



Liquid Phenolic Resin for Friction Mixes

SG-3100C: Improving Workplace Conditions Through Dust-Free Compounding

The SG-3100C is a new dust-free solution for compounding friction mixes that are used in the manufacture of disc brake pads and drum linings. This one, universal liquid resin may be used for either partial or full replacement of powdered resins. Airborne dust in the workplace is detrimental in many ways. Therefore, it is recommended to avoid or reduce dust originating from the mixing process to the absolute minimum. A build-up of dust on surfaces also poses a dust explosion hazard in the presence of a static electricity discharge.

Reducing Dust Using Liquid Phenolic Resin

ASK Chemicals' liquid phenolic resin, SG-3100C, reduces dust in the workplace without interfering with the quality of the friction material. SG-3100C is also indicated for nonasbestos formulations, preventing dust generated by the fiber mix that is used as an asbestos replacement.

SG-3100C Liquid Resin Characteristics

Viscosity 20°C (cP)	Solids (%)	H ₂ O Tol. (%)	Cure 160°C (sec)
60-95	53-59	200-550	90-120

Formulatory Guidelines

For partial replacement, substitute 30% of the powder resin (by solids content) in the friction formulation.

For full replacement, substitute 100% of the powder resin (by solids content) in the friction formulation.

Mixing

In both cases, use a standard cylindrical plow and chopper mixer, such as a Henschel, Lödige, Eirich or Littleford Ploughshare mixer. The liquid resin is added either under pressure through an injector near the chopper, or alternatively without pressure through a tube at the top of the mixer.

Pressing and Oven Curing

In the case of partial replacement, use the normal method of hot pressing, which may or may not include the use of cold pressed preforms. Pressing is followed by the standard oven curing cycle. In the case of full replacement, cold pressing is advised using high pressure. The oven curing schedule also needs to be revised to include an additional holding step at 80-90°C for 1 hour to facilitate degassing and prevent cracking or blisters during heating.

Sample Formulations

The following sample formulations are indicative only, and have not been adapted for commercial production:

Low-metallic Disc Brake Pad for Light Vehicle

Phenolic Resin Powder and Liquid	Kg
Steel Wool	12
Wollastonite	21
Mineral fibers	12
Calcium carbonate	30
Graphite coarse synthetic	4
Friction dust	5
Barium sulphate	10
Phenolic resin powder	4.2
Phenolic resin liquid	3.2

Low-metallic Disc Brake Pad for Light Vehicle

Phenolic Resin Powder and Liquid	Kg
Steel Wool	12
Wollastonite	21
Mineral fibers	12
Calcium carbonate	30
Graphite coarse synthetic	4
Friction dust	5
Barium sulphate	10
Phenolic resin liquid	10.7

Recommendations

It is permissible for some material from a previous batch to contaminate a subsequent batch if the batches are of the same type of compound. Otherwise, absolute cleanliness is recommended. The encrustation of material onto the mixer wall must be avoided. Periodic cleaning is needed.



In cold pressing, if a problem is experienced with the structural integrity of moulded discs, a moulding aid such as cellulose fibers can be incorporated into the formulation.

What this means for you

ASK Chemicals' SG-3100C liquid phenolic resin for friction mixes eliminates dust in the production area, providing a safer and healthier working environment. Contact your local sales representative to learn more.