



TERACURE® HP-47

Hydrophilic Aliphatic Polyisocyanate Hardener for
Waterborne Two-Component Polyurethane Coatings and Inks

TYPICAL CHARACTERISTICS

Appearance	Clear Liquid
NCO (As Supplied, %)	23.0 ± 0.5
Weight Per Gallon, Lbs.	9.5 - 9.9
Viscosity, cps	800 - 1200
Equivalent Weight, Avg., g (As Supplied)	183
Color, Hazen (APHA)	≤ 80
Hexamethylene Diisocyanate Monomer (HDI), %	< 0.26

COMPATIBILITY

TERACURE® HP-47 is an aliphatic cross-linking agent for two-component, high-performance water-borne polyol binders used in automotive, aerospace, adhesives, construction and floor coatings, decorative and wood coatings, inks and general-purpose industrial coatings applications. The product is known for its excellent dispersion stability in aqueous systems as well as its performance characteristics, including chemical resistance, mechanical properties, high gloss, and durability.

TERACURE® HP-47 is compatible with hydroxyl-functional waterborne resins, co-solvents ranging from highly hydrophilic (methyl ethyl ketone, methoxy propyl acetate, propylene glycol) to highly hydrophobic (butyl acetate, xylene, dimethyl formamide), various functional additives to improve performance attributes (elasticity, rheology, gloss, weather resistance, chemical resistance, etc.) and catalysts (to improve cure rate).

Formulations based on TERACURE® HP-47 are moisture-sensitive, and only polyurethane-grade solvents (≤0.05% water) and similar grade materials should be used.

The information contained herein is to the best of our knowledge true and accurate and any suggestions are made without guarantee, express or implied, since the conditions of use are beyond our control. Pflaumer Brothers, Inc. disclaims any liability incurred in connection with the use of these data or suggestions.

APPLICATIONS

TERACURE® HP-47 is usually formulated with hydroxyl functional polyol binders where the NCO:OH ratio is critical to performance. A stoichiometric ratio of 1:1 means the formulation has a perfect balance for the reacting NCO to the OH groups. In most waterborne systems, a ratio greater than 1 is typical because the NCO groups are available to crosslink fully with the polyol and any excess moisture present, thus creating a durable coating film.

A higher ratio of NCO increases the crosslinked density of the polymer network, resulting in improved hardness, toughness, chemical resistance, and solvent resistance. These performance properties are particularly important in applications such as floor sealers and topcoats that require excellent durability.

A lower NCO:OH ratio – closer to 1.0 or even slightly lower – produces lower crosslinking and a more linear polymer network resulting in coating films with greater flexibility, elongation, and elasticity, all of which is useful for application onto flexible substrates such as plastics or in formulations seeking a balance between flexibility and hardness.

The optimal ratio of NCO:OH for an application is determined, of course, by appropriate testing and field trials. The formulator makes this isocyanate index towards the high range due to the presence of water in the system, because the isocyanate reacts with moisture.

A competent formulator will consider the use of the following additives in the preparation of a coatings recipe based on TERACURE® HP-47:

1. Catalyst – Catalysts such as organometallic catalysts are used in some systems to accelerate cure times to benefit conditions where temperature and humidity can vary.
2. Wetting and Dispersing Agents – These additives aid in wetting and dispersing pigments and fillers, preventing settling, flocculation and often improving color stability and gloss.
3. Matting Agents – Low-gloss and matte finishes are achieved by effective use of matting agents such as fumed or precipitated silica.
4. UV Stabilizers – Aliphatic isocyanates offer good UV resistance, but formulators add UV stabilizers to enhance durability in outdoor applications, helping to minimize yellowing.
5. Co-Solvents – Careful selection of co-solvents impact the dispersion of the isocyanate as well as film properties such as clarity and curing characteristics of the film.
6. Adhesion Promoters – These products enhance the bond strength between the coating and the substrate, promoting long-term durability and film integrity. This is particularly important on metal and some plastics substrates..

Formulations based on TERACURE® HP-47 are highly recommended for hardwood floors, concrete and tough applications such as high-performance luxury vinyl tiles used in high-traffic commercial and residential construction.

The product is also recommended for finishing high-end cabinetry, architectural millwork, and furniture, both for new applications and for refinishing. These finishes protect the wood or

The information contained herein is to the best of our knowledge true and accurate and any suggestions are made without guarantee, express or implied, since the conditions of use are beyond our control. Pflaumer Brothers, Inc. disclaims any liability incurred in connection with the use of these data or suggestions.

substrate with excellent chemical, humidity, and abrasion resistance, as well as everyday wear, UV protection, and colorfastness.

Marine coatings applications benefit from the corrosion and abrasion characteristics of sea water on boats, docks, and offshore structures, as well as onshore structures in coastal areas.

Coatings formulated with TERACURE® HP-47 are recommended for aircraft exterior topcoats and applications where durability, weatherability, chemical resistance, high gloss, and UV resistance are desirable. Topcoats can be applied to the fuselage, wings, and other external surfaces to meet the stringent standards for exterior aircraft coatings.

Coatings for plastics use the performance qualities of TERACURE® HP-47 for protection and decoration where strong substrate adhesion, flexibility, and impact resistance are critical.

FEATURES

- Easily dispersed in water
- Outstanding chemical resistance and weatherability
- Excellent corrosion resistance
- Wide range of applications

RECOMMENDED USE LEVELS

Used primarily as the crosslinking agent for waterborne coatings applications but can be combined with other aliphatic isocyanates. Formulators normally start with an NCO:OH ratio slightly greater than 1.0 and increase the isocyanate index from there, depending on the application. All formulations based on TERACURE® HP-47 should be fully tested against industry standards and field tested before use in the marketplace. Pflaumer's Technical Service team is available upon request for formulation assistance and recommendations.

SAFETY, STORAGE, AND HANDLING

Store TERACURE® HP-47 in original Pflaumer container and keep containers tightly closed. Keep away from moisture, moist air, moist containers, and other materials such as solvents that contain moisture: Hydrophilic isocyanates react with moisture resulting in carbon dioxide and insoluble ureas, and the generation of carbon dioxide can cause dangerous increases in container pressure. Recommended storage temperature is 0-30°C, and higher temperatures may cause increases in color and viscosity. Keep away from heat.

Shelf life of TERACURE® HP-47 is six months following the day of shipment to the customer. Product used after this period must be thoroughly tested in the formulation and in the application or use. Pflaumer represents the product meets specification within the six-month period provided the material is stored in full compliance with the conditions listed in this section. No

The information contained herein is to the best of our knowledge true and accurate and any suggestions are made without guarantee, express or implied, since the conditions of use are beyond our control. Pflaumer Brothers, Inc. disclaims any liability incurred in connection with the use of these data or suggestions.

representation is made that the product meets specification beyond the six-month period as indicated here.

CONTAINER SIZES

5 Gallon Pail (45 Lbs.)

55 Gallon Drums (496 Lbs.)

275 Gallon Tote (2,535 Lbs.)

The information contained herein is to the best of our knowledge true and accurate and any suggestions are made without guarantee, express or implied, since the conditions of use are beyond our control. Pflaumer Brothers, Inc. disclaims any liability incurred in connection with the use of these data or suggestions.

PFLAUMER PRODUCTS FOR HIGH-PERFORMANCE COATINGS

Pflaumer offers a wide variety of products to formulate high-performance coatings:

TERAMINE® Hardeners for Epoxies	A wide variety of hardeners for fast-cure, medium-cure, and slow-cure 2K epoxies
TERACHEM® 53-Colorants	Ready-to-use pigment dispersions of masstones and tints for 2K epoxies, polyurethanes and polyaspartics
TERACURE® Aliphatic Polyisocyanates	Complete line of HDI-based trimer and biuret isocyanates
TERASPARTIC® Polyaspartic Amines	A variety of aspartic amine resins to provide slow, medium and fast curing options.
TERACURE® Aromatic Polyisocyanates	MDI-based aromatic isocyanates for polyureas and urethanes
TERACHEM® Polyols	Specialty polyols for urethane coatings
TERACHEM® Reactive Diluents	TERACHEM® A-140 for polyurea and polyaspartic systems
TERAFLEX® Non-Reactive Diluents	TERAFLEX® DME-200 for polyaspartics, polyurethanes, and polyureas
TERACHEM® Moisture Scavengers	Molecular sieve pastes for polyaspartics, polyurethanes, and other applications
Intermediates and Modifiers	TERAMINE® A-136 cycloaliphatic secondary di-amine for polyaspartics, epoxies, and polyureas; TERAMINE® cycloaliphatic amines (PACM, MACM) for epoxies; TALLICIN® 3001 extends pot life for urethanes and polyaspartics
TALLICIN® Wetting Agents, Dispersants, and Grinding Resins	A wide range of surfactants, wetting agents, and dispersants for both solvent-based and water-based formulations; TALLICIN® acrylic and modified-acrylic grinding resins
TALLICIN® Surface Tension Agents	A variety of bubble-release, flow and leveling modifiers for solvent-free polyaspartics, epoxies, and polyurethanes
TALLICIN® Catalysts	Tin-based catalyst for polyurethanes

The information contained herein is to the best of our knowledge true and accurate and any suggestions are made without guarantee, express or implied, since the conditions of use are beyond our control. Pflaumer Brothers, Inc. disclaims any liability incurred in connection with the use of these data or suggestions.