FIBERLINK INC.

TECHNICAL DATA SHEET "NI-CORE" HIGH TEMPERATURE FOAM

General Description

FIBERLINK "NI-CORE" High Temperature Foam FC Series is a closed-cell rigid foam which does not contain any CFCs. This series has a fine and unique cell size that is 0.3 – 0.5 mm.

The processing parameter is up to temperature of 150°C and maximum pressure up to 0.5 MPa. Structural components can be manufactured by the following cure methods: Autoclave, Vacuum bagging, RTM, VARTM, VARI , HP-RTM and others. The FC Series can be easily shaped by thermo-forming, bond by adhesive, and suitable for CNC cutting.

The FC Series has wide range of applications. It is suitable for sandwich structure composites parts in medical, automotive, and various industrial fields.

Packaging

All sheets will be pre-dried or heat treated before packing and delivery. The sheets are tightly sealed in a bubble film, and then in a plastic sealing bag or an aluminum foil bag, whichever requested by the customer. Both bags are suitable to protect the sheets against moisture and other surface contaminants. The bags are then placed into a palletized crate.

Drying & Moisture Management

The FC Series will absorb moisture from the air, if it is not placed in the completely sealed moisture-proof aluminum bags. As a result of moisture uptake, the compression creep resistance will be mainly reduced. Thus, under a certain temperature and pressure (in autoclave, RTM or mold-pressing), the dimension stability of foam will be affected. It is therefore recommended that the FC series is dried before using, which can eliminate the generation of steam during processing and will improve its creep behavior.

The sheets should be dried at a minimum of 3 hours at 130°C (2-3°C/min) by using a heating cabinet with air circulation. During this drying process, the distance between each panel shall be at least 35mm. All precautions regarding placement and accurate temperature control shall be strictly maintained. It is necessary to prolong the drying duration when the sheet thickness is more than 25.4mm.

Heat Treatment

For processing with temperatures up to 180°C, a heat treating process prior to processing the FC Series is required, which can greatly improve its compression creep resistance. Firstly, sheets must be dried at a minimum of 4 hours at 135°C by using a heating cabinet with air circulation. Immediately after the first step, the sheets must undergo heat treating at a temperature of between 150°C to 180°C, for 48 hours. The net-shaped cores should only be machined after the high temperature heat treatment, since the high temperature heat treatment at 190°C will damage the surface of the material and the dimensional accuracy of the material will change during the drying process.

Properties	Testing Method	FC Series			
		32 kg/m^3	52 kg/m^3	75 kg/m^3	110 kg/m^3
Density (kg/m^3)	ASTM D1622	32	52	75	110
Compressive Strength (MPa)	ASTM D1621	0.4	0.9	1.5	3
Tensile Strength (MPa)	ASTM D638	1	1.9	2.8	3.5
Shear Strength (MPa)	ASTM C273	0.4	0.8	1.3	2.4
Compressive Modulus (MPa)	ASTM D1621	28	54	72	120
Tensile Modulus (MPa)	ASTM D638	35	68	90	150
Shear Modulus (MPa)	ASTM C273	12	20	23	50
Elongation at Break (%)	ASTM D638	≥ 2	≥ 2	≥ 2	≥ 2
Heat Distortion (^{o}C / F)	DIN 53424	180 / 356	180 / 356	180 / 356	180 / 356
Cell Size (mm)		0.3 – 0.5	0.3 – 0.5	0.3 – 0.5	0.3 – 0.5
Dimension Ranges					
Sheet Size (mm)		1250 x 2500	1250 x 2500	1250 x 2500	1000 x 2200
Thickness (mm)		1 – 110	1 – 110	1 – 80	1 - 70

Disclaimer of Liability

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