



AirMail

TIMELY TECH TIPS AND HOT NEWS FOR OUR GLOBAL POLYURETHANE CAST ELASTOMER CUSTOMERS

PSP OFFERINGS

- Airthane® Prepolymers
- Versathane® Prepolymers
- Versalink® Polyurethane Curatives
- Lonzacure® MCDEA Curative
- Versalink Oligomeric Diamines

Versalink® 740M Diamine Curative Very Versatile

Air Products' Versalink® 740M diamine curative is a safe, high-performance curative for mixed isomer liquid polyurethane prepolymers. It has also been shown to be effective for epoxy resins.

We have evaluated Versalink 740M curative with several types of commercially available polyether- and polyester-backbone TDI prepolymers. TDI prepolymers—formulated with the 80/20-TDI 2,4—2,6 isomer blend—produced cured elastomers with excellent physical properties.

However, we do not recommend using Versalink 740M curative with the few remaining and commercially available prepolymers based on pure 2-4, TDI isomers.

Polyurethane elastomers formulated with Versalink 740M curative not only exhibit outstanding physical properties, but also have excellent chemical properties. Tests conducted on Versalink 740M-cured elastomer formulations disclose excellent hydrolytic stability, dry heat aging high-temperature performance, electrical properties, and chemical resistance to oil, solvents, weather, and ozone, etc.

Contact our Product Information Center at 800-345-3148 for detailed property and processing information.

TOXICITY

Versalink 740M curative is the diester of trimethylene glycol, (1,3-propanediol) and p-aminobenzoic acid. Esters of this acid have been used commercially for many years as local anesthetics and for similar applications. Thus, substantial toxicological characterization is reported in the available literature.

Acute toxicity and mutagenicity testing has been conducted on Versalink 740M curative by Arthur D. Little, Cambridge, Mass., as well as other independent evaluators. These evaluations show:

- Versalink 740M curative is a non-irritant under no-rinse dermal testing with albino rats.
- Versalink 740M curative's LD50 is greater than 500 mg/kg.
- Versalink 740M curative did produce some degree of eye irritation on albino rats after 24 hours under no-rinse conditions. Eyes examined after seven days showed recovery.
- Using the standard Ames Salmonella Test, Versalink 740M curative proved to be non-mutagenic with and without metabolic activation at levels up to 1000 µg per plate.

Investigation of the metabolism of this product by the Research Triangle Institute disclosed the primary metabolites to be 1,3-propanediol and the monester, 1-hydroxy-3-propane aminobenzoate.

THERMAL CHARACTERISTICS

A decided advantage of Versalink 740M curative is the fact that it is not particularly sensitive to heat at processing temperatures. It has been melted and held at process temperatures for up to 21 hours with no significant loss in vulcanizate physical properties.

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Health & Safety Precautions

1. CONSULT THE VERSALINK 740M CURATIVE MSDS SHEET.
2. DO NOT INGEST OR INHALE IT; AVOID SKIN AND EYE CONTACT.
3. CONSULT A PHYSICIAN FOLLOWING SKIN OR EYE CONTACT.
4. PROVIDE ADEQUATE VENTILATION.
5. WEAR PROPER SAFETY GEAR AND PROPER CLOTHING; LAUNDRY IT REGULARLY.
6. STORE CONTAINERS PROPERLY; KEEP CLOSED WHEN NOT IN USE.
7. CLEAN UP SPILLS PROMPTLY; COMPLY WITH ALL FEDERAL, STATE, AND LOCAL LAWS.

Table 1: Typical Properties of Versalink 740M Curative

Chemical Name	Trimethylene glycol di-p-aminobenzoate
Acronym	TMAB
Equivalent weight	157
Molecular weight	314
Purity	98% minimum
Product form	Granular powder
Color	Off-white to light tan
Odor	Very slight ester odor
Melting range	125-128 °C (257-263 °F)
Moisture content	0.2% maximum by weight
Flash Point, Melt, Open cup	288 °C (550 °F)
Specific gravity melt (@ 140 °C)	1.14 grams/cc
Storage stability	Excellent (non-hygroscopic)



Versalink® 740M Diamine Curative Very Versatile

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Need FDA Support?

Our Versalink 740M curative is approved by the Food and Drug Administration (FDA) for use in the making of polyurethane elastomers intended to contact dry food (21 CFR Part 177, Paragraph 177.1680[b]).

If you need help in working with the FDA regarding Versalink 740M curative—as well as several of our surfactants, defoamers, curing agents, and other polymer emulsions—visit www.airproducts.com/fdaletters. This site makes it easier for you to provide compliance documentation to the FDA. Simply follow the one-step registration process and view products that comply with certain regulations and generate personalized FDA letters. ▲

www.airproducts.com/fdaletters



Versalink 740M curative exhibits non-exothermic thermal decomposition at about 482 °F (250 °C) with decomposition vapors exhibiting a flash point at 550 °F (288 °C).

PROCESSING PARAMETERS

Based on an evaluation of a variety of prepolymers, Versalink 740M curative demonstrates a relatively versatile and “forgiving” capability for providing excellent, frequently superior elastomer physical properties. We can help you determine and optimize formulation and processing conditions for specific or general enhancement of your elastomers depending on your needs.

Whether you process Versalink 740 M curative automatically or via “hand batching,” you’ll obtain the best results by following these guidelines:

- Select an amine stoichiometry in the range of 85 to 100% of the reported NCO content of the prepolymer. If Versalink 740M curative is being evaluated to replace any other diamine curative, first evaluate the same stoichiometry before varying the ratio of curative to prepolymer.
- Process Versalink 740M curative at 285 °F (140 °C) since its melting range is 257 to 263 °F (125 to 128 °C).
- Thoroughly mix the melted curative with the liquid prepolymer, which has been heated to 185 to 195 °F (85 to 90 °C). It’s generally good practice to degas the prepolymer before mixing with the curative, as well as after mixing. Maintain a minimum of 5mm mercury in the degassing chamber.
- Pour the degassed mixture into a mold heated to 212 °F (100 °C).
- Demold the finished elastomer part at an optimum time depending on the prepolymer used—usually between 15 minutes and one hour.
- Post cure. We recommend six hours at 212 °F (100 °C) for ethers and 16 hours at the same temperature for esters. ▲

Table 2: Solubility of Versalink 740M Curative at 25 °C*

Solvent	Percent by Weight
Acetone	18
Methanol	3.3
Toluene	< 0.5
Water	< 0.1

*Solubility data for a number of other common solvents is available from us. Call our Product Information Center at 800-345-3148.



Versalink® 740M

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Airthane® Prepolymers • Versathane®-C Prepolymers
Versathane Prepolymers • Versalink® Polyurethane Curatives • Lonzacure®
MCDCA Curative • Versalink Oligomeric Diamines

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