AMERICAN COLLOID COMPANY

LOVOX®-107B RESIN

Lovox® - 107B is a uniquely formulated resin designed to react with specific polyisocyanate coreactants and amine catalysts. This distinct chemistry provides for similar binder performance characteristics as phenolic urethane systems without the negative qualities of phenol, formaldehyde, and aromatic solvents. The result is a core and mold binder system that offers comparable latent reactivity characteristics to that of conventional phenolic urethanes but with significantly reduced odor and hazardous emissions. Emission testing has shown a reduction in total HAP's of over 50% and VOC reductions of almost 60%. Although this is a three part urethane system, it may be used as a suitable replacement for any chemical binder system.

While the low VOC, HAP, and odor properties are significant benefits, the most attractive features of the Lovox® binder system are its casting performance. This novel approach to urethane resin chemistry provides superior thermal stability as compared to most other chemical binder systems. Reduction in, or elimination of veining defects without the use of powdered sand additives or core coatings has been demonstrated in numerous ferrous casting applications. In addition, the binder has been shown effective at eliminating certain types of gas defects. Shake-out properties, particularly in aluminum casting applications, are next to none. Reductions in shakeout time of over 80% have been demonstrated in some of the most difficult castings.

Application

Lovox® - 107B resin can be used in most any no-bake operation. The two part resin system reacts with a third part liquid amine catalyst. Recommended binder levels are 1.0% to 1.5% based on sand weight. The Part 2 resin is an isocyanate formulated to optimize the performance characteristics of the Part 1.The ratio of Part 1 to Part 2 resins is typically 40:60. With the elimination of the phenol, formaldehyde, and aromatic hydrocarbons, resin reactivity is slightly lower than that of a standard phenolic urethane system, but the latent reaction properties typically yield a work time/strip time ratio of around 0.60 – 0.65:1. Catalyst levels will run from 5 to 15% based on Part 1 weight.

The total binder required depends on the type of sand, grain fineness, LOI value, and required core and mold strength. In general, sand additives are not required with Lovox® resins, so no consideration needs to be made for these. Catalyst type and addition level can be adjusted depending on sand conditions and productivity needs. Lovox® can be used in reclaimed sand and is particularly well suited for thermal reclamation systems. It should be noted that Lovox® is a base cured resin, and its performance will be impacted if used in acid cured mechanically reclaimed sands.

Sand mixing may be accomplished in either continuous or batch type mixers. It is generally recommended that the no-bake resins be mixed in continuous mixers due to the potentially rapid reaction rate of these systems. The mixed sand is flowable, but some means of mechanical compaction is recommended to insure that maximum sand density is attained. Sand temperature control is recommended since temperature has a direct effect on resin curing rates. It is also recommended that in cold ambient conditions pattern equipment be heated. Sand moisture levels should be held below 0.20% to insure maximum curing performance.

Product Features

The Lovox® - 107B binder system provides the following performance features:

- Excellent thermal properties yield superior veining resistance w/o use of sand additives.
- In certain applications, core washes may be eliminated.
- Reduces or eliminates certain types of gas defects.
- Superior shake-out properties in all cast metals.
- Zero phenol, zero formaldehyde, zero AHC resins provides significant reduction in VOC and HAPs.
- Phenol formaldehyde free chemistry virtually eliminates odor at mixing station.
- Excellent reclaimability.
- Thermal decomposition properties lead to less resin returned to green sand systems.
- May be used with most sand types.
- Part 1 resin may be cleaned up with water.

Physical Properties

Physical State	Liquid
Color	Black
Specific Gravity	1.19
Viscosity	150 - 250 cps
Usable Temp. Range	60 – 90° F

Storage and Handling

Lovox® – 107B resin should be stored in a dry environment in a temperature range of 60 – 90° F. When exposed to temperatures above this range the resin stability may be compromised. Temperatures below this range may increase resin viscosity thus reducing pumpability and mixer efficiency. It is recommended that opened containers be equipped with a desiccant cartridge to protect it from ambient humidity.

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