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Ananlysis of Artificial Leather With Textile Fabric

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ABSTRACT
The fundamentals of a textile fabric intended for vehicles interior presentation. Chemical and physical mechanical properties of artificial leather with bonded textile fabrics are analysed. The most important method for leather durability are force and elongation with properties. Chemical properties of artificial leather and basic construction of textile are invested. The physical properties of artificial leather are quality of seam that is important, the result is obtained from physical and mechanical property, evolution of places compared.
Keyword*: artificial leather, textile fabric, properties, strength, seam strength, physical and mechanical properties*

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I. INTRODUCTION

Ergonomically designed car seats are made for keeping the body of the passengers feel no bodify fatigue and keep them comfortable also avoid discomfort. Contact between the body and the seat depends on the fabric that may be composed of a non-woven or knitted fabric and artificial leather. Artificial leather is a composite fabric which is mechanically and chemically finished for leather, artificial leather is marked under many brands including "leatherette", "faux leather" and "pleather". Pleather is otherwise called as "plastic leather" is also called as synthetic leather made out of plastic. Pleather is often used for inexpensive substitute for leather, they are called as lighter leather. Some wear this leather as an alternative to real animal leather garments. Polyurethane is washable and also can be dry cleaned by allowing air to flow through the garment, PVC leather does not breathe and its difficult to breath and its difficult to dry.

The non-woven materials lie as an interior of the seat used as an interlining solid material, wooden, plastic car components. The exterior fabric is the one that gets a contact with the body and they should give good aesthetic resistance for a car. The fabric should be flame resistant to avoid sun utra rays spark and they should also be stain-resistant finish. Artificial leather is equal to of natural leather and adds advantage properties into the fabric. The stability of the fabric is improved by the help of laminating or knitted fabric, thermal joining is the method of joining woven or knitted fabric to the back side of artificial leather. The woven fabric imparts high elasticity.

1.1 Manufacturing of the Fabric

The use of woven and knitted fabric on the back side of the leather material will be discussed below, to sew different materials with synthetic leather is recommended that special sewing machines and sew two or three layers tight without damaging the threads. A special sewing machine needle is used for the process of sewing.

The fabric used for sewing is interlined using cotton fabric. The yarn is wrapped on the machine and woven relatively using low warp and weft density, Air jet weaving machine are used for weaving plain weave. After weaving the fabric is inspected for any faults, fly or thread removal. Artificial leather is supplemented with woven fabric to gain more strength and bond also to add softness and flexibility to the upholstery fabric.
Cutting the artificial leather with the woven fabric on the front side or knitted fabric on the back while cutting the spread length direction are on the warp direction. This makes the fabric stability and durability longer.
Process of sewing

1. Joining the back part of the seat cover with sitting parts
2. Sewing the elastic band to the sides of the car seat
3. Joining the side part with the sitting part section of the seat cover.

1.2 Discussion

The samples of the artificial leather with woven fabric on the back side (sample I and sample II) and the samples knitted (sample IV and V) are taken and the difference of average elongation at break. The fabric sample were taken in 6 different direction and the distance was checked.

The sample of the artificial leather with woven fabric on the back side have highest break force in the warp direction from 677 N (sample 1) to 714 N (sample II) and the lowest angle of 150 and 330 (200N sample 1 and 300 sample II). Elongation at break also differs in the direction of sample III and IV ranging from 16.5 to 25% and in the seamed fabric ranges from 14.2% to 16.5%. the elongation is higher in the case of lower breaking forces, in the most sensitive elongation direction along the line close angle of 60^o - 240 and 150- 300.

The samples of the artificial leather with woven fabric on the back side have higher breaking forces in the warp and weft direction related to the cross and longitude direction of artificial leather. The breaking forces in direction more in the samples with woven fabric on the back side. The artificial leather with woven fabric on the back side have higher breaking forces in the wrap and weft direction in relation to the cross and longitude direction of the artificial leather with knitted fabric on the back side. The sample with artificial leather with woven fabric on the back side with knitted fabric on the back. The seat cover with artificial leather and woven fabric on the back side are more durable and stable than the sample on the artificial leather. The most stress happens during sitting, stress dissipates from all direction, the result for the breaking forces of the sample of the artificial leather with woven fabric and knitted fabric on the back side. By correct spreading the cutting parts into the warp and weft direction in case of artificial leather with knitted fabric on the back side, the durability of the car seat cover and their stability may increase to the exception.

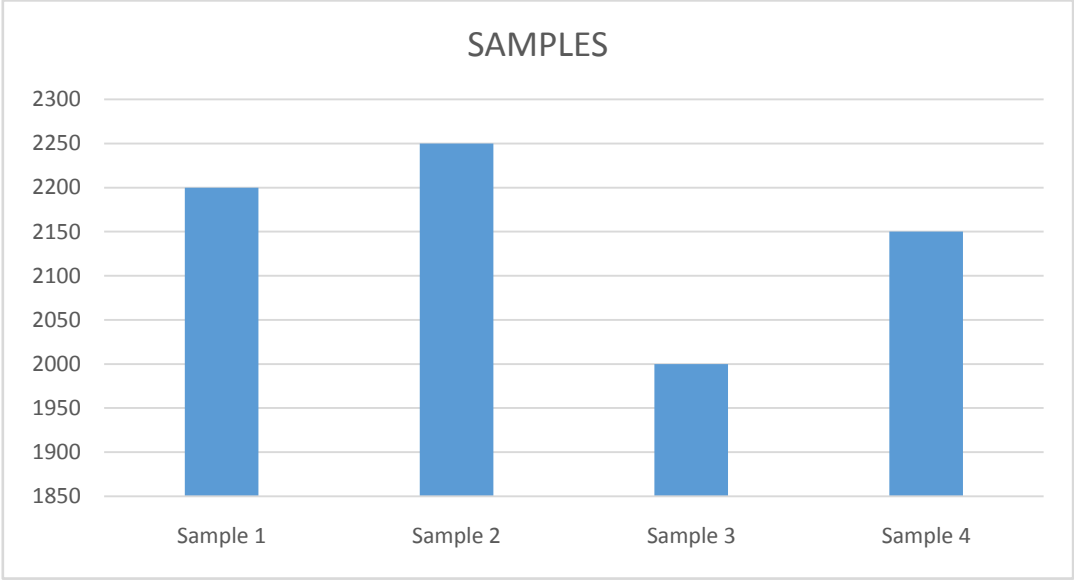

Fig 1: Breaking force direction of the sample artificial leather with woven/ knitted fabric fusing

II. CONCLUSION

Artificial leather designed for car seats and upholstery has been designed for the requirement and specification like the strength, breaking force, abrasion, resistance, durability etc. To meet all the demands, artificial leather is on the back side of the woven or knitted fabric and polyurethane foam. According to the test result, samples of artificial leather with woven fabric on the back side have higher breaking force with knitted fabric on the back side. The shortcoming of the woven fabric is irregular breaking force of the sample along the angles 0^o – 360^o where the knitted fabric has more uniform breaking forces in all direction. These fabrics are mostly made from single cotton yarns, and very rarely from ply yarns, mostly because of economics reason. By increasing the density on woven or knitted fabric greater thickness, stability and stiffness of the artificial leather. The knitted fabric are made of piled cotton yarns on the warp knitted machine, the sample of the artificial leather with knitted fabric on the back side also have a slight higher breaking force in the length direction with knitted fabric are more uniform with woven fabric. The sample with woven fabric have a higher bursting strength and a small elongation at break than the sample of artificial leather with knitted fabric.

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