FREEMAN

Technical Data Sheet

Freeman T-5040 High Temperature Epoxy Board

Description

The Freeman T-5040 is a high-temperature epoxy tooling board that offers a very fine surface structure, good dimensional stability, and excellent heat resistance. The ability of the T-5040 to withstand temperatures as high as 302ºF once properly post cured make this board a good choice for high temperature laminate and prepreg tools.

Physical Properties

Color	Blue
Hardness (Shore D)	69
Density (g/cc)	0.66
Density (lb./ft.^{3})	41.2
Compression Strength (psi)	9,427
Flexural Strength (psi)	5,511
Flexural Modulus (psi)	348,091
Deflection Temperature (°F)	302*
Coefficient Thermal Expansion (in/in/°F)	18.8 x 10^{-6}

***Post-cure of parts on Freeman T-5040 tools**: The temperature differential (delta T) between the center of the tool and the external surface must never exceed 50°F on either ramp up or cool down. To achieve this, a temperature soak of 6 hours every 50°F up and down in the oven and temperature ramp rates of no more than 1°F/min are recommended, but if the temperature differential would exceed 50°F then these parameters need to be adjusted until it does not. Leave the tool in the oven for at least 6 hours below 100°F before opening the doors and exposing the tool to room temperature conditions.

Preparation of board surface for bonding

Prior to bonding, all surfaces should be sanded using 80 grit sandpaper or coarser. The surfaces to be glued must be clean, dry, and dust free, which may be achieved using either compressed air or vacuum. The surfaces to be bonded must also be cleaned with suitable solvents to ensure they are free of oil and/or dirt residue. Suitable solvents for cleaning will be any materials that evaporate quickly, such as acetone or isopropanol, as they will minimize the risk of affecting adhesive power.

Bonding and Machining

Once material is cleaned, it may be bonded. It is recommended to use Fre-Weld 5060 for bonding, applying adhesive to both surfaces. Secure material with sufficient clamps or presses and allow to cure for (24) hours at room temperature. It is recommended to run the tool through intended application cure (see cure schedule above) prior to machining to desired dimensions.