



# BX180-220

## Benzoxazine Tooling Prepreg

### Introduction

BX180-220 Benzoxazine Tooling Prepreg is designed for high temperature large aerospace tooling applications where temperature stability, long outlife and tool durability are key. It can be supplied on a variety of fabrics to meet your cost and manufacturing requirements.

*Typical applications: High temperature aerospace tooling*

### Key Features & Benefits

- Cure temperature **360°F**
- Service temperature to **390°F** after postcure
- Low CTE and shrinkage
- Work life at 70°F: **1 year**
- Store at ambient temperatures
- Excellent handleability in warmer conditions – low tack
- No health and safety concerns

### Storage & Out Life

This material should be stored at ambient temperatures in a cool, dry place. It must be kept sealed in a polythene bag which must not be opened until ready for use.



## Cure Cycles & performances

Recommended cure cycle 2 hours at 320°F followed by 2 hours at 360°F under 6 bar autoclave pressure.

If required for T<sub>g</sub>, a free standing postcure of 2 hours at 390°F can be carried out.

- Curing Schedule is meant to be a guide only and is subject to local conditions.
- To avoid exotherm particular care must be taken with thick laminates.  
 Ramp rates must not exceed **2°F** per minute during **initial cure**.  
 Ramp rates must not exceed **1°F** per minute during **post cure** (free standing).

## Cured Material Properties

<b>Mechanical Properties</b>	
Flexural modulus, MPa	4,513
Flexural strength, MPa	105
Ultimate elongation, %	2.1
Tensile modulus, MPa	4,477
Tensile strength, MPa	46
Ultimate elongation, %	1.0
Toughness test <sup>4</sup>	
K <sub>1c</sub> , MPa√m	0.57
G <sub>1c</sub> j/m <sup>2</sup>	82

<b>Thermal Properties</b>		
T <sub>g</sub> by DSC, °F	405	
T <sub>g</sub> by DMA, °F	E'	385
	E''	420
	Tan Delta	440
Water absorption 48 h in boiling water, %	1.16	
T <sub>g</sub> by DMA In water 48h/210°F	E'	325
	E''	375
	Tan Delta	415
After free standing post cure at 390°F for 2h		
T <sub>g</sub> by DSC, °F	435	
T <sub>g</sub> by DMA, °F	E'	445
	E''	465
	Tan Delta	480
Water absorption 48 h in boiling water, %	1.3	
T <sub>g</sub> by DMA In water 48h/210°F	E'	385
	E''	420
	Tan Delta	460

NB – based on supplier's data

SHD COMPOSITE MATERIALS INC  
203 McKenzie Road  
 Mooresville  
NC 28117

www.shdcomposites.com  
Tel: +1 (704) 6266876  
us-sales@shdcomposites.com



## Viscosity Profile

Contact SHD for additional data.

## Health and Safety

This material contains benzoxazine resin which can cause allergic reactions with skin contact and must avoid repeated and prolonged skin contact.

Please refer to the product Safety Data Sheet before using this material. The following precautions must be taken when using benzoxazine resin prepregs:

- Overalls must be worn.
- Impervious gloves must be worn.
- Curing schedule is meant to be as a guide only and is subject to local conditions.
- To avoid exotherm, particular care must be taken with thick laminates.
- Ramp rates must not exceed 2°F/min during initial cure and 1°F/min during post cure.

**Disclaimer:** Technical advice, instruction, data or recommendation, whether verbal or in writing, is given in good faith. The SHD company providing any such advice gives no warranty or guarantee, whether express or implied, in relation to such advice.

Customers must carry out their own tests and assessments as necessary in order to determine the quality and suitability of the product for their particular application and circumstances. Such testing should be performed under conditions identical to those to which the final component/product may be subjected. Values listed in any SHD document are for typical properties of the product or substance in question and are not intended to be used in establishing either statistical specifications nor engineering basis values. They do not constitute either minimum or maximum values for the product or substance in question.