



POLYURETHANE SOLVENT-BASED SPRAY SERIES APPLICATION GUIDE



Once the processing equipment has been chosen, ensure you understand the operation, cleaning, and maintenance from the equipment manufacturer. We recommend separate hoses, fittings, and spray guns when processing Polyurethane from other coating types. When mixing and processing any flammable liquid, ensure equipment is electrically ground and spark proofed. Refer to product TDS for detailed information. Recoat time without additional surface preparation is under 72 hours at 23°C (73°F).

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POLYURETHANE SOLVENT-BASED SPRAY SERIES

PROCESSING EQUIPMENT

- Standard airless - high volume, for coating wide open space
- Conventional - medium to low volume, for coating smaller complex parts

Standard airless pumps with a minimum of 2000psi tip pressure is required. Both air and electric motors can be used and to include 80 mesh inline filters. Proper hose length to maintain tip pressure over distance of 3000psi to include a Teflon core. Preferably a ¼” whip end of 10ft then the main hose of ¾” or ½”. A quality airless spray gun including a swivel connection and reverse cleaning spray tip is recommended. Tip size from .017” to .021” with varying fan patterns will ensure most applications are covered. Dilution rates are minimal and typically at 20%. Conventional equipment such as pressure pot or gravity feed guns are great options for small to medium sized coating jobs. Dilution rates will typically be higher than standard airless, up to 50%.

Pot life / Working Time: 1 hour at 23°C (73°F) at 50% relative humidity. Pot life correlates with temperature, humidity, and mass. As the conditions change, so will the pot life.

Kit Sizes and Packaging: Products are packaged at the proper mix ratio. Splitting pre-packaged kits is possible when done accurately. The use of a weigh scale measuring in one-gram increments will provide the required accuracy.

Application Conditions: Ambient and surface temperature should be similar and between 10°C to 45°C (50°F to 113°F). Warming surfaces and surrounding air is a good option when working in colder temperatures. Relative humidity should be below 85% and dew point is maintained 3C (5F) above substrate temperature for the duration of the application. Higher temperatures will speed cure times. It is possible to spray at lower temperatures when dewpoint and humidity levels are safe, expect cure times of all products to lengthen. Always protect the surface from contaminants and direct sunlight.

MIXING

- Required – Polyurethane A&B parts, thinning solvent, T-10 (high-build additive) and pigment if not pre-tinted.
- Ensure each product mix ratio is met, and calculations have been noted.
- Mix by shaking part B container for one minute, part A does not require mixing.
- Solvent thinning is determined by application equipment, atomization requirements, and desired surface finish. 100% dilution rate is possible but rarely required. Your goal is to use the least amount of thinner to achieve desired results.
- M.C. (Methylene Chloride) is the preferred solvent, a non flammable with very fast evaporation rate. MEK (Methyl Ethyl Ketone) is another option.
- If not already colored, pigment is added to the mix at a rate of 0.5% based on part A weight. Pigment can be increased up to 2% based on part A weight if required.
- T-10 is a thixotropic agent used to increase spray thickness per pass. This additive will save application time when higher thickness is required. T-10 quantities are based on kit sizes, 20 g for 5 kg kit and 100 g for 25 kg kits. After both A&B parts are thoroughly mixed together, add T-10 and power mix to achieve a uniform mix and desired result.
- Mixing of all components should be done in a clean appropriately sized container. Plastic mixing containers are preferred as cured PU is removed easily for container reuse.

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Demasking: Demasking and final trimming should take place before the material has reached final cross-linking and therefore can be trimmed with minimal force. This can only be determined in-situ environment. Trimming will become more difficult as cure time lengthens.

Ultimate Cure Time: These times will vary depending on ambient temperature. The warmer the ambient temperature the faster the material will cure. 80% material cure can be realized after 24 hours at room temperature 23°C (73°F). The final 20% will take 5 days.

SAFETY / PPE

- Read and understand the SDS for each product used
- Electrically ground and spark proof all mixing and processing equipment
- A supplied clean air system is recommended for breathing
- Use a full-face mask with disposable lens covers
- Protect skin, disposable spray suits, gloves, and footwear are recommended

STORAGE / SHELF-LIFE

- Keep all materials in a cool dry place out of direct sunlight
- Storage temperature range of 15°C to 30°C (60°F to 86°F)
- Pay attention to shelf life of 2+ years and rotate stock
- Only open containers as they are required
- Use clean dry vessels when transferring materials

SURFACE PREPARATION WHEN BONDING TO METAL

GENERAL

All substrates must be clean and dry with no oil, grease, or loose debris. NORMAC Polyurethane products use primers to successfully adhere to both porous and non-porous substrates. Individual adhesion tests should be performed to confirm adequate adhesion strength prior to use.

METAL

Metal substrates must be dry, clean, and sound. Remove all dirt, dust, grease, oils, detritus, and all other contaminants. Radius all sharp edges to minimum 3 mm (.120"), grind uneven seam lines, and remove weld splatter. Previously used metal should be checked for contamination that may require additional cleaning. Abrasive grit-blasting to SSPC-SPI0 near white including a minimum depth profile of 2 microns (.002") is recommended for maximum adhesion strength. Other forms of mechanical roughening to clean and profile are possible such as grinding but expect lower adhesion strength. All metals require NP-9500 to achieve maximum adhesion strength. NP-9600 is used in conjunction with NP-9500 for immersion service only. Specialty and some hardened metals will require adhesion testing to ensure acceptable results.

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Salt Contaminated Surfaces/Efflorescence: Metal surfaces that have been immersed for any time in salt solutions should first be grit-blasted to remove existing coating. For best results, power wash with hot water using minimum 120C (248F) to flush capillary residue. Quickly force dry completely using open propane torch flame to evaporate dissolved salts. Repeat steps until salt contamination has reached a maximum of 15mg/sqm. Finish by grit-blasting to specification.

ELASTOMERS

Elastomer substrates include cured Rubber, Polyurethane, Polyurea, and PVC belting. Surface must be dry, clean, and sound. Remove all dirt, dust, grease, oils, detritus, and contaminants by solvent clean and choose the appropriate method for mechanical roughening to achieve desired adhesion strength. De-glossing using abrasive blast cleaning and or power tool cleaning, to achieve a minimum depth profile of 25 micron (.001"). Grinding or sanding using slow speed rotation (under 2000 rpm) by heavy wire wheel, or 24 to 50 grit aluminum oxide disks can achieve results. Elastomers require either NP-8400 or NP-9500 primer to ensure maximum adhesion strength.

CONCRETE

Concrete surfaces are plane, and must be clean, sound, and dry. For best results, uneven profiled and blow-holed surface imperfections should be repaired and allowed to cure to a smooth level surface prior to mechanical roughening. Grit-blasting and grinding are best to achieve a minimum depth profile of 50 microns (.002"). Remove any dust, laitance, grease, oil, dirt, detritus, and all other contaminants from the concrete. New concrete must be cured for a minimum of 28 days with less than 15% moisture content. The compressive strength of the concrete substrate should be at least 20 MPa (3000 psi) at the time of application. Concrete requires NP-100 primer to ensure adequate adhesion strength and to stop outgassing. NP-100 can be mixed with aggregate to make high strength repair mortars.

OTHER SUBSTRATES

These substrates include Carbon Fiber, Fiberglass, and Wood. Surface must be dry, clean, and sound. Remove all dirt, dust, grease, oils, detritus, and contaminants by solvent clean and choose the appropriate method for mechanical roughening for desired adhesion strength. De-glossing using abrasive blast cleaning and or power tool cleaning, to achieve a minimum depth profile of 25 micron (.001"). Use NP-9500 primer to ensure maximum adhesion strength. Wood is porous and may not require primer.

Note: Cured product results will vary as each application has specific service condition variables. NORMAC cannot accept responsibility for determining the suitability of an existing coating as a substrate for our products. The Owner or their Representative shall perform adhesion tests on any existing substrate to determine suitability.

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METAL PRIMER APPLICATION

NP-9500 PRIMER

- Two coats of NP-9500 are required for all metal applications; 30 minutes between coats.
- PU top-coat window is 6 hours. If you find yourself outside the window, simply re-prime.
- The 2nd coat of primer can be applied at a maximum of 5 days after the 1st coat.
- A two-part system, mixed ratio of 3A to 1B by weight only. Shake both parts well before use.
- Applied by roller, brush, or spray.
- Dilute using MEK solvent up to 25% depending on application method.
- A DFT of 50 microns (0.002") is required.

FOR IMMERSION SERVICE ONLY

NP-9600 WASH PRIMER

- One thin coat is required, used in conjunction with NP-9500 primer only.
- Applied a minimum 6 hours before topcoating with NP-9500 primer.
- Mix each part well prior to use. It's recommended to scrape the bottom of the "A" side can.
- A two-part system, mixed ratio of 100A to 91B by weight. 1:1 by volume.
- Applied to prepared metal using roller, brush, or spray.
- Dilute using MEK solvent up to 25% depending on application method.
- A DFT of 12.5 microns (0.0005") thickness is required.

POLYURETHANE SPRAY TECHNIQUES

- Allow a minimum 15 minutes between coats at 23C (73F). Colder temps = longer wait
- Spray at 90 degrees to the substrate whenever possible
- Use the theory of "light coats" and many coats
- While spraying, look for the gloss and move on
- Cross hatching whenever possible
- Measure thickness to understand what you are achieving per pass
- Coat hard to access areas first, before moving to easy open areas
- Trim any drips or sags prior to the last few coats for best finish appearance

Recoat and Repair for Polyurethane: Surface preparation for over-coating becomes necessary when more than 72 hours have elapsed, or you wish to adhere to previously coated urethane. NP-9500 primer is used to bond new urethane to previously applied urethane using one coat of 25 micron (0.001") after proper surface preparation has been completed.

Surface Prep Options:

- Grit-blasting using a medium to coarse grit size. Plan to remove the gloss and 50 micron (.002") of existing coating.
- Sanding with a slow speed sander at 2000 rpm or less and a 24, 36, 50 grit aluminum oxide sanding disks. Plan to remove the gloss and 50 micron (.002") of existing coating.
- Wire brush attachment on a grinder or drill. Use a slow speed under 2000 rpm. Plan to remove the gloss and 50 micron (.002") of existing coating.

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TROUBLESHOOTING

SYMPTOM	POTENTIAL CAUSE	POSSIBLE SOLUTIONS
Runs and sags	Excessive thickness per pass	Spray each pass thinner Wait 15 min to overcoat
Delamination	Exceeding recoat window Off ratio mixing	Recoat window is under 72 hrs Mix products according to TDS
Blisters	Off ratio mixing Contamination Solvent has not flashed off At dew point water entrapment	Mix products according to TDS Check and clean contaminants Ensure primer is dry Check environment conditions
Uneven surface finish	Dilution rate Air Atomization	Adjust dilution rate for proper atomization

DISCLAIMER

The direction for the use of our products are based upon tests believed to be reliable but no warranty is given. Since conditions for the use of this product are beyond the seller's control, all risks are assumed by the user. Please contact your local agent or call Normac Adhesive Products Inc. (905) 332.6455 for further assistance.



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