

# PRIMER 302 LV

## CORROSION RESISTANT METAL PRIMER

### Technical Data & Application Instructions

#### PRODUCT DESCRIPTION

PRIMER 302 LV is a two-component, high performance corrosion resistant primer. It combines corrosion inhibiting pigments with a crosslinking polymer resin to form a highly stable polymer-pigment matrix. PRIMER 302 LV creates a physical and chemical bond between the substrate and polyurethane/polyurea elastomers. This superior bond strength is achieved by chemically crosslinking the polymer in the primer to the polyurethane/polyurea elastomer topcoat.

PRIMER 302 LV is manufactured in Light Gray color only.

#### BASIC USES

PRIMER 302 LV was specifically developed to provide maximum adhesion of UNITED'S Elastuff polyurethane and polyurea coatings to steel, stainless steel, ductile iron, aluminum (mill finish), and other metal substrates.

PRIMER 302 LV can also be used beneath a UNITED approved topcoat under constant immersion conditions. UNITED requires that test immersion panels be installed in the actual immersion solution for a minimum of 30 days, and then the results be evaluated prior to recommending any specific primer/coating system.

#### SHELF LIFE

Shelf life of Part A and Part B components in unopened containers is two (2) years. Store at temperatures between 50°F and 100°F (10°C and 38°C). Do not open containers until ready to use the material.

#### PHYSICAL PROPERTIES

- Mixing Ratio:**  
1 Part A to 1 Part B by volume (1A:1 B)
- Mixed Usable Pot Life:**  
8 hours at 75°F (24°C), 50% R.H.
- Dry Time:**  
3 hours at 75°F (24°C), 50% R.H.
- Solids by Weight (Mixed):**  
81% (±2) [ASTM D2369]
- Solids by Volume (Mixed):**  
80% (±2) [ASTM D2697]
- Flash Point:**  
**Part A:** 109°F (43°C)  
**Part B:** 80°F (27°C)  
[Seta-Flash closed cup]
- VOC (Volatile Organic Content):**  
Part A: 28 g/l  
Part B: 167 g/l  
Combined: <100 g/l
- Temperature Limits for Service Conditions:**  
-70°F to 200°F (-56°C to 93°C)

#### PACKAGING & MIXING

PRIMER 302 LV is a two-component material available in quart (0.95 liters) and 1-gallon (3.8 liters) cans, and 5-gallon (19 liter) pails. Special packaging is available.

**MIX 1 VOLUME OF PART A WITH 1 VOLUME OF PART B.** The blended PRIMER 302 LV can be applied at full strength, however, thinning is recommended for increased "wetting" capability over most substrates. Thin up to 50% by volume using Methyl Ethyl Ketone (MEK), Xylol or Acetone. Material shall be thoroughly mixed prior to application. Use an air-operated or other explosion-proof mixer, which has been grounded and bonded, with a blade capable of uniformly mixing the entire container. Mixed, useable pot life is 8 hours at 75°F (24°C).

## **PERFORMANCE & ADVANTAGES**

1. **Resistance to Condensation:\***

Test panels were placed in the QCT Condensation Cabinet and maintained at a temperature of 120°F (49°C) and 100% relative humidity. **PRIMER 302 LV** had no loss of adhesion, no blistering or softening, and no corrosion was observed beneath the film. Visual observations were made within 30 minutes after test panels were removed from the test chamber and again after 24 hours following the test. Tested in accordance with ASTM D2247.
2. **Adhesion:\***

Test panels primed with **PRIMER 302 LV** were cross-cut, forming a grid area of 100 squares. Tape was then firmly placed across the center of the grid. After the tape was removed, the grid area was inspected for adhesion of the primer to the substrate under magnification. The results were 100% adhesion, meeting the requirements for a 5 B Classification as defined in the ASTM Standard. The edges of the cuts were completely smooth and none of the squares of the grid were detached. Tested in accordance with ASTM D3359.
3. **Resistance to Salt Spray:\***

Test panels were placed in the Harshaw Salt Spray Cabinet and maintained at a temperature of 95°F (35°C), utilizing a sodium chloride fog solution of not less than 5% by weight. Test panels were "X" scribed to initiate corrosion before being placed into the test chamber. After 1,000 hours of continuous testing, **PRIMER 302 LV** had no loss of adhesion, no blistering or softening, and no corrosion was observed beneath the film. Corrosion was observed on "X" cut. Visual observations were made immediately after test panels were removed from the test chamber. Tested in accordance with ASTM B117.
4. **Flexibility:\***

**PRIMER 302 LV** retains its ability to withstand multiple  $\frac{7}{16}$ " (1.11 cm) mandrel bends without cracking. Observations were made under 10 times magnification. Tested in accordance with Federal Test Method Standard No. 141 a-6221.
5. **Resistance to Impact:\*\***

Gardner Impact Tester – **PRIMER 302 LV** did not shatter, crack or chip when struck by a direct impact of 60 inch pounds. Tested in accordance with Federal Test Method Standard No. 141 a-6226.
6. **Bond Strength:**

**PRIMER 302 LV** was applied over steel test panels to a minimum thickness of 1.5 dry mils (38 dry microns). Steel panels were sandblasted to Near-White (SP10) prior to being primed. **UNITEDS Elastuff 504** was then applied over the primed test panels to a minimum thickness of 38 dry mils (965 dry microns). After test panels were allowed to fully cure, the bond (peel) strength was tested using the Instron Universal Testing Instrument. **Elastuff 504** reached its maximum elongation point and pulled parts of **PRIMER 302 LV** from the steel panels. The bond between the primer and the substrate proved to be outstanding. The peel strength of **PRIMER 302 LV** exceeded 75 lbs. per lineal inch (13.13 kN/m). Tested in accordance with ASTM D903.
7. **Cathodic Disbondment:**

Successful coatings for steel pipe subjected to negative voltage for corrosive resistance must pass rigid cathodic disbondment criteria as outlined in ASTM Standard G8. **PRIMER 302 LV** surpasses the most critical requirements and effectively bonds polyurethane and polyurea elastomers to steel pipe subjected to varying degrees of negative voltage.
8. **Low & High Temperature Applications:**

**PRIMER 302 LV** may be applied at temperatures as low as 32°F (0°C) and at surface temperatures as high as 120°F (49°C). For applications below 32°F (0°C), consult UNITED'S Technical Service Department
9. **Fast Cure Time:**

**PRIMER 302 LV** dries in under 3 hours at 75°F (24°C), 50% R.H. This allows topcoating on the same day, thus maximizing work efficiency. Dry time can be reduced by reducing with a "fast" solvent, such as MEK.

\* **Note:** These tests were conducted using cold rolled steel panels. Steel panels were sandblasted to Near-White (SSPC-SP10) and then primed. **PRIMER 302 LV** was spray-applied in one coat to a minimum thickness of 1.5 dry mils (38 dry microns). Test panels were then allowed to cure at 75°F (24°C), 50% R.H. for 6 days and then oven dried at 125°F (52°C) for 1 day before testing.

\*\* **Note:** This test was conducted using stainless steel panels. Stainless steel was acid cleaned using 10% muriatic acid and then primed. **PRIMER 302 LV** was spray-applied and cured in the same manner as listed above.

## PREPARATION OF SURFACES

Steel and fabrication defects, such as weld imperfections, delaminations, slivers, etc., should be corrected prior to starting abrasive blasting operations.

All previous paints or coatings on the substrate must be completely removed, including paints or coatings that are tightly adhered to the surface.

All burrs, jagged edges, undercuts, recesses and surface defects shall be ground smooth. Porous welds shall be ground down to pinhole free metal.

Steel surfaces must be blast cleaned to either Near-White (SP10) or White Metal (SP5) depending upon the conditions under which the topcoat will be subjected on a specific project. **Wet or water vapor sandblasting is not recommended.**

The following cleaning procedures are provided for guideline use only. Occasions will arise where the specified method of blast cleaning will not result in achievement of the type of cleaning required. It is suggested that UNITED'S Technical Service Department be contacted for recommendations on each specific application.

Cleaning procedures as hereinafter specified shall be in strict conformance with the following applicable **Steel Structures Painting Council (SSPC) - Surface Preparation Specifications:**

SSPC – SP1	Solvent Cleaning
SSPC – SP5	White Metal Blast Cleaning
SSPC – SP10	Near-White Blast Cleaning

All oil, grease, weld flux, and other surface contaminants shall be removed prior to blast cleaning by use of a solvent wash as defined in **SSPC – SP1 Solvent Cleaning.**

Excessive rust-scale shall be removed by mechanical means prior to blast cleaning.

Abrasive blast cleaning shall not be performed when 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 well before the primer can be applied.

The blast cleaned surface shall be primed by the end of the same work day, but in any event before any visible rusting occurs. If rusting occurs after blast cleaning, the surface shall be reblasted before priming. If the steel surface is subjected to chemical contamination, priming of the blast cleaned surface must take place as soon as possible.

For inspection purposes, the visual standards contained in the Pictorial Surface Preparation Standards For Painting Steel Surfaces, SSPCV 1 S 1-67T shall be used as a guide in determining the minimum degree of surface preparation.

### STEEL SUBJECT TO DRY ABRASION

#### 1. Lightweight Abrasive Materials:

**Blast Cleaning** – Surfaces shall be blast cleaned to a Near-White Blast Cleaned Surface Finish (SP10) with a minimum surface profile of 2 mils (51 microns).

**Primer** – Surfaces shall be primed with **PRIMER 302 LV** to a minimum thickness of .80 and a maximum of 1.2 dry mils (20 to 30 dry microns).

#### 2. Lightweight to Medium Abrasive Materials:

**Blast Cleaning** – Surfaces shall be blast cleaned to a Near-White Blast Cleaned Surface Finish (SP10) with a minimum surface profile of 2+ trails (51+ microns).

**Primer** – Surfaces shall be primed with **PRIMER 302 LV** to a minimum thickness of .80 and a maximum of 1.2 dry mils (20 to 30 dry microns).

#### 3. Heavy Abrasive (Larger than 1"):

**Blast Cleaning** – Surfaces shall be blast cleaned to a Near-White Blast Cleaned Surface Finish (SP10) with a minimum surface profile of 3 + trails (76+ microns).

**Primer** – Surfaces shall be primed with **PRIMER 302 LV** to a minimum thickness of 1.5 and a maximum of 2.0 dry mils (38 to 50 dry microns).

### STEEL SUBJECT TO LIQUID SLURRY:

#### 1. Plain Water and Mineral Solids:

**Blast Clean to White Metal (SP5).** Prime as specified above for Lightweight Abrasive Materials.

#### 2. Light Slurry with Lightweight to Medium Particles:

**Blast Clean to White Metal (SP5).** Prime as specified above for Lightweight to Medium Abrasive Materials.

#### 3. Heavy Slurry:

**Blast Clean to White Metal (SP5).** Prime as specified above for Heavy Abrasive (Larger than 1").

Prior to the application of **PRIMER 302 LV**, 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.

Note: The above surface preparations as defined by the National Association of Corrosion Engineers are comparable to SSPC Surface Preparation specifications: NACE No. 1 (SSPC-SP5); NACE No. 2 (SSPC-SP10) and NACE Standard TM-01-70 (SSPC-VISI-67T).

## APPLICATION

**PRIMER 302 LV** may be applied by conventional or airless spray. Airless spray is the preferred method. Any airless spray equipment capable of 1,000 psi (6,890 kPa) and ½ gallon per minute (1 .91/minute) delivery can be used. A reversible self-cleaning spray tip with orifice size of .013" to .019" (.33 to .48 min) and minimum 40 degree fan angle is recommended.

Coverage rate will depend upon the surface profile, as well as the whether or not **PRIMER 302 LV** has been reduced. Reducing up to 50% by volume with MEK, Xylol or Acetone is recommended for most surfaces. The following suggested application rates are for **PRIMER 302 LV** that has been reduced at a 2:1 ratio (primer to solvent) with one of the recommended solvents. For surfaces that have been abraded to a 2 mil (51 micron) profile, **PRIMER 302 LV** should be applied at a minimum rate of 1 gallon per 250 to 300 sq. ft. (6.1 to 7.3 m<sup>2</sup>/l) of surface area. This coverage rate should result in 1 to 1.5 dry mils (25 to 38 dry microns). If **PRIMER 302 LV** is applied without being reduced, the coverage rate will be approximately 50% higher. Surface profile and application conditions will also affect the coverage rate.

Consult UNITED'S Technical Service Department for minimum dry mil thickness recommendations when steel surfaces are abraded to a surface profile greater or less than 2 mils (51 microns).

Spray gun should be held not more than 24" (61 cm) from, and at a perpendicular angle to, the surface being primed.

When **PRIMER 302 LV** is applied over stainless steel or aluminum, apply primer to a small test area to ensure proper adhesion. Due to the various types of stainless steel and aluminum, preparation of these surfaces to receive **PRIMER 302 LV** may require a different procedure from that stated above. For any primer to function as it was designed, proper surface preparation is essential in attaining optimum adhesion.

**PRIMER 302 LV** should be topcoated on the same day. If topcoating can not be achieved within 48 hours, consult UNITED'S Technical Service Department for recommendations.

## CLEAN UP

Clean equipment with Methyl Ethyl Ketone (MEK), Xylol or Acetone.

## LIMITATIONS & PRECAUTIONS

Keep all containers tightly closed during storage.

Solvents in **PRIMER 302 LV** are flammable. Use only in a well ventilated area. Keep away from heat, sparks, open flame, or lighted cigarettes. Use explosion-proof application equipment that has been grounded and bonded. Avoid prolonged or repeated breathing of vapor or spray mist. Approved (MSHA/NIOSH) chemical cartridge respirator should be worn by applicator. Avoid contact with eyes and contact with skin.

For additional information on safety requirements, refer to OSHA guidelines and **PRIMER 302 LV** Material Safety Data Sheet.



LONGEVITY BY DESIGN<sup>SM</sup>  
A Subsidiary of Quest Specialty Chemicals<sup>TM</sup>  
19011 E. Cataldo Ave. • Spokane Valley, WA 99016  
(509) 926-7143 • Fax: (509) 928-1116  
(800) 541-4383 • www.unitedcoatings.com

*Our products are guaranteed to meet established quality control standards. Information contained in our technical data is based on laboratory and field testing, but is subject to change without prior notice. No guarantees of accuracy are given or implied, nor does UNITED assume any responsibility for coverage, performance or injuries resulting from storage, handling or use of our products. Liability, if any, is limited to product replacement or, if applicable, to the terms stated within the executed project warranty.*

