

ELASTUFF 160

PRIMERLESS POLYURETHANE COATING
Classified by Underwriters Laboratories Inc.
in Accordance with ANSI/NSF Standard 61 (1996)

Technical Data & Application Instructions

PRODUCT DESCRIPTION

ELASTUFF 160 is a two-component, 100% solids polyurethane coating system. This unique thermosetting elastomer is designed to achieve exceptional adhesion to properly prepared metal surfaces without the need of a separate primer. It has passed extensive testing in accordance with ANSI/NSF 61 for use in potable water storage, containment and transfer applications.

ELASTUFF 160 develops a dense, high-durometer finish due to the nature of its highly cross-linked polymer. The slick, non-porous surface provides excellent release properties, which also contribute to its resistance to abrasion and tearing. ELASTUFF 160 has a tenacious bond direct to Near White (SSPC-SP10) or White Metal (SSPC-SP5) blasted surfaces, as well as primed concrete, primed wood, expanded polystyrene (EPS) and polyurethane foam. Where cathodic disbondment protection is required, this durable polyurethane coating is available as ELASTUFF 160 CD, which extends the product use over buried metal surfaces.

BASIC USES

ELASTUFF 160 provides outstanding protection on surfaces subject to abrasion in either dry or aqueous solutions or environments. Due to the excellent hydrophobicity of ELASTUFF 160 it is extremely effective as a tank or pipe lining subject to fresh water, salt water and slurry solutions, as well as a wide range of fuels, oils and other hydrocarbons. Applications include interior tank lining, waste/water treatment processing tanks, interior pipe, exterior buried pipe and tanks, below-grade metal, hoppers, chutes and dumpsters.

ELASTUFF 160 can also be applied over concrete surfaces where a slick, dense finish is desired to aid in release or flow characteristics. It is equally effective in providing increased abrasion and impact resistance over EPS or polyurethane foam surfaces. Conformance to ANSI/NSF 61 requirements allows the use of ELASTUFF 160 as a liner for potable water movement and containment.

Both ELASTUFF 160 and ELASTUFF 160 CD are fast-cure, thermosetting polyurethane coatings designed for application through 1:1 ratio plural component airless spray equipment. High vertical hold allows ELASTUFF 160 to uniformly cover weld seams, bolts, angles, edges and other irregular surfaces.

TYPICAL PROPERTIES

- Mixing Ratio:**
1 Part A to 1 Part B by volume (1A:1B)
- Mixed Usable Pot Life:**
30 seconds (can be shortened by adjusting catalyst level)
- Flash Point:**
Both components >200°F (93°C)
- Dry Time to Touch:**
2 to 3 hours @ 75°F (24°C)
- Cure Time:**
80% after 24 hours @ 75°F, 50% R.H.
90% after 4 days @ 75°F, 50% R.H.
[ASTM D 1640]
- Water Absorption:**
Less than 1% weight gain after 7 days
[ASTM D 570]
- Tensile Strength:**
2,500 psi (±100) [ASTM D412]
- Elongation:**
30% (±10) [ASTM D412]
- Tear Strength:**
250 lbs/inch (±30) [ASTM D1004]
- Hardness:**
70 to 80 Shore D @ 75°F (24°C)
[ASTM D2240]
- Abrasion Resistance:**
65 to 75 mg weight loss with H-10 wheels using 1000 gm weights at 1000 revolutions
[ASTM D4060]
- Low Temperature Flexibility:**
Passes ¼" (6 mm) mandrel bend @ -4°F (-20°C)
[ASTM D4060]

COLORS

Standard color for ELASTUFF 160 is Gray. Part A component is supplied in Black, while the Part B is White. When properly proportioned and blended through the plural component spray equipment, they form the standard Gray color. For applications subjected to UV exposure, aluminum pigment is added to the Part B, which creates a metallic gray finish.

SURFACE PREPARATION

STEEL SURFACES

Steel and fabrication defects, such as weld imperfections, delaminations, slivers, etc., shall be corrected prior to starting cleaning operations. All burrs, jagged edges, undercuts, recesses and surface defects shall be ground smooth. Porous welds shall be ground down to pinhole free metal. Excessive rust scale shall be removed by use of a wire brush or wheel, or other mechanical means prior to blast cleaning. All seams and joints must have a continuous, smooth interior weld.

All steel surfaces shall be free of excessive rust scale, pollution fallout, dirt, grease, surface chemicals or other foreign contaminants prior to blast cleaning. Use a solvent wash as per SSPC-SP1 "Solvent Cleaning" to remove these contaminants along with any accumulated oil, smoke, wax, or other material that could interfere with maximum adhesion.

Steel surfaces subject to immersion conditions must be blast cleaned to White Metal as per SSPC-SP5, with a minimum anchor profile of 2+ mils (51+ microns). Steel subject to non-immersion conditions shall be cleaned to Near-White as per SSPC-SP10, with a minimum anchor profile of 2.0 mils (51 microns). All previously applied paints or coatings on the substrate shall be completely removed, including paints or coatings that are tightly adhered to the surface.

Abrasive blast cleaning shall not be performed when the surface temperature of the steel is less than 5°F (3°C) above the dew point of the ambient air, when relative humidity exceeds 80%, or when there is a possibility that the blasted surface will become wet before the coating can be applied. The blast-cleaned surface shall be coated by the end of the same day, but in any event before any visible rusting occurs. If rusting occurs after blast cleaning, the surface shall be reblasted before coating. If the steel surface is subjected to chemical contamination, coating of the cleaned surface must take place as soon as possible.

Prior to application of **ELASTUFF 160**, all loose dust and blast particles shall be removed from the surface by use of a power vacuum. Dry air blow-off and brush cleaning are not recommended.

POLYURETHANE FOAM AND EPS

Polyurethane and Expanded Polystyrene (EPS) foam shall be dry and free of any degraded foam, grease, oil, dirt or other contaminants that will interfere with proper adhesion. Any physical damage to the foam shall be repaired before coating application commences. All oxidized foam shall be repaired or replaced. Do not coat directly over foam that has been mechanically scarified. Apply a thin coat of **UNITED'S Wall-Bond 70** or **90** over scarified or degraded foam surfaces prior to topcoating with **ELASTUFF 160**. **Wall-Bond** will also help prevent pinholing when coating over low density EPS surfaces.

CONCRETE SURFACES

Surfaces that are contaminated with oil, grease, dirt, chemicals or other surface contaminants shall be cleaned prior to blasting or acid etching with **United Cleaning Concentrate (UCC)** or other approved biodegradable chemical cleaner and water, as per ASTM D 4258 "Surface Cleaning Concrete for Coating". Mechanical scrubbing may be necessary to remove tightly adhering contaminants. Thoroughly power rinse using fresh, clean water to remove all traces of the chemical cleaner.

All concrete subject to immersion conditions shall be abrasive blast cleaned as per ASTM D 4259 "Abrading Concrete", to provide a minimum surface height profile of 5 to 8 mils (127 to 203 microns). Blasting must produce an even profile, free of loose aggregate, weak matrix, crusts, dusting and other contaminants. Existing paints or coatings must be completely removed, except for residual areas that resist thorough blast cleaning. Loose edges of remaining coating must be bevel-cut to sound adhesion.

Concrete subject to non-immersion conditions may be acid-etched as an alternative to blast cleaning, provided that acid etching produces an even profile of 5 to 8 mils (127 to 203 microns). Acid etching shall be accomplished using a 10% Muriatic Acid solution. Following Manufacturer's instructions, the diluted solution shall be sprinkled onto the concrete surface. After the solution has stopped bubbling (normally 5 to 10 minutes), the area shall be scrubbed thoroughly using mechanical scrubbers. After scrubbing, all surfaces shall be thoroughly rinsed with liberal amounts of fresh water to assure complete acid removal. Surfaces may require additional rinsing or a high pressure rinse to remove all traces of the acid solution.

All concrete surfaces shall be free from sharp projections, ridges and loose aggregate. Apply a "scratch coat" of **UNITED'S Uni-Crete** or similar polymer concrete to fill any bugholes or voids. Use a trowel to apply the **Uni-Crete** with adequate pressure to completely fill the honeycomb or air pocket, and to achieve a sound, consistent surface. Allow the polymer concrete repair material to cure for a minimum of 24 hours at 75°F (24°C) prior to priming. Allow additional cure time in cooler temperatures. When **Uni-Crete** is used to "sack" rough or porous concrete surfaces, it is not necessary to brush-blast the surface prior to application of the primer and topcoat.

Concrete surfaces shall be primed with one (1) coat of **UNITED'S Uni-Tile Sealer**. Allow a minimum of 30 minutes dry time at 75°F (24°C) between application of **Uni-Tile Sealer** and the application of **ELASTUFF 160**. Colder temperatures will require additional dry time. Sealer should be topcoated within 24 hours, and should under no circumstances be left exposed longer than 48 hours. If primer is not topcoated within 48 hours, the surfaces must be brush blasted, followed by an additional, thin coat of **Uni-Tile Sealer** applied at the rate of 400 to 500 sq. ft. per gallon (9.8 to 12.2 m²/l).

COATING APPLICATION

ELASTUFF 160 is applied using 1:1 ratio plural component airless spray equipment. Refer to separate literature entitled Plural Component Spray Equipment for information on the design and operation of this equipment.

ELASTUFF 160 shall be applied to steel surfaces that have been cleaned and blasted to the required profile, or concrete surfaces that have been previously primed with **Uni-Tile Sealer**. It can also be applied to fiberglass or wood surfaces previously primed with **Uni-Tile Sealer** or to polyurethane foam or polystyrene (EPS) surfaces with no primer required. All preparation work, including treatment of cracks, surface repairs, etc. must have been completed in accordance with UNITED'S published recommendations. Do not apply **ELASTUFF 160** when ambient temperature is below 40°F (4°C) or above 100°F (38°C), if rain is anticipated within 2 hours of application or if the relative humidity is over 90%.

Flush Methylene Chloride or M.E.K. solvent through the pumps and hoses prior to introducing the **ELASTUFF 160** components. Set transfer pumps at the minimum pressure required to completely fill the proportioning cylinders as they cycle so that no cavitation occurs. This will typically require 200 to 300 psi (1,378 to 2,069 kPa) fluid pressure. Set main proportioning pump at 2,100 to 2,800 psi (14,469 to 19,292 kPa) fluid pressure to achieve an acceptable spray pattern, depending upon tip size, material temperature and ambient conditions.

Plural component equipment must be equipped with in-line, high pressure heaters as well as heated, insulated high pressure hose capable of developing and maintaining a minimum of 120°F (49°C) material temperature at the spray gun. In cooler ambient conditions where the material in the drum cannot be maintained at 60°F (16°C) or higher, it is recommended that drum heaters be utilized to facilitate easier pumping of the liquid components by the transfer pumps.

Utilize an approved plural component gun, equipped with either an internal or external mixing chamber, or a single component gun with a static mixer in conjunction with a manifold and up to a 20' (6 m) whip to assure proper mixing and cure of the liquid components. A reversible airless spray tip between .025" and .041" (.6 to 1 mm) with a 40° to 50° fan pattern is recommended. If using a spray gun incorporating a solvent purge, use Methylene Chloride or M.E.K. to fill the solvent flush system, which must be set to achieve a minimum of 800 psi fluid pressure (5,512 kPa).

Coverage rates and dry mils are determined by specific project requirements. The versatility of **ELASTUFF 160** allows the specifying engineer to solve a multitude of protection problems over a wide range of substrates, utilizing one coating system at various dry mil thicknesses. Contact UNITED COATINGS' Technical Service Department for specific project recommendations.

ELASTUFF 160 applied at the rate of one gallon per 100 sq. ft. (.4 l/m) of the combined Part A and Part B will theoretically yield 16.0 dry mils (406 dry microns). The following dry mil thicknesses are provided for guideline use only for typical applications.

Light Abrasion – Dry or Immersion
32 to 40 mils (813 to 1,016 microns)

Medium Abrasion – Dry or Immersion
45 to 60 mils (1,143 to 1,524 microns)

Heavy Abrasion – Dry or Immersion
80 to 120+ mils (2,032 to 3,048+ microns)

The applicator must periodically check the number of gallons used compared to the square feet coated. If adequate material has not been used according to UNITED'S published recommendations and/or project specifications, adjust accordingly and apply additional material to previously coated areas.

ELASTUFF 160 is capable of rapid, high film build utilizing multiple-pass application technique. Most required film builds can be achieved in one or two applications using this method. Ultra-high film builds may require three or more separate coats. The number of coats required to achieve the specified film thickness will vary depending on application method, jobsite and ambient conditions. Allow each coat of **ELASTUFF 160** to dry tack free prior to applying an additional coat. This will require a minimum of 30 minutes at 75°F (24°C). Additional coats of **ELASTUFF 160** should be applied within 48 hours of the previous coat. For on-line operations, or when a faster cure time is desired, **ELASTUFF 160** can be manufactured with a higher catalyst level, which will necessitate the use of a plural component spray gun, rather than a mix/manifold set-up.

All surfaces must be uniformly coated and free of voids, pinholes or blisters. When applying **ELASTUFF 160** over rough concrete or other textured surfaces, it is helpful to back-roll the material immediately after application to help achieve a void-free, monolithic film. A polyester or fiberglass mesh may also be embedded into the first coat of **ELASTUFF 160** to help cover and reinforce cracks, seams or voids. Open time for back-rolling or embedding fabric is thirty to ninety seconds, depending on jobsite conditions.

ELASTUFF 160 is self-flashing at natural termination points such as expansion joints, corners, edges, counter-flashings, tank wall caps, etc. Expansion joints shall be inspected and filled with the appropriate sealer and shall be isolated from the coating to ensure that the coating does not bond to the joint sealant. The finished coating membrane shall be allowed to cure a minimum of 72 hours at 75°F (24°C), (96 hours if ambient temperatures are below 60°F) before the coated area is returned to service. The **ELASTUFF 160** must be inspected as soon as practical following installation to ensure that all surfaces have been uniformly coated and are free of holidays.

PACKAGING & MIXING

ELASTUFF 160 is a two-component material available in 5-gallon (19 liter) pails and 55-gallon (209 liter) drums. The Part A component is Black and the Part B component is White. Mix each container with a power mixer until the material is a uniform consistency. The components are metered at a 1:1 ratio when pumped through the plural component equipment. When properly metered and mixed, the finish will yield the standard Flint Gray color.

ELASTUFF 120X3

When coating over rough surfaces, or for applications requiring high film build, the use of **Elastuff 120X3** is an effective method of obtaining a monolithic, pinhole free film. Because it expands and cures to approximately three times its wet film thickness, **Elastuff 120X3** is able to fill and cover rough textured substrates. It can also be used for building film thickness at corners and edges, control joints, vertical/horizontal seams, transitions between dissimilar substrates and any application requiring a high film build.

Elastuff 120X3 is for use as a base coat only and must always be topcoated with a minimum of 30 mils of **ELASTUFF 160** or **Elastuff 120**. Contact UNITED'S Technical Service Department for specific project recommendations. Allow **Elastuff 120X3** to cure 10 to 15 hours prior to topcoating, however, do not exceed 48 hours.

TOPCOAT APPLICATION

ELASTUFF 160 is designed as a functional coating system for providing a durable, abrasion and chemical resistant, waterproof membrane on a wide variety of surfaces and service conditions. It will lose its sheen and chalk slightly under exterior exposure. For this reason, it is recommended that **ELASTUFF 160** be topcoated when subject to severe UV exposure, or in areas where aesthetics are of prime importance. **Uniflex 255** is typically used as a topcoat, however, other products are acceptable as well. Contact UNITED'S Technical Service Department for topcoat recommendations.

CLEANUP

Clean equipment with Methylene Chloride or M.E.K. Do not leave Methylene Chloride in fluid hoses or pumps for prolonged periods. It can cause swelling and deterioration of hoses and corrosion in the pump.

REPAIR PROCEDURE

Repairs to the coating membrane shall be made with **ELASTUFF 160** Roller-Grade where small spot repairs require a hand-applied material. Surfaces shall first be roughened using an abrasive brush-blast or by mechanically abrading with a wire wheel, wire brush, coarse sandpaper, or other similar means. Coating surface must be roughened so as that the repair material is able to achieve a mechanical bond.

Solvent wipe the surface with M.E.K to remove all dust and other contaminants and to soften the existing coating surface. After thoroughly blending the Part A and B components, apply repair material to the designated area, taking care to maintain a flow edge at least 20 mils (508 microns) thick. Do not feather edges of the repair material.

SHELF LIFE & STORAGE

Shelf life of Part A and Part B components in unopened containers is 6 months from date of shipment from UNITED'S factory. If shelf life has expired, contact UNITED'S Technical Service Department before attempting to use the material. Material must be stored at temperatures between 50°F and 100°F (10°C and 38°C). Do not open containers until ready to use the material.

LIMITATIONS & PRECAUTIONS

ELASTUFF 160 components are affected by moisture prior to catalyzation and must be protected from moisture contamination. Keep all containers tightly closed during storage. After opening and if all components are not to be used, containers must be purged with nitrogen gas or dry air and tightly sealed to protect the components from moisture contamination.

Ambient temperature range for application is from 40°F to 100°F (4°C to 43°C). **ELASTUFF 160** may be applied in high humidity conditions up to 90% relative humidity. In-service temperature limits will vary depending upon the application conditions. For specific heat exposure limits contact UNITED'S Technical Service Department for recommendations.

The theoretical mil thickness given for coverage per gallon is based on smooth, non-porous surfaces. Actual gallons required in the field to achieve the minimum dry mil film thickness will depend upon the surface texture, ambient weather conditions and spray technique of the applicator. It is the responsibility of the applicator to apply sufficient material to achieve the minimum dry mil film thickness.

Use only in a well ventilated area. Avoid breathing of vapor or spray mist. For exterior applications, approved (MSHA/NIOSH) chemical respirator must be worn by applicator and personnel in vicinity of application. If used indoors, provide mechanical exhaust ventilation. During indoor spray operations, air line masks or positive pressure hose masks must be worn. Avoid contact with eyes and contact with skin. For additional information on safety requirements, refer to OSHA guidelines and **ELASTUFF 160** Material Safety Data Sheet.

UNITED COATINGS

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