



One-Component, Moisture Cure Aliphatic Prepolymers for Rubber Crumb Binder Applications

DESCRIPTION

The following product, **Desmodur® ultra E 30500**, is a recommended aliphatic polyisocyanate prepolymer based on **Hexamethylene Diisocyanate (HDI)**. The **Covestro Prototype 73095A** is an aliphatic prepolymer in development and based on **Methylene Bis(4-Cyclohexylisocyanate) (H12MDI)**. These products provide the properties suited for rubber crumb binder applications and are recommended and supplied by Covestro.

RAW MATERIAL DETAILS

Material	Type	% NCO	Equivalent Weight (avg. as supplied)	Viscosity
Desmodur® ultra E 30500	HDI	12.5%	336	4250 mPa·s (@ 25°C)
Covestro Prepolymer Prototype 73095A	H ₁₂ MDI	7.0%	600	4500 mPa·s (@ 25°C)

MIXING AND APPLICATION GUIDELINES

- Recommended mix ratios for topcoat, wear layer is 78% rubber crumb to 22% aliphatic polyisocyanate prepolymer binder.
- Aliphatic prepolymers may require use of a catalyst. The recommended prepolymers were catalyzed with 2% tin catalyst for curing and physical property testing.
- Load rubber crumb into a clean, dry paddle cement mixer before adding binder.
- With the mixer at a slow speed, add the appropriate amount of binder.
- Mix for 30 to 60 seconds until the rubber crumb is uniformly coated.
- Apply immediately once mixing is stopped — do not allow the mixture to sit. This could lead to excess air and cause foaming.
- Surface moisture control: Ensure all surfaces and rubber crumb materials are completely dry before application. The presence of morning or evening dew will result in foaming and compromised surface quality.
- Weather window requirements: Allow a minimum 24–48-hour rain-free period following application to ensure complete curing. Check weather forecasts and postpone application if precipitation is expected during this critical curing window.
- Cure rate increases in hot or humid conditions and slows in cold or dry conditions — plan application timing accordingly.

CURED AND DRYING PHYSICAL PROPERTIES

Table 1: The tensile strength and elongation at break, according to ASTM D 412, and the Die C tear resistance, according to ASTM D 624. For each prepolymer, the cured properties as a clear film and mixed as a binder with rubber crumb are provided.

		Tensile Strength @ Break ASTM D 412	Elongation @ Break ASTM D 412	Tear Resistance, Die C ASTM D 624
Desmodur® ultra E 30500	Clear Film	28 MPa	500%	250 lbf/in
	With Rubber Crumb	1.5 MPa	33%	72 lbf/in
Covestro Prepolymer Prototype 73095A	Clear Film	30 MPa	675%	150 lbf/in
	With Rubber Crumb	1.5 MPa	158%	79.0 lbf/in

Note: Samples "With Rubber Crumb" were prepared at a ratio of 78% rubber crumb to 22% aliphatic polyisocyanate prepolymer binder.

Table 2: The film build time and film dry time (in hours), obtained using linear dry time recorder, at five temperature and humidity conditions.

Temperature / Humidity		5°C / 90%	25°C / 20%	25°C / 50%	40°C / 20%	40°C / 90%
Desmodur® ultra E 30500	Film Build Time (hr)	19.7	2.4	1	2	0.7
	Film Dry Time (hr)	43.3	4.3	6.7	3	2.2
Covestro Prepolymer Prototype 73095A	Film Build Time (hr)	19	9	6	3	1.5
	Film Dry Time (hr)	36	14	12	4	2.5

Covestro LLC
 Coatings and Adhesives
 1 Covestro Circle
 Pittsburgh, PA 15205 USA

Desmodur® is a registered trademark of the Covestro group.

The manner in which you use and the purpose to which you put and utilize our products, technical assistance and information (whether verbal, written or by way of production evaluations), including any suggested formulations and recommendations, are beyond our control. Therefore, it is imperative that you test our products, technical assistance, information and recommendations to determine to your own satisfaction whether our products, technical assistance and information are suitable for your intended uses and applications. This application-specific analysis must at least include testing to determine suitability from a technical as well as health, safety, and environment standpoint. Such testing has not necessarily been done by Covestro. Unless we otherwise agree in writing, all products are sold strictly pursuant to the terms of our standard conditions of sale which are available upon request. All information and technical assistance is given without warranty or guarantee and is subject to change without notice. It is expressly understood and agreed that you assume and hereby expressly release us from all liability, in tort, contract or otherwise, incurred in connection with the use of our products, technical assistance, and information. Any statement or recommendation not contained herein is unauthorized and shall no bind us. Nothing herein shall be construed as a recommendation to use any product in conflict with any claim of any patent related to any material or its use. No license is implied or in fact granted under the claims of any patent.