

Technirez® FR-001, FR-001LV

Phosphonate Ester Flame Retardant

Description:

Technirez® FR-001 and Technirez® FR-001LV are high phosphorous containing, oligomeric phosphonate flame retardants that can be used in a variety of applications requiring the highest standard of flame resistance. Technirez® FR-001LV is a lower viscosity version of Technirez® FR-001, making it easier to compound in liquid systems without increasing viscosity and without sacrificing flame resistance. Both can be used at loading levels below those of other organophosphorous containing flame retardants. They can be used to replace or in combination with other flame retardants such as brominated epoxy resins. Both are useful in thermoset and thermoplastic resins based formulations. Properly formulated systems containing FR-001 will pass FAR25.853 a b (OSU 65/65/200) flame and smoke specifications as well as UL94-0 flame specification.

Advantages:

- Low volatility content
- Good flame retardant efficiency
- Excellent thermal stability
- High phosphorous content

Typical Applications:

- Aircraft interior parts
- Electrical potting and encapsulation
- Printed circuit board

Handling Precautions:

Refer to the product Safety Data Sheet

Typical Properties:

Appearance: Clear to off-white liquid
FR-001 Viscosity (@25°C): 645,000 cPs
FR-001LV Viscosity (@25°C): 17,000 cPs
 Active concentration: 100%
 Phosphorous content: 21.5%
 Acid number: <2 mg KOH/g
 Specific gravity @ 25°C: 1.3
 Flash point (closed cup): 146°C

Typical Formulations (by wt.):

Liquid epoxy resin (EEW: 190)	100	100
Technicure® D-10 ¹	8	0
Technicure® TDU-200M ²	2	0
Resicure™ EMI-24 ¹	0	6
Technirez® FR-001	18.3	20
Phosphorous content	3%	3.3%

UL 94 V-0 (3mm)	Passed	Passed
Total burning time (sec.) (10 flame applications)	25	23

Reactivity by DSC³		
Onset Temp., °C	134	137
Peak Temp., °C	165	147
Heat of reaction, -J/gm	219	101

Glass Transition Temp., °C	127 ⁴	137 ⁵
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1. Curing agent - Product of ACCI Specialty Materials
2. Accelerator - Product of ACCI Specialty Materials
3. 10°C/min, scan rate
4. By DMA, 60 mins. at 140°C + 30 mins. at 150°C
5. By DMA, 90 mins. at 150°C

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