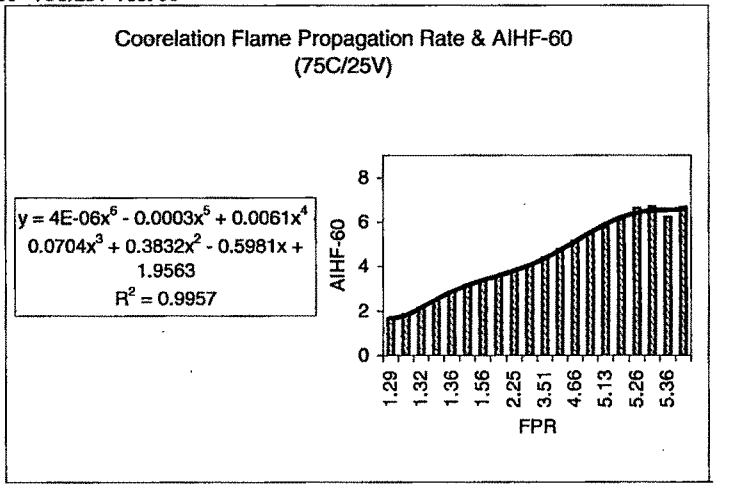

Figure 6.14a: GSM Vs AIHF 60 for Fibres

GSM	100 C	100N	100P	100V
50	1.28	1.01	1.04	1.57
100	1.87	1.01	1.40	1.71
150	2.43	1.03	2.39	1.91
200	2.67	1.07	2.83	2.17
250	2.80	1.17	2.87	2.46
300	2.90	1.36	2.89	2.74
350	2.95	1.89	2.94	2.98
400	2.98	2.13	2.97	3.20
450	3.15	2.76	3.07	3.45
500	4.27	3.70	3.26	3.77
550	4.55	5.03	3.61	4.17
600	5.00	5.49	4.18	4.63
650	4.93	6.30	4.85	5.04
700	4.89	6.64	5.35	5.36
750	4.83	7.24	5.64	5.56
800	4.76	7.27	5.79	5.70
850	5.00	7.29	5.86	5.81
900	5.00	7.31	5.87	5.94
950	5.00	7.33	5.84	6.19
1000	5.00	7.35	5.97	6.55

100C
y = -5E-06x6 + 0.0004x5 - 0.0102x4 + 0.1395x3 - 0.9218x2 + 2.9112x - 0.9719
R2 = 0.9746

100N
y = 7E-07x6 + 2E-05x5 - 0.0022x4 + 0.0445x3 - 0.291x2 + 0.7262x + 0.4825
R2 = 0.9976

100P
y = 8E-06x6 - 0.0005x5 + 0.0101x4 - 0.0903x3 + 0.2812x2 + 0.3616x + 0.3841
R2 = 0.9963

100V
y = 4E-06x6 - 0.0002x5 + 0.0049x4 - 0.0503x3 + 0.2551x2 - 0.3561x + 1.7163
R2 = 0.9994

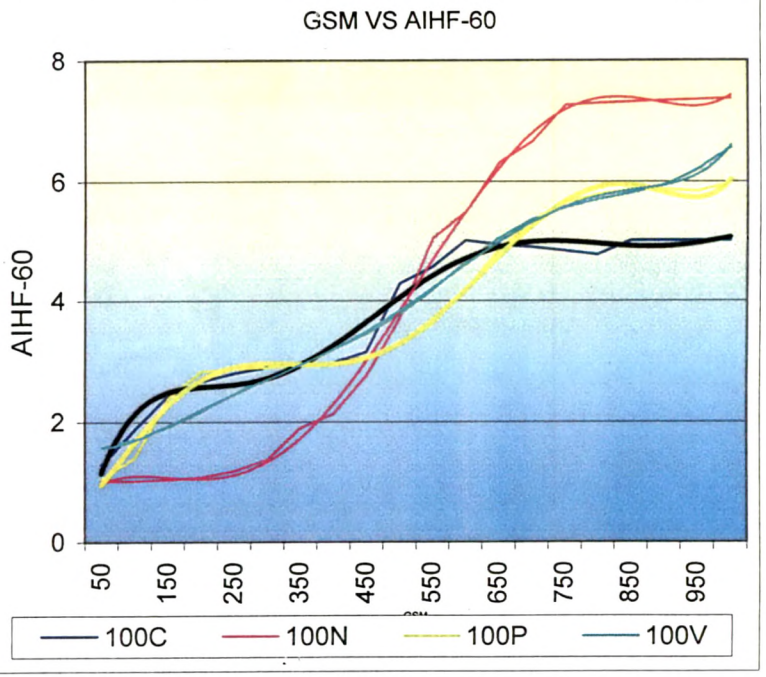

Figure 6.14b: GSM Vs AIHF 60 for Fibres

GSM	100C	100N	100P	100V
50	1.72	1.79	1.73	2.53
100	2.27	1.90	1.74	3.13
150	2.92	2.05	1.81	3.33
200	3.32	2.23	1.91	3.11
250	3.74	2.47	2.07	3.48
300	4.27	2.73	2.31	4.31
350	4.73	3.02	2.61	5.22
400	5.06	3.31	2.98	5.59
450	5.30	3.54	3.36	5.75
500	5.50	4.13	3.78	5.84
550	5.65	5.84	4.09	5.91
600	5.73	7.12	4.44	5.96
650	5.70	7.73	4.78	6.01
700	5.62	7.93	5.14	6.06
750	5.53	8.00	5.55	6.14
800	5.48	8.03	6.04	6.24
850	5.45	8.05	6.58	6.40
900	5.44	8.05	7.00	6.65
950	5.45	8.06	7.19	6.97
1000	5.47	8.06	6.61	7.30

100C
y = -2E-06x6 + 0.0001x5 - 0.0025x4 + 0.025x3 - 0.1328x2 + 0.8576x + 0.9657
R2 = 0.9993

100N
y = 5E-06x6 - 0.0002x5 + 0.0029x4 - 0.0019x3 - 0.1252x2 + 0.6778x + 1.1399
R2 = 0.988

100P
y = -6E-06x6 + 0.0003x5 - 0.0074x4 + 0.0749x3 - 0.3342x2 + 0.6745x + 1.2945
R2 = 0.9998

100V
y = -9E-06x6 + 0.0005x5 - 0.0106x4 + 0.0885x3 - 0.1615x2 - 0.8913x + 6.381
R2 = 0.9119

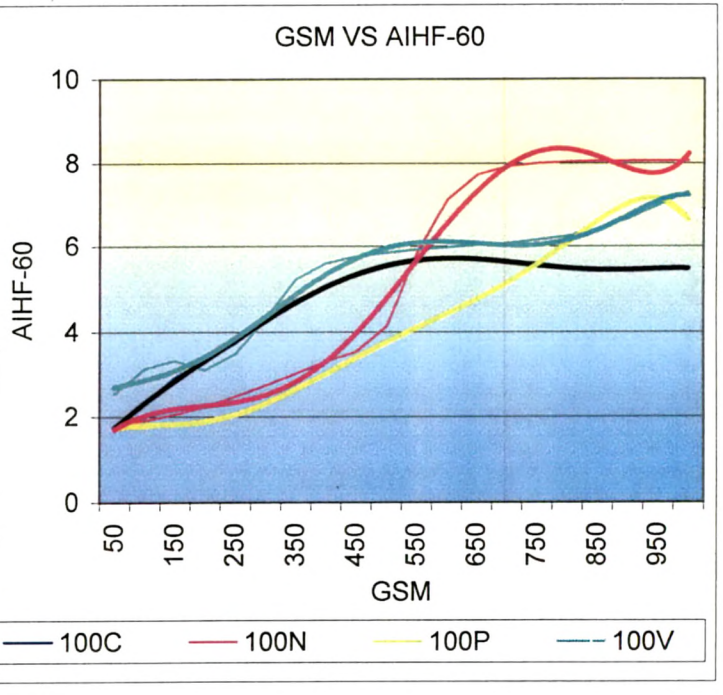

Figure 6.15a: GSM Vs FPR 60 for Fibres

GSM	100C	100V	100P	100N
50	1.68	0.90	0.89	0.90
100	1.77	0.92	0.89	0.90
150	1.85	1.07	0.89	0.90
200	1.87	1.07	0.89	0.90
250	1.94	1.07	0.91	0.90
300	2.31	1.07	0.91	0.90
350	3.06	1.76	1.81	0.92
400	3.30	1.96	2.89	1.18
450	3.35	2.56	3.92	2.30
500	3.32	2.56	4.01	3.01
550	3.32	2.56	4.18	3.25
600	3.49	2.81	4.55	3.25
650	4.56	2.81	5.14	3.38
700	4.81	2.96	5.79	3.38
750	5.06	3.31	5.89	3.43
800	5.78	3.79	6.51	3.49
850	6.33	4.24	6.61	3.57
900	6.58	4.61	6.64	3.68
950	6.69	4.86	6.65	3.81
1000	6.73	5.40	6.66	3.96

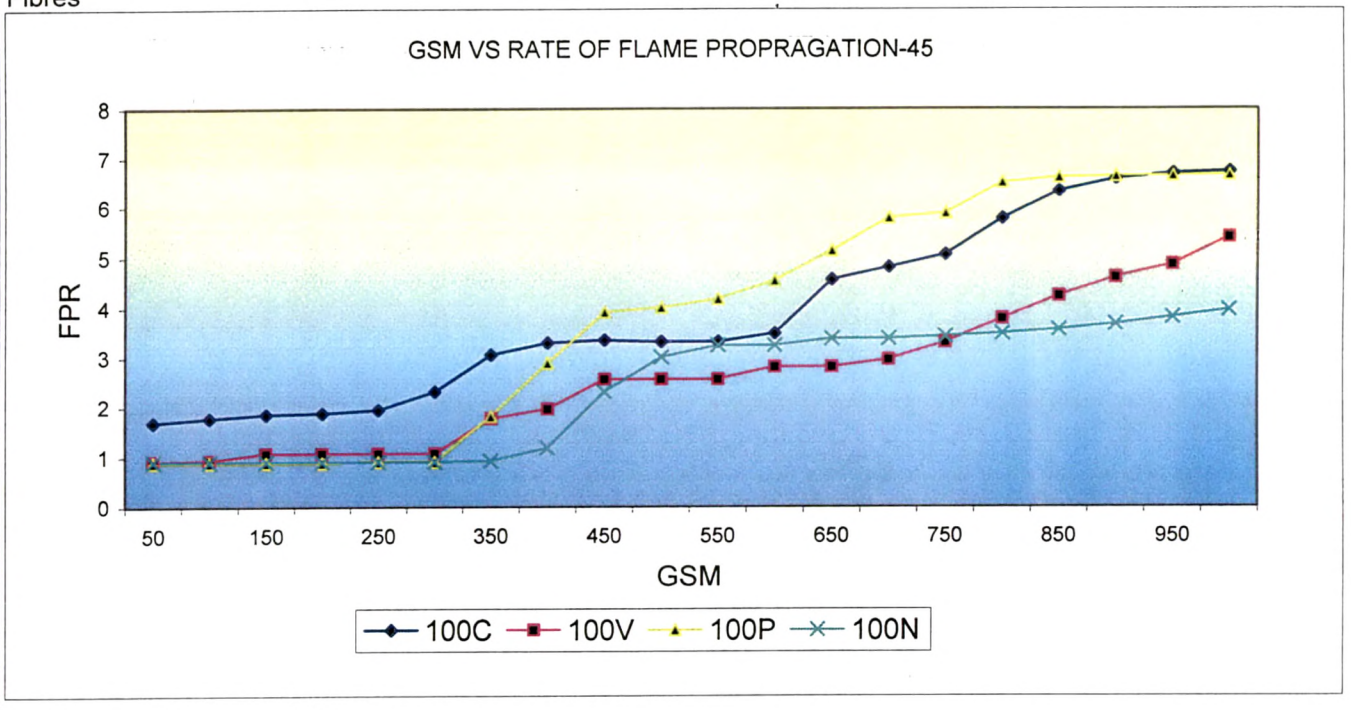

Figure 6.15b: GSM Vs FPR 60 for Fibres

GSM	100C	100N	100P	100V
50	2.027	1.14	1.16	1.16
100	2.12	1.14	1.18	1.16
150	2.21	1.14	1.36	1.16
200	2.27	1.15	2.61	1.16
250	2.37	1.18	3.22	1.16
300	2.79	1.33	3.77	1.16
350	3.68	2.24	3.85	1.18
400	4.12	3.91	3.84	1.15
450	4.25	4.49	3.79	2.67
500	4.29	4.59	3.69	3.44
550	4.31	4.74	3.53	3.72
600	4.69	5.09	3.37	3.82
650	5.22	5.63	3.40	3.88
700	5.26	5.66	3.51	3.88
750	5.48	6.22	3.86	3.92
800	6.18	6.87	4.34	3.97
850	6.7	6.96	4.83	4.04
900	6.94	7.01	5.14	4.15
950	7.04	7.01	5.38	4.24
1000	7.09	7.03	5.55	4.43

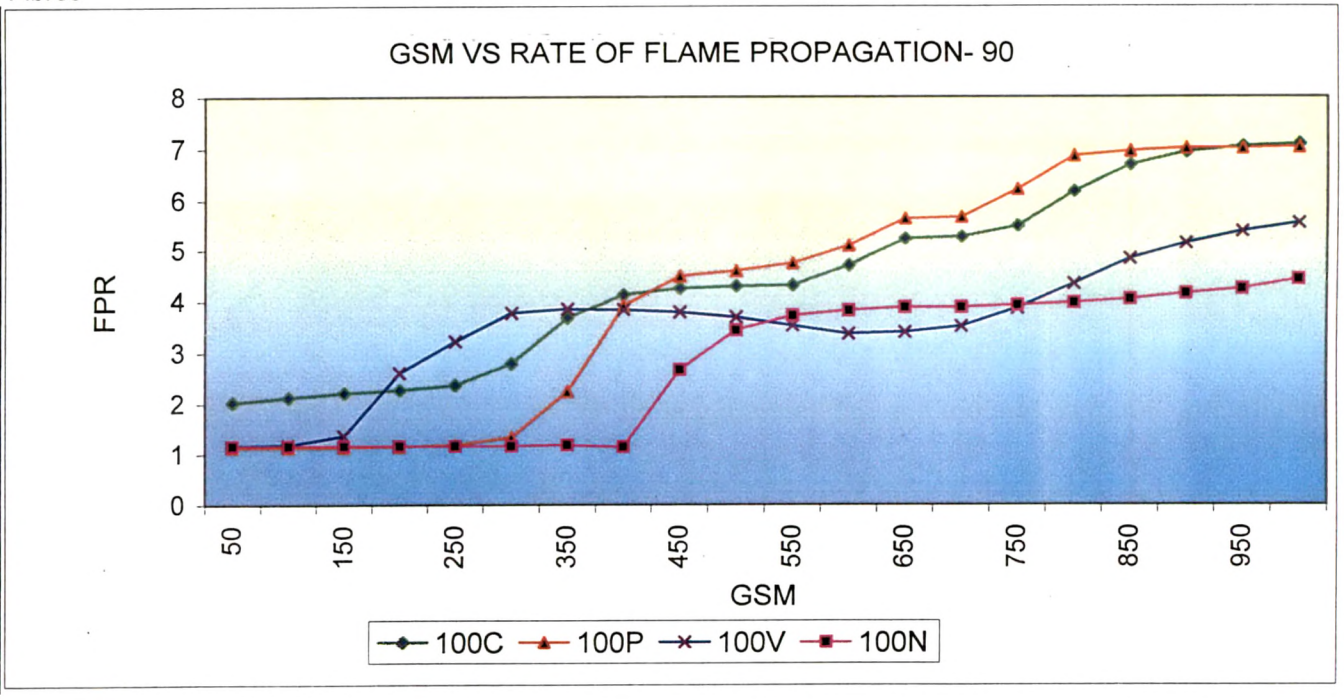

Figure 6.16a: GSM VsBR 60 for Fibres

GSM	100 C	100N	100P	100V
50	5.30	2.42	5.13	4.79
100	4.76	3.20	7.58	4.71
150	7.47	3.60	3.57	4.69
200	2.42	3.28	4.08	4.70
250	2.64	3.28	3.76	4.71
300	6.05	3.68	3.20	4.72
350	3.26	3.44	2.95	4.72
400	3.28	3.44	5.10	4.77
450	3.26	3.60	3.67	4.78
500	3.17	3.12	3.21	4.76
550	3.00	3.12	3.54	4.76
600	2.70	2.96	5.03	3.54
650	2.41	2.42	2.79	2.42
700	1.21	2.42	2.38	2.42
750	1.20	2.42	2.48	2.42
800	1.10	2.42	2.54	2.42
850	0.99	2.42	2.61	2.42
900	0.86	2.42	2.68	2.42
950	0.77	2.42	2.74	2.42
1000	0.71	2.42	2.78	2.42

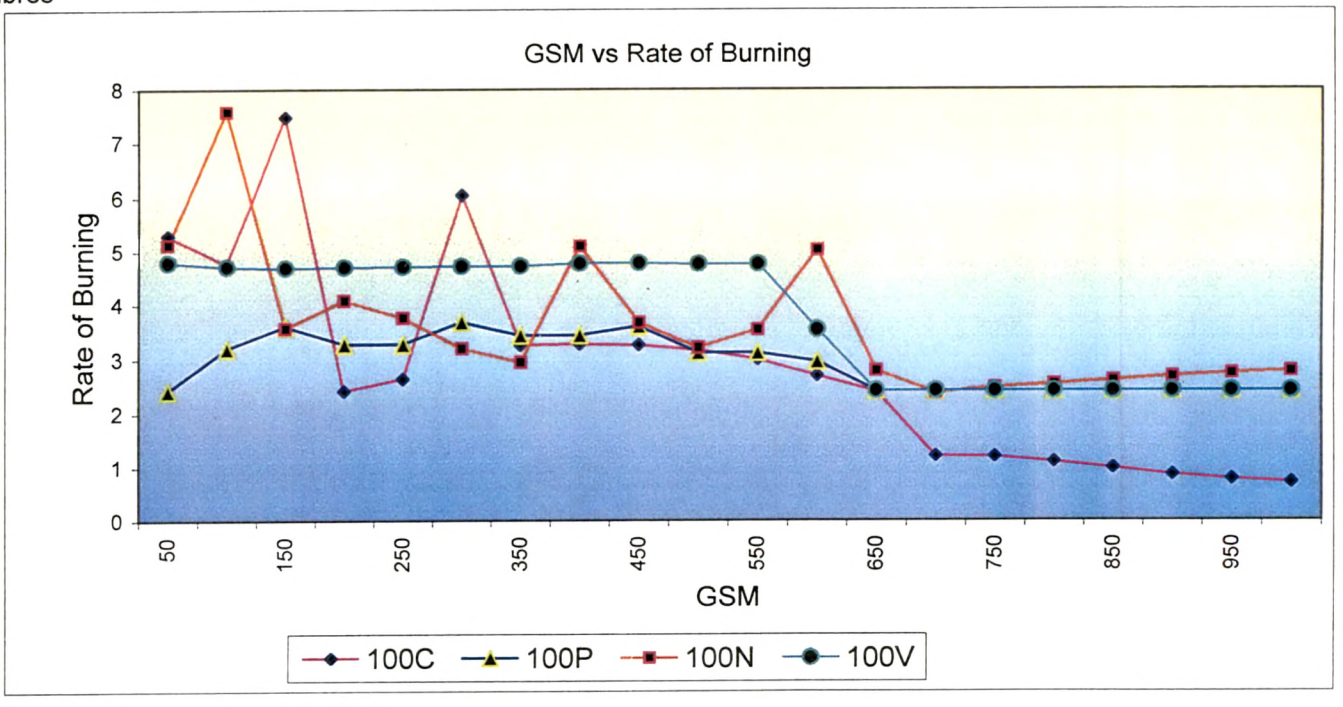

Figure 6.16b: GSM VsBR 60 for Fibres

GSM	100C	100N	100P	100V
50	5.32	1.84	5.45	2.57
100	4.5	2.29	7.69	2.55
150	7.56	1.84	2.74	2.55
200	1.95	2.8	2.56	2.55
250	2.12	1.84	1.85	2.55
300	5.87	1.84	1.9	2.56
350	2.74	1.84	2.28	2.56
400	2.71	2.88	4.5	2.56
450	2.69	2.88	3.69	2.57
500	2.25	1.84	3.6	2.56
550	2.49	2.71	3.69	2.55
600	2.25	1.84	4.44	2.18
650	2.05	1.84	2.68	1.84
700	1.21	1.84	2.26	3.2
750	1.3	1.84	2.33	2.88
800	1.2	1.84	2.39	3.47
850	1.02	1.84	2.44	2.4
900	0.86	1.84	2.48	2.71
950	0.74	1.84	2.51	2.54
1000	0.65	1.84	2.54	3.14