

### INTRODUCTION

Phthalonitrile resins are **advanced thermosetting materials** renowned for their unprecedented **thermal stability**, **high glass transition temperature**, **flame retardancy**, and **superior mechanical strength**. These unique properties make them ideal for demanding **high-temperature applications** in industries such as aerospace, defense, marine, automotive, and electronics, where **performance** and **reliability** under **extreme conditions** are critical.

**SP-3414\_A** is a **mono-component phthalonitrile resin** specifically tailored for use in processes like **vacuum infusion** and **RTM** (Resin Transfer Molding).



### KEY FEATURES

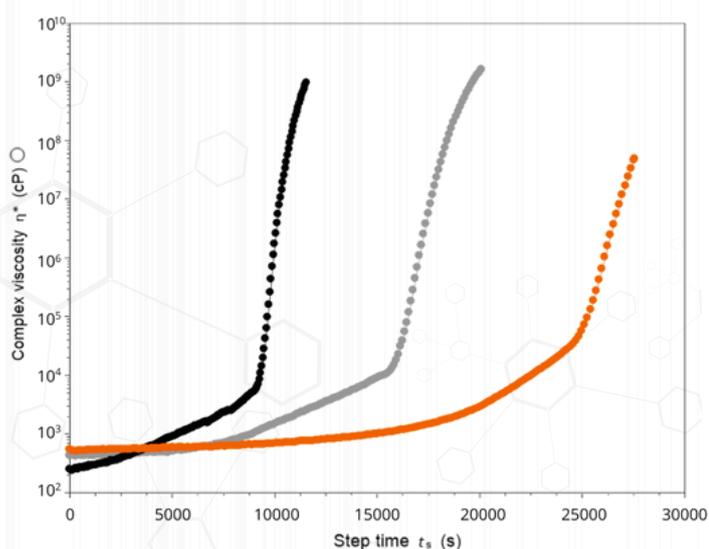
1. One-part crystalline-free system with indefinite shelf life at room temperature
2. Epoxy-like processability
3. Safety - Low reaction enthalpy
4. Non-combustible or self-extinguishing material with high char yield formation
5. Decomposition temperature onset > 490 °C



### NEAT RESIN CHARACTERISTICS

	CHARACTERISTICS	DATA
C u r e d	T $\alpha$ (dry) (DMA - 3 Points Bending)	340 – 360 °C
	T $\alpha$ (wet) (DMA - 3 Points Bending)	310 – 330 °C
	Decomposition temperature (Td5%)	490 – 495 °C
	Char yield (at 900 °C) (TGA – under nitrogen)	71 %
	Moisture absorption (15 days at 70 °C in water)	4.3 – 4.6 %
	Density	1.27 – 1.29 g/cm <sup>3</sup>
U n c u r e d	Dry extract	100 %
	Density at 25 °C	1.1 – 1.15 g/cm <sup>3</sup>
	Polymerization onset	250-270 °C
	Polymerization enthalpy	190-250 J/g

### VISCOSITY PROFILES AND DATA



TEMPERATURE	INITIAL MIX VISCOSITY	GEL TIME	POT LIFE
130°C	370 CP	> 7h30	4h
140°C	200 CP	5h30	2h30
150°C	120 cP	3h	1h

### PROCESSING PARAMETERS

It is advised to degas the formulation before use at 110 °C and 10 mbar for 30 min. The formulation can be cured according to the following cycle:

1. Increase the temperature from injection temperature to 280 °C at a rate of 1 °C/min
2. Dwell at 280°C for 2 hours
3. Before removing the part, cool the mold to at least 60°C at a speed of no more than 5 °C/min.

Post-cure can be performed without tooling. The recommended curing cycle is 3 h at 320 °C.

