

Jolly Softboard

Insulating & Acoustical Boards

Jolly Softboard is soft, resilient, light coloured sheet material 9 to 25 mm thick, manufactured from bagasse (sugar-cane) fibres.

Jolly Softboards are grooved or drilled to improve their sound absorbing capabilities and then used as acoustic boards. They are used for ceilings and wall linings particularly where reflected sound is to be reduced.

RELATED DOCUMENTS:

Indian Standard 3348: 'Fibre Insulation Boards' and BS 1142 Part 3: 1972 'Insulating Board-Softboard' include all available International Standards and give the procedure for sampling. They also define six tests levels which insulating board must satisfy. These are density, bending strength, water absorption, thermal conductivity, sound absorption and surface spread of flame.

DESCRIPTION:

Composition and Manufacture: Bagasse is reduced to fibres which are then felted to form a continuous sheet. After cutting to approximate size, the sheets are passed through a drying oven. These sheets are trimmed to board sizes.

Improved acoustic properties are obtained by grooving insulating boards to part of their depth in various patterns.

Sizes generally available are:

Sheets: 1220mm x 2440mm (4' x 8') and 1220mm x 1220mm (4' x 4') Thickness available are 9, 12, 18 and 25mm.

Production tolerances: Permissible deviations in length, width and thickness from manufacturers stated size are as per those given in Table 1 in IS 3348 and Table 1 in BS 1142: Part 3, Smaller tolerances than those specified can be obtained by agreement.

Weight: Weight of boards varies according to brand. Typical weights (kg/m²) are 2.5-2.7 for 9mm thickness, 3.2-3.7 for 12mm, 4.4-5.4 for 18mm, and 6-7.5 for 25mm.

Density: Generally within the range of 230 to 330 kg/m³. IS 3348 maximum is 400 kg/m³. BS 1142 maximum is 350 kg/m³.

APPEARANCES:

Surface texture: Varies from smooth to dimpled.

Colour of most boards is various shades of cream and brown. Some boards are coated with a white primer for painting.

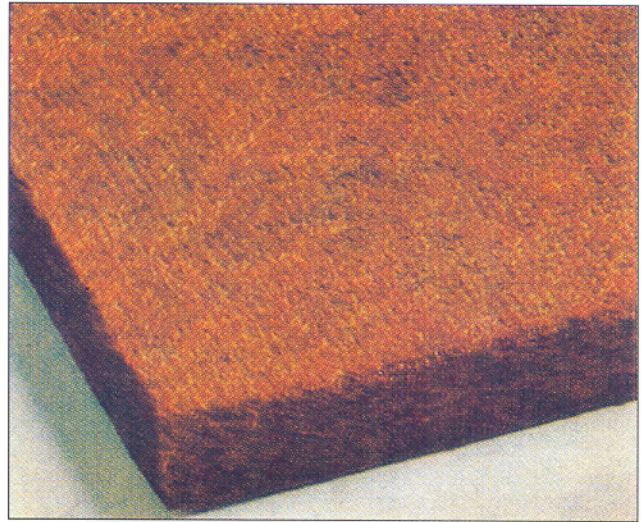
Special boards available: Painted, paper plastic or textile faced. Flame-retardant treated types are available on request.

CLIMATIC EFFECT:

Jolly Softboards are hygroscopic in nature. Their dimensions change in response to changes in humidity. If these dimensional changes take place after the boards have been fixed they may cause bowing or gaps at joints. To avoid this the moisture content of board may first need to be adjusted to that of the surrounding air by conditioning. Conditioning is done by placing the boards in the room where they are to be fitted for 24 to 48 hours to attain the same moisture content.

BEHAVIOUR IN USE:

The data presented in the following table gives general round values from laboratory test results.



STRUCTURAL PROPERTIES

Property	Thickness (mm)	Range of Values	IS 3348-1965 min. Value
Density (kg/m ³)		270-330	400 max.
Modulus of Rupture (kg/cm ²)	9		20
	12		20
	18		16
	25		16
Tensile strength (kg/cm ²)			
Parallel to surface	12	15	
Perpendicular to surface	12	3	
Water absorption (2 hrs)	9		30
	12		30
	18		25
	25		25

FIRE:

Fire Resistance: The contribution to the fire resistance of a structure is proportional to the thickness of the board. For example 12mm insulating board will contribute 15 minutes fire resistance when used as lining to wall or partition and 10 minutes when used as a ceiling.

Combustibility: Combustible as defined in BS 476 Part 4 and IS: 3348 clause 9.6.

Ignitability: not easily ignitable as defined in BS 476: Part 5 and IS:3348 clause 9.6.

Calorific value: is approximately 19.8 MJ/kg; thus when 12mm insulating board burns it yields about 60MJ/m².

Spread of flame: Class 4 as defined in IS 3348 and BS 476 Part 7 when undercoated. Further treatments can be applied to achieve compliance with higher spread of flame requirements. Class 1 or 2

can be obtained by bitumen impregnation during or after manufacture. Improved spread of flame performance can also be obtained by painting the surface in the factory or on site with a flame-retardant paint.

GASES-WATER VAPOUR:

Water vapour permeability: of 12mm natural insulating board is approximately 1.2 to 3.4g/sMN. Board with surfaces of aluminium foil or PVC provide a vapour barrier. Vapour barriers can also be provided by two coats of flat paint to give permeability of 0.067g/sMN and by a gloss paint system to give a value of 0.027g/sMN. (A material is considered to be a vapour barrier when its water vapour permeability does not exceed 0.067g/sMN.)

LIQUIDS-WATER:

Water absorption: The thermal insulation properties of boards are considerably reduced if they become wet and some boards, because of their porous nature, readily absorb water. It is therefore necessary that boards or tiles are kept dry both before and after fixing. IS 3348, specifies a water absorption test for these boards and gives the following maximum mean water absorption values to which Jolly Softboard easily conforms.

Water Absorption			
Type of board	Nominal thickness mm	maximum* mean water Absorption at 27° + 2°C	
Fibre insulating board, ordinary or flame retardant type	9 12 18 25	30 30 25 25	*IS 3348
Effect of relative humidity change from 33% to 90% at 20°C			
% increase in Length & Width		% increase in Thickness	
approx. value	BS 1142 max.	BS 1142 max.	
0.27-0.34	0.40	7.0	

BIOLOGICAL:

Vermin infestation: Board will not normally be attacked by rodents or wood boring insects common in India. Boards can be anti-termite treated.

Fungus resistance: Like other fibre building boards Jolly Softboards are not susceptible to attack by rot fungi and microfungi under normal circumstances of use. Superficial mould growth is not readily supported on any type of insulating board.

THERMAL:

The thermal insulation characteristics of fibre insulating boards are given in IS 3348.

Thermal conductivity (k): shall not be more than 5.6 kcal/cm/m² h°C (or 0.65 mw/cm deg.)

Against the BS 1142 max: mean k-value: 0.058 W/m°C, the thermal conductivity (k) is 0.044 - 0.050 W/m°C.

Specific heat: 1580J/kg°C

Thermal diffusivity: 5.6 x 10⁻⁴ m²/h

ACOUSTIC:

Sound Insulation: Against impact, sound transmission to the standards of building regulations is obtained when a resilient soft board layer is incorporated in the construction.

Sound absorption: A plain softboard has some sound absorption characteristics and will reduce reflected sound when used as wall or ceiling lining or as a cavity lining or backing to other materials.

Sound absorption co-efficient when determined by the standing wave method shall be as follows as per IS 3348.

Sound absorption co-efficient.

Frequency c/s	Absorption co-efficient Min.
125	0.1
250	0.1
500	0.2
1000	0.3
2000	0.5

For the acoustic boards or tiles made from softboard by machining the surface to produce superior sound absorbing qualities, the sound absorption characteristics vary according to the thickness of the board, the depth and number of holes or grooves, and the depth of cavity (if any) behind the absorbent. Some typical sound absorption co-efficients are given in the following table.

Typical Sound Absorption Co-efficients

Type of board	Thick-ness (mm)	Cavity behind board (mm)	Absorption Co-efficient					
			Frequency (Hz)					
			125	250	500	1000	2000	4000
Plain insulating board	12	152.4	0.13	0.56	0.15	0.13	0.17	0.20
Acoustic boards: (As per perforations)								
Regular	12	152.4	0.09	0.67	0.47	0.61	0.73	0.80
Regular	12	25.4	0.20	0.30	0.35	0.55	0.70	0.70
Regular	12	Solid	0.10	0.20	0.40	0.50	0.45	0.50
Micro	12	19.1	0.19	0.68	0.46	0.65	0.73	0.61
Micro	12	Solid	0.11	0.28	0.67	0.65	0.71	0.59
Regular	18	25.4	0.20	0.50	0.70	0.85	0.75	0.65
Irregular	18		1.0					

DURABILITY:

Jolly Softboard has good durability. It will be damaged if subjected to high impact loads. Thermal insulation value is reduced if the board gets wet.

WORKING CHARACTERISTICS:

Jolly softboard is a light weight, easily handled material which can be readily cut with a sharp knife or sawn with hand or machine saws. Special cutting tools are available for chamfering. It can be bonded with all wood working adhesives and nailed in the manner of other wood based sheet materials. It can be decorated easily with all commercial paints and coatings and can readily be faced with other sheet materials.

APPLICATION:

Jolly Soft Board can be effectively used for wall linings, and ceilings. When used for panelling and partitioning with adequate framework for support, insulation board helps absorb reflected sound.

Jolly Softboard, aesthetically covered with attractive fabrics serves as a practical and unobtrusive display board ideal for window dressing and other displays in all kinds of stores. Another fast growing application is pin board (a smaller size ready to use display or notice boards.)

Use of softboard in recording studios, auditoria and other places that require sound control results in effective reduction of reflected sound.

Soft board is also used for all purposes where good thermal insulation is required, in the form of wall lining, ceilings and roof linings. It is also used as core material for partitions and doors, for partition panels, and as anti-drum lining for metal partitions and machine casings. For purpose requiring a resilient material, such as a floor or carpet underlay, it assists in reducing impact sound transmission.

Due to its resilient nature Jolly Softboard is used as base material for expansion joint fillers.

Predecorated boards are available. In situations where humid conditions may arise bitumen-impregnated soft board should be specified.

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