

## JB TB 650 Epoxy Tooling Board

### Application

- Master models
- Automotive die models
- Vacuum forming at intermediate temperatures
- Lay-up tools for low and medium temperature curing.
- Prepreg.

### Properties

- Excellent surface finish
- Excellent dimensional stability
- Good coefficient of thermal expansion
- High glass transition temperature

### Description

JBB TB 650 is an intermediate temperature epoxy modelling material, recommended for tooling use up to 120°C

### Physical Data

Property	Unit	Value	Test method
Colour	Visual	Light Green	
Hardness	Shore D	65	ASTM D-2240
Density	g/cm <sup>3</sup>	0.68	BS EN ISO 1183-3 1999
Glass transition Temperatures	°C	117	CRP TP-T002
Coefficient of Thermal Expansion	mm/mm/°C	38 x 10 <sup>-6</sup>	BS 4618 3.1
Tensile Strength	MPa	31.4	BS EN ISO 527
Young's Modulus	MPa	1,116	BS EN ISO 527
Flexural Strength	MPa	41.7	BS EN ISO 178
Flexural Modulus	MPa	1,816	BS EN ISO 178
Uniaxial Compressive Strength	MPa	45.5	BS EN ISO 604
Uniaxial Compressive Modulus	MPa	1,490	BS EN ISO 604
Shear strength	MPa	24.2	BS 2782 340A
Hydrostatic Crush Pressure	bar	760	ASTM D2736
Bulk Modulus	MPa	4,551	ASTM D2926
Thermal Conductivity	W/mK	0.127	ASTM C518
HDT	°C	111	BS 2782
Izod Impact - Unnotched	KJ/m <sup>2</sup>	9.8	BS EN ISO 187

### Machining Information

Roughing Speed	1,600 rpm
Roughing Feed	17 mm/s
Cutters	24 mm Ball End Mill, 2-Flute, High Speed Steel (Minimum of 8% Cobalt suggested)
Depth	6mm to 50mm deep with a 40% step over

Finish speed	10,000 rpm
Finishing Feed	42 mm/s
Cutters	16mm Ball End Mill, 4-Flute, Carbide
Depth	3mm deep leaving 0.05 mm scallop

\* A continuous air-blast is recommended during the cutting process to assist in cooling and evacuation of waste chips.

### Bonding

Precautions should be taken when selecting an adhesive for bonding tooling board. When selecting an adhesive, choose a product with a gel time that is long enough to provide time to mix the required amount of adhesive and to spread it onto the surfaces that will be bonded.

Boards should be wet out on both sides of the stack. Boards should be held in position by light clamping or placing a weighted object over the entire top surface of the stack to ensure equal pressure throughout the board.

Over-clamping will cause the adhesive to spread unevenly, which may result in stress build up in the board and lead to stress micro cracking and/or warping. Always use an adhesive that is capable of meeting the mechanical properties of the board.

Precautions should be taken when post curing to ensure that the temperature is ramped up and down slowly. This will prevent thermal shock from occurring to the board and the adhesive, which will result in a poor bond and stress cracking in the board.

### Handling & Storage

Handling: Keep away from heat, sparks and open flame. During use, dust will be emitted. Ventilate well. Avoid breathing dust. Avoid skin and eye contact. Use approved respirator if air contamination is above accepted level. Wear full protective clothing for prolonged exposure and/or high concentrations.

Storage: No special requirements necessary

### Disposal Consideration

Product: Must be disposed of in a special waste disposal unit in accordance with the corresponding regulations.

Packaging: Completely emptied packaging can be given for recycling. Packaging that cannot be cleaned should be disposed of as product waste.

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