

Torlon® AI-10 polyamide-imide

Torlon® AI-10 is a polyamideimide (PAI) powder developed for the performance coatings industry. As a liquid polymer solution, the resin is incorporated into the formulation of engineered coatings; often as the principal primer, binder, or high temperature adhesive component. As a powder, the resin is used in specialty composites and unique dry spray applications.

Coatings based on the Torlon® AI-10 polymer yield durable, abrasion resistant, thermally stable films that do not exhibit unwanted thermoplastic properties. The resin has superior resistance to organic solvents and a wide array of other commercial and industrial chemicals. Outstanding tribological characteristics are afforded both by the resin as well as its unparalleled intra-coat adhesion to fluoropolymers. Coatings based on AI-10 polymer have been shown to be cost effective in electrical/electronic, high temperature decorative and corrosion preventative applications.

Magnet wire insulation and protective coatings for printed circuit boards are some of the electrical

uses. Industrial applications include primers and decorative topcoats for cookware, appliances and housewares. AI-10 polymer has been combined with fluoropolymers to produce high-performance, low-friction, corrosion-resistant coatings that provide protection to saw blades, gears, carburetor needles and lawn and garden tools. Torlon AI-10 is also used for high-strength, high-temperature adhesives. Excellent bond strengths have been observed with stainless steel, aluminum and titanium alloys and polyimide films.

A special grade (called AI-10 LM) has been developed to reduce the amount of residual methylene dianiline (MDA) monomer to below the 1000ppm level specified in hazard communication regulations.

A water soluble analog of AI-10 (called Torlon® AI-30) is also available.

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
Uses	• Adhesives • Binder	• Coating Applications
RoHS Compliance	• RoHS Compliant	
Forms	• Powder	
Processing Method	• Coating	• Solution Processing

Physical

	Typical Value	Unit
Viscosity ¹ (23°C)	1.00	Pa·s

Torlon® AI-10

polyamide-imide

Additional Information

Typical Value Unit

Non-Volatile Content²

90 %

Solubility

Torlon AI-10 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 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 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 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

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

¹ 25% in NMP ± 300 mPa-s

² ± 1.5%

Torlon® AI-10

polyamide-imide



www.syensqo.com

Safety Data Sheets (SDS) are available by emailing us or contacting your sales representative. Always consult the appropriate SDS before using any of our products.

Neither Syensqo nor any of its affiliates makes any warranty, express or implied, including merchantability or fitness for use, or accepts any liability in connection with this product, related information or its use. Some applications of which Syensqo's products may be proposed to be used are regulated or restricted by applicable laws and regulations or by national or international standards and in some cases by Syensqo's recommendation, including applications of food/feed, water treatment, medical, pharmaceuticals, and personal care. Only products designated as part of the Solviva® family of biomaterials may be considered as candidates for use in implantable medical devices. The user alone must finally determine suitability of any information or products for any contemplated use in compliance with applicable law, the manner of use and whether any patents are infringed. The information and the products are for use by technically skilled persons at their own discretion and risk and does not relate to the use of this product in combination with any other substance or any other process. This is not a license under any patent or other proprietary right.

All trademarks and registered trademarks are property of the companies that comprise the Syensqo or their respective owners.

© 2024 2023 Syensqo. All rights reserved.