

COMPARATIVE PROPERTIES

Comparative properties of extruded styrene structural foam to timber

PROPERTIES	STRUCTURAL FOAM	BEECH	DOUGLAS FIR
DENSITY g/cc	0.56	0.64	0.48
ELASTIC MODULUS MPa	2430	11900	13400
RUPTURAL MODULUS MPa	59.80	103.00	85.00
WORK TO MAXIMUM LOAD KJ/M3	101	104	68
TENSILE STRENGTH MPa	30.00	7.00	2.30
COMPRESSION STRENGTH MPa	56.70	24.50	49.90
COMPRESSION STRESS AT PROPORTIONAL LIMIT (perpendicular to grain) MPa	20.70	3.70	5.50
IMPACT HEIGHT TO CAUSE FAILURE (22.7kg tup dropped on 2" x 2" and 28" span) M	0.70	1.04	0.79

DATA SHEET

1. IDENTIFICATION OF SUBSTANCE/PREPARATION AND COMPANY

PRODUCT NAME: Synthetic Wood
PRODUCT TYPE: Polystyrene Foam
SUPPLIER: Highwood Consultants Limited.

2. COMPOSITION/INGREDIENTS

Substance Styrene homopolymer - CAS NO. 9003-53-6
Talc - CAS no. 14807-96-6
Impact Modifier - Polystyrene component CAS No. 9003-53-6 -
Rubber component CAS No. 25038-36-2
EPS - CAS No. 9003-53-6 Polystyrene CAS No. 109-66-0 Pentane
UV Stabilisers - CAS no. 2440-2-4 - CAS No. 52829-07-9 - CAS No.
2082-79-3

3. HAZARDS IDENTIFICATION

Human health hazards: Not classified as dangerous under EC criteria
Safety hazards: Not classified as dangerous under EC criteria
Environmental hazards: Not classified as dangerous under EC criteria

4. FIRST AID MEASURES

- Inhalation: No specific measures
- Eye: Flush eye with water
- Ingestion: No specific measures

5. FIRE FIGHTING MEASURES

Specific hazards: Carbon monoxide may be evolved if incomplete combustion occurs.

Extinguishing media: Foam, water spray or fog. Dry chemical powder, carbon dioxide, sand or earth may be used for small fires only.

Unsuitable extinguishing media: Water in a jet

Protective equipment: Full protective clothing and self-contained breathing apparatus.

6. HANDLING AND STORAGE

Handling:

- Avoid contact with heated or molten product.
- Do not breath dust or fumes or vapours from heated product.
- Avoid generation or accumulation of dusts
- Take precautionary measures against static discharges
- Earth all equipment

Storage:

- Must be stored internally
- Storage temperatures: Ambient
- Product transfer: No special measures

7. EXPOSURE CONTROLS/PERSONAL PROTECTION

Occupational exposure limit: No special requirements

Respiratory protection: Not normally required. If risk of dust inhalation wear general purpose dust respirator

- Hand protection: No special requirements
- Eye protection: Goggles: when cutting or working material
- Body protection: Standard issue work clothes and safety shoes.

8. PHYSICAL AND CHEMICAL PROPERTIES

- Physical state: Solid
- Colour: Various to suit requirements
- Odour: Odourless
- Density: Circa 0.5 to 0.65
- Softening point: 91oC ISO 306
- Flash point: > 250oC
- Solubility in water: Insoluble

9. STABILITY/REACTIVITY

- Stability: Stable
- Conditions to avoid: None known
- Hazardous decomposition products: None known

10. TOXICOLOGICAL INFORMATION

Basis of assessment: Information given is based on knowledge of the constituents and the toxicology of similar substances.

- Acute toxicity - oral: LD50:> 2000 mg/kg
- Acute toxicity - dermal LD50: >2000 mg/kg
- Eye Irritation: Not irritating
- Skin Irritation: Not irritating
- Skin Sensitisation: Not a skin sensitiser

11. ECOLOGICAL INFORMATION

Basis for assessment: Information given is based on knowledge of the constituents and the ecotoxicology of similar substances.

- Mobility: Floats in water
- Persistence/degradability: Not readily biodegradable
- Bioaccumulation: Does not bio accumulate
- Ecotoxicity: Not toxic at the limit of water solubility
- Sewage treatment: Not toxic at the limit of water solubility

12. DISPOSAL CONSIDERATIONS

Product disposal: Recover or recycle if possible. Otherwise incineration

Local legislation: Not classified as chemical waste

13. TRANSPORT INFORMATION

Not dangerous for conveyance under UN, IMO, ADR/RID AND IATA/ICAO codes.

This information is based on our current knowledge and is intended to describe the product for the purpose of health, safety and environmental requirements only. It should not therefore be construed as guaranteeing any specific property of the product.

TECHNICAL INFORMATION

Mechanical properties of extruded styrene structural foam

PROPERTIES	TEST METHOD	RESULTS	NOTES
Tensile strength MPa	ISO 527	30.0	
Elongation at break %	ISO 527	2.5	
Modulus of Rupture MPa	BS373	59.8	3 point bending
Modulus of elasticity MPa	BS 373	2430.0	
Stress at proportional limit MPa	BS 373	50.5	
Compression strength parallel to grain MPa	BS 373	56.7	
Compression strength perpendicular to grain MPa	BS 373	20.7	
Screw retention kN	BS 6984	2.5	1.5 inch No.6 screw 22mm depth
Nail retention kN	BS 6948	0.88	2.5 x 38mm wir nail, 22mm depth
Impact strength KJ/m ²	BS 373	0.85	3 point bending
Impact height M	BS 373 BS 373	0.66 0.38	For 20 x 20, span 280mm, tup 3.3 lb For 24 x 28, span 280mm, tup 4.4kg
Water absorption %	ISO 82	0.14	40 x 40 x 7.5
Coefficient of thermal expansion 1/C	DIN 62-53491	5 x 10 - 5	40 x 40 x 7.5
Toxic Gas Factor (only 2 detected from 8 tested)	SNES 714C02, CO, HC1, HCN H2SSO2, NOX, Ammonia	0.7, 2.6	Carbon dioxide Carbon monoxide 0 - 3 low toxicity
Classification of flame spread	BS 476	Class 1	Not standard product and only available by special order
UV stability	ASTM E383-B	Good	No change in mechanical strength 375MJ/m ²
Viscat softening point	ISO 306	91oC	
Density g/cc		0.56	