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EASY PRINT FOAM BOARD DATA SHEET

LAMINATED FOAM BOARDS WITH EXPANDED & EXTRUDED POLYSTYRENE CORE

What exactly is EPS?
EPS stands for Expanded Polystyrene. It is a lightweight cellular plastic material consisting of fine spherical shaped particles, which are comprised of 98% air. This is trapped within a number of closed hollow cells in each particle.

How is EPS manufactured?
When raw EPS particles containing a blowing or expanding agent are softened by heating with steam, the hollow closed cells are formed within the particles, which expand to up to 50 times their original volume. Blocks of EPS are made by resoftening the expanded particles in a block mould with steam until they fuse together. The block is then cut into sheets or boards. Shaped EPS products are produced either by cutting block with a hot wire or by direct moulding of the expanded particles in specially shaped moulds.

What exactly is XPS?
XPS stands for Extruded Polystyrene. It is a lightweight cellular plastic material consisting of fine spherical honeycomb shaped particles. Extruded polystyrene foam (XPS) has air inclusions which gives it moderate flexibility, a low density and a low thermal conductivity.

How is XPS manufactured?
Raw Polystyrene beads are fed into an extruder at high temperature and blended with butane to form the foamed honeycomb liquid. It then passes through a second extruder, which is cooling the material. It is then extruded through a large circular die and the blown material passes over a stainless sleave and is then cut from the bottom in a continuous process that folds out into a sheet and rolled onto a large jumbo rolls for further processing and finishing.

Does EPS & XPS absorb water?
EPS & XPS are a closed cell and cannot absorb water. During the process of moulding a block, tiny channels are formed between the particles. If the material is immersed in water these tiny channels can be filled with water. After immersion for more than 360 days, there may be up to 6% water content by volume which has entered the channels. Even under such an adverse and rare condition of prolonged saturation, EPS & XPS suffer little adverse effect. It maintains its shape, size, structure, cohesion and physical appearance.
The ability of EPS to resist the adverse effects of moisture is exemplified by its widespread use in floats, marinas and other applications, which involve full or partial submergence in water for prolonged periods of time.

Is EPS & XPS durable?
Yes. Because EPS & XPS is an inert organic material, it will not rot and is highly resistant to mildew. It also provides no nutritive value to ants, termites and rodents.
To prevent damage to EPS & XPS by pests and insects seeking to gain access to the other materials in building =s which provide a food source, EPS may be coated with a thin cement slurry.

Does EPS & XPS contain CFC"s?
No. EPS & XPS are both chlorofluorocarbon (CFC) and Hydrochlorofluorocarbon (HCFC) free.

Does EPS & XPS burn?
Because EPS & XPS boards contain a fire retardant additive, they do not present an undue fire hazard when correctly installed. Like timber, particle-board and other organic building materials, EPS & XPS will burn when in contact with a flame. Due to the presence of the fire retardant additive, this flame will self extinguish almost immediately after the fire source is removed.

Does EPS & XPS give off toxic fumes?
The level of toxicity of EPS & XPS in a fire situation is no greater than that of timber and other commonly used building materials: the same toxic gas, carbon monoxide, is produced. Also produced are carbon dioxide and soot (carbon). There is no emission of such gases as hydrogen cyanide or hydrogen chloride.

Physical Property	Unit	CLASS						Test Method
		"L"	"SL"	"S"	"M"	"H"	"VH"	
Nominal Densities of Rigid Cellular Polystyrene –guide only	kg/m^3	11	13.5	16	19	24	28	AS 1366.3
Compressive stress at 10 percent deformation (min)	kPA	50	70	85	105	135	165	AS 2498.3
Cross-breaking strength (min)	kPA	95	135	165	200	260	320	AS 2498.4
Rate of water vapour transmission (max.) measured parallel to rise at 23°C	$\mu g/m^2 s$	710	630	580	520	460	400	AS2498.5
Dimensional stability of length, width, thickness (max.) at 70 °C, dry condition seven days	percent	1	1	1	1	1	1	AS 2498.6
Thermal resistance (min.) at a mean temperature of 25 °C	$M^2.K/W$	1	1.13	1.17	1.20	1.25	1.28	AS 2464.5 or AS 2464.6
Flame propagation characteristics: median flame duration (max.) eighth value (max.) median volume retained eighth value (min.)	s s percent percent	2 3 15 12	2 3 18 15	2 3 22 19	2 3 30 27	2 3 40 37	2 3 50 47	AS 2122.1

COMPARATIVE TESTING OF SOME MATERIALS TO AS 1530.3 - 1982

Material	Ignitability Index. (0-20)	Spread of Flame Index. (0-10)	Heat Evolved Index. (0-10)	Smoke Developed Index. (0-10)
EPS (I)	12	0	3	5
Softboard (ii)	16	9	7	3
Oregon (ii)	13	6	5	3
Blue Gum (ii)	11	0	3	2
Radiata Pine (iii)	14	8	9	3
Hardboard (iii)	14	7	9	5

Extensive research programs have been conducted overseas (iv) to determine if thermal decomposition products of EPS & XPS present a toxic hazard. The test results have revealed that these decomposition products are decidedly less harmful than those of burning wood and other conventional building materials. Gases released during combustion are predominantly carbon dioxide and, at much lower levels, carbon monoxide. A current CSIRO report (v) comments that the toxicity of the gases associated with the burning of EPS & XPS is no greater than that associated with timber.

(i) AWTA – Test report no:9-96156.
(ii) EBS Notes on science of building NSB-66.
(iii) Australian Standard 1530.3 – 1982. Table A1.
(iv) H.Hoffman and H.Oettal - Comparative toxicity of thermal decomposition products.
(v) P.R Nicholl & K.G Martin – Toxicity considerations of combustion products from cellular plastics.