

## Torlon® AI-10 LS polyamide-imide

Torlon® AI-10 LS is a polyamide-imide (PAI) powder developed for the performance coatings industry. It is similar to Torlon® AI-10 in that it is produced using the same monomers and polymerization system. However, the manufacturing process has been optimized to reduce the amount of residual methylene dianiline (MDA) monomer to below the 1000 ppm action level specified in various hazard communication regulations and the residual N-methylpyrrolidone (NMP) is less than 1.5%.

Torlon® AI-10 LS can be substituted for Torlon® AI-10, without any changes in formulation or process. Coatings based on the Torlon® AI-10 or AI-10 LS polymer yield durable, abrasion resistant, thermally stable films. The resin has superior resistance to organic solvents and a wide array of other commercial and industrial chemicals.

### General

Material Status	• Commercial: Active	
Availability	• Africa & Middle East • Asia Pacific • Europe	• Latin America • North America
Features	• Abrasion Resistant • Chemical Resistant • Flame Retardant	• Good Adhesion • High Heat Resistance • Water Soluble
Uses	• Binder	• Coating Applications
RoHS Compliance	• RoHS Compliant	
Forms	• Powder	
Processing Method	• Coating	• Solution Processing

### Physical

#### Typical Value Unit

Acid Number	82.00 mg KOH/g
Solids Content	92 %
Viscosity <sup>1</sup> (23°C)	850 mPa·s

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## polyamide-imide

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### Additional Information

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#### Solubility

Torlon® AI-10 LS resin is supplied as a powder that is readily dissolved in N-methyl pyrrolidone (NMP) and other aprotic solvents. Other organic solvents may be used as diluents to reduce viscosity at lower cost. N-methyl pyrrolidone is hydrophilic, and as such, retains considerable amounts of water. Adding non-polar diluents may be appropriate to aid in the application process and to prevent potential formulation and shelf stability issues.

#### Pigments and Additives

Pigments and additives can be used with Torlon® AI-10 LS polymer to produce special purpose coating and adhesive formulations. Suitable additives include heat-stable organic and inorganic pigments, fillers and certain epoxy and fluoropolymer copolymers. Due to the inherent color of Torlon® AI-10 LS polymer, care must be taken if white or very pale shades are to be successfully formulated. To prevent the absorption of unwanted moisture, all pigments should be ground in closed milling equipment. Likewise, hygroscopic additives, such as fibers and copolymers, should be dried to appropriate moisture levels prior to being incorporated into the formulation.

#### Application

Depending on the aesthetic and performance characteristics required, uniform coatings can be applied by spray, roll, spin or curtain techniques. Usually, dry film thicknesses from 10–20 µm are readily achieved in a single coating pass, with multicoat systems affording the opportunity for additional surface build. Regardless of the method employed, it is essential to assure appropriate preparation of the substrate prior to application of coating. Once complete, application equipment should be purged of coating and cleaned with a true solvent.

#### Drying/Curing

Coatings based upon Torlon® AI-10 LS resin dry and initiate cure at temperatures as low as 150°C (300°F). However, optimal film properties result after heating for 5 to 20 minutes, depending on the film thickness and the formulation, at 250°C (480°F). In the case of multi-coat systems, an intermediate temperature step at around 200°C (390°F) for 10 minutes may be advisable. For coating formulations employing low solids, a brief flash off period of about 3 to 10 minutes may be recommended prior to initiating cure.

### Notes

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Typical properties: these are not to be construed as specifications.

<sup>1</sup> 25% in NMP

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