Phenolic Resin as Supersizer in Coated Abrasives

The Benefits of Supersizer in Coated Abrasives

Phenolic resins (are commonly-used bonding agents for standard and high quality coated abrasives. After drying and curing, they achieve an internal structure like wood, becoming water insoluble and “thermosetting”. Additionally, they have very high bonding strength.
The advantages of phenolic resins are:

- High strength and toughness
- Water insolubility and chemical resistance
- Temperature resistance
- Viscosity is easily adjustable by addition of water
- Good grain adhesion
- Limited shrinkage while drying
- Good compatibility with mineral fillers
- Easy handling in highly-engineered production lines

Supersizer refers to the application of an additional size coat that is purpose-designed for the substrate, with the aim of enhancing stock removal.

These substrates can vary from soft metals (aluminium, copper) to medium-hardness metals (mild steel) to hard metals (stainless steel).

Accordingly, the manufacturer of these specialized coated abrasives would design a supersizer fit for the following purposes:

- Anti-loading
- Cooling
- Corrosion
- Lubrication
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ASK Chemicals offers F-1231 as a premium phenolic resin for supersizers.

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Formulatory Guidelines

F-1231 is ideal for use in supersizer mixes for, but not limited to

- Fiber discs
- Belts
- Flap discs
- Flap wheels

F-1231 is best used in conjunction with about 60% of the following types of additives

- Halide-containing grinding aids
- Dehydrating fillers
- Anti-block agents
- Anti-static agents
- Lubricants
- Free-radical scavengers

Phenolic Resins for Supersizer

ASK Chemicals offers F-1231 in two variants as depicted in the following table. F-1231 can be used where a heated bath is utilized, whereas F-1231LV is suitable for lower viscosity mixes.

Grade	Viscosity (cP)	Solids (%)	H_2O Tol. (%)
F-1231	3.000-4.000	75-79	60-200
F-1231LV	500-700	70-75	50-200

The storage life is three months at 10°C.

F-1231 Characteristics

F-1231 is a water-based phenolic resol resin with excellent compatibility with a range of corrosive, antiloading and cooling additives, leading to stable mixes without any air entrapment.

Typical Formulations

Cooling supersizer for mild steel

F-1231LV	40
Water	10
Pigment dye	2
Cryolite	5
Aluminium trihydrate	43
Zinc stearate	10

Corrosive supersizer for stainless steel

F-1231LV	40
Water	10
Pigment dye	2
KBF_4	48
Zinc stearate	10

Application Recommendations

After partial post-curing of the size coat, and optional flexing, the supersizer is applied.

The wet coating is normally applied at a thickness of approximately 260 – 320 g/m2 over the grit size range of P100 to P30.

Curing Schedule

The supersize coating is cured by employing the following oven program:

Temperature	Time
90°C	18 minutes
95°C	36 minutes
100°C	18 minutes
105°C	18 minutes

Post-curing is achieved by curing for six hours at 120°C.

What this means for you

Supersizer has proven in independent testing to improve stock removal by up to 100%. Therefore, F-1231 resin will enhance the value of high-performance coated abrasives.

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