

AERO

FELT SHEET

" FELT" is a textile structure composed of fibers physically interlocked and consolidated by the utilization of

Mechanical Work
Chemical action
Moisture

No Weaving, knitting, stitching, thermal bonding or adhesives unlike other textile fabrics. WOOL is the basic and only raw material used in felts.

1) PHYSICAL PROPERTIES

1.1 Density : "the weight per unit volume of felt." Density is the parameter that affects the mechanical and functional properties of felt.

1.2 Tensile strength and elongation : Directly proportionate to felt density. In general, each grade of felt has a characteristic stress-strain or modulus value that is distinct from that of other grades.

1.3 Hardness/softness : The denser the felt, the harder it is.

1.4 Abrasive wear resistance : Directly proportional to density and quality of fiber used.

1.5 Splitting resistance : it measures interfacial strength. It increases with density.

1.6 Coefficient of friction : independent of felt density or grade. Totally dependent upon the texture and smoothness of adjacent surface and viscosity of lubricants used.

2) CHEMICAL PROPERTIES

No effect of lubricating oil, organic solvents & dilute inorganic acids to felt.

2.1 Ageing : Felt is unchanged by temperature in the range of -15°C to 100°C (-60°F to 212°F). No effect of diverse atmospheric condition.

3) GENERAL PROPERTIES

3.1 Felt can be made to engineer's requirement.

3.2 Felt is easy to put into any desired Shape/Form.

3.3 NON-Glazing : wool felt doesn't get glazed even after continuous rubbing.

4) FUNCTION AND USED OF WOOL FELT

4.1 Polishing and Buffing :

A) Felts in form of wheels and also in different shapes, Sizes are used for polishing and buffing.

- B) Felts having density more than 0.34 gmc^3 are used for this application.
- C) Buffing i.e. highlighting, the commonly used components are tripoli, rouge, s.s. compounds & emry paste.
- D) For Deburring ----- greaseless compound can be used.

4.2 Wicking & Lubrication :

- A) Feed lubricating system for bearing and other mechanical movements, Where oil or other coolants are required to be fed in controlled manner without failure or interruption

4.3 Spacing & Sealing :

- A) Felts aer used as gasket and washer.
- B) Felt used in this application has high liquid absorption capacity, low coefficient of friction and excellent resilience.
- C) Because of resilient character, felt maintains constant sealing pressure.

4.4 Surfacing, Padding, Cushioning :

Because of non-scratching surface and non-revelling edges, the wool felts are ideally suited for surfacing, padding & cushioning.

4.5 Sound absorption & Vibration isolation :

No sharp distinction can be made between sound adsorption, Vibration isolation and shock absorption characteristics : shock implies a single, sharp displacement that may on may not be resonant vibration.

In general, periodic oscillation up to about 50 cycles per second is considered vibration; above that frequency it is considered sound or, if it includes a mixturn of frequencies not harmonically related, noise. Since the effectiveness of vibration/sound adsorption increases with frequency, it can be assumed that, as felt is effective at very low frequencies, it is even more effective at higher frequencies.

- A) Felt can reduce the vibrational energy transmitted from a machine to its foundation.
- B) Felt mounting under precision instruments afford equal protection against externally generated noise and vibration.
- C) Felt has ability to conform to uneven surface prevents the unwanted intrusion of dirt, oil etc., beneath the load-bearing area.
- D) Felt provides near permanent resilience due to its natural construction, towards maximum vibration, absorption and isolation characteristics.
- E) Felt retains its resilience even at low temperature where some other materials become hard and brittle.

F) Sound insulation is preventing the generation of sound, higher the density of Felt better the insulation.

4.6 Filtration :

Wool felt filters are an efficient medium for the mechanical filtration of air, gases and liquids where maximum

- A) Retention efficiency
- B) High Permeability
- C) Low plugging rate
- D) Long Life

are primary designed requirements.

4.7 Frictional Applications :

As with other materials, the friction coefficient is greatly influenced by surface films such as lubricants and oxide layers and by the texture and smoothness of adjacent surfaces. Behaviour under different conditions can be quickly determined by tests.

4.8 Thermal Insulations :

While thermal insulation is directly proportional to the thickness of any material it also varies inversely according to the intrinsic thermal conductivity of the materials itself. While the conductivity of wool felt is noticeably low among insulating material, the superior insulating properties of still air mean that less dense felts are more effective insulating.

4.9 Dyeing :

Wool felt can be dyed in any beautiful colour of individual's choice-bright and fast. printing and embossing is feasible on woollen felt. It can be sanded to give a smooth finish ,soft, swede-leather-like surface.

For weight of industrial felts - see annexure - 1