Technical Data Sheet

PARALOID™ EDGE XL-195 Crosslinker

Cycloaliphatic Dialdehyde

Description

PARALOID™ EDGE XL-195 Crosslinker is a mixture of 1,3 & 1,4-cyclohexanedicarboxaldehyde. It is specifically designed to crosslink with PARALOID EDGE Resins in coating formulations to produce isocyanate-free[1], two component (2K) polyurethane systems.

Features and Benefits

- Ambient Cure
- Fast dry time
- Long pot-life
- Excellent exterior durability
- Isocyanate free[1]
- Excellent adhesion to metal substrates

[1] Manufactured without isocyanate

Typical Physical Properties

Property	Typical Values
Appearance	Liquid
Solids (%)	>95
Density (lbs/gal)	8.8
Aldehyde Equivalent Weight (EW) – as supplied	70-80

Potential Applications

- Industrial Maintenance Finishes for metal
- General Industrial Finishes for metal
- Agricultural & Construction Equipment (ACE)
- Transportation Coatings (e.g., railcar, shipping containers)
- Automotive Refinish Coatings (e.g., primer surfacer, topcoat)
- Industrial Wood Finishes for Kitchen Cabinets
- Industrial Wood Finishes for Furniture
- DIY Finishes for Wood
- Pigmented or Clear Wood Topcoats

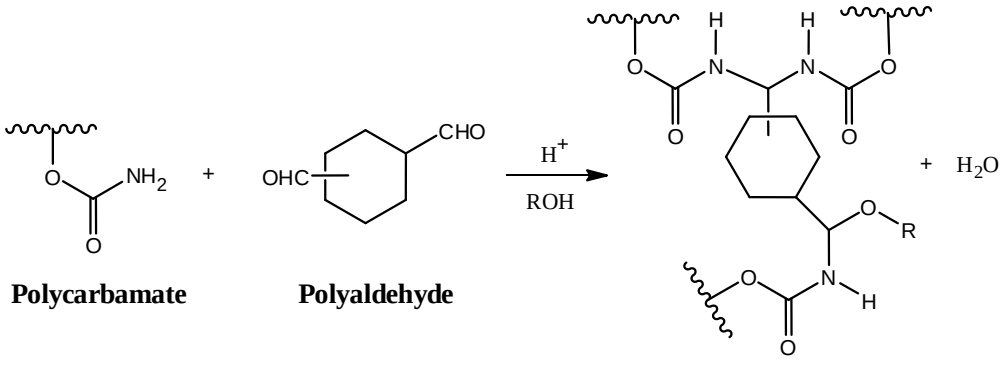
Chemistry and Benefits of PARALOID™ EDGE Isocyanate Free Polyurethane Chemistry

The PARALOID EDGE Resins and Crosslinkers provide 2K, solvent borne, novel, isocyanate-free polyurethane coatings at ambient temperatures from the reaction of polycarbamate functional resins and polyaldehyde crosslinker using an acid catalyst (Figure 1). There is a need in many coating applications for faster drying and hardness development than can be achieved with current 2K polyurethane chemistry. Typical approaches to faster dry times using isocyanate chemistry can lead to shorter formulation pot-life.

The benefits observed with coatings based on the PARALOID EDGE products are decoupling formulation pot-life from coating dry-time and hardness development. A primary alcohol (i.e. ethanol, n-propanol) is typically used as a co-solvent to enhance the pot-life of the coating formulation. The hydroxy functionality of the alcohol reacts with the aldehyde functionality of PARALOID EDGE XL-195 forming acetal equilibrium products. When the paint/coating is applied to a substrate the alcohol volatilizes and the aldehyde functionality of PARALOID EDGE XL-195 reacts with the carbamate groups of the PARALOID EDGE resins resulting in urethane crosslinks. As a result, fast, ambient cure without the short pot-life issues of traditional 2K polyurethane systems is achieved.

In 2K polyurethane coating systems, the isocyanate crosslinker can undergo irreversible side reactions with water which can be problematic during application in humid environments. An added benefit of coating formulations based on PARALOID EDGE Resins and Crosslinker is they do not suffer from an irreversible reaction of the crosslinker with water. As a result, formulations can be applied under ambient conditions that lead to coatings with fast property development which is highly desirable to the end-user. The resulting isocyanate-free polyurethane coatings have excellent mechanical properties, good chemical resistance and exceptional weatherability.

Figure 1. PARALOID EDGE – formation of polyurethane from reaction of polycarbamates and polyaldehydes.



Polycarbamate **Polyaldehyde** **Polyurethane**

Handling Precautions

Before using this product, consult the Material Safety Data Sheet (MSDS)/Safety Data Sheet (SDS) for details on product hazards, recommended handling precautions and product storage..

Storage

Material is air-sensitive. Store under nitrogen. Avoid temperature extremes during storage, ambient temperature preferred. Store products in tightly closed original containers at temperatures recommended on the SDS and product label.

Disposal Considerations

Dispose in accordance with all local, state (provincial) and federal regulations. Empty containers may contain hazardous residues. This material and its container must be disposed in a safe and legal manner.

It is the user's responsibility to verify that treatment and disposal procedures comply with local, state (provincial) and federal regulations. Contact your Dow Coating Materials Technical Representative for more information.

Product Stewardship

Dow has a fundamental concern for all who make, distribute, and use its products, and for the environment in which we live. This concern is the basis for our product stewardship philosophy by which we assess the safety, health, and environmental information on our products and then take appropriate steps to protect employee and public health and our environment. The success of our product stewardship program rests with each and every individual involved with Dow products - from the initial concept and research, to manufacture, use, sale, disposal, and recycle of each product..

Customer Notice

Dow strongly encourages its customers to review both their manufacturing processes and their applications of Dow products from the standpoint of human health and environmental quality to ensure that Dow products are not used in ways for which they are not intended or tested. Dow personnel are available to answer your questions and to provide reasonable technical support. Dow product literature, including safety data sheets, should be consulted prior to use of Dow products. Current safety data sheets are available from Dow.

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