



# SOLVENT-BASED SPRAYABLE POLYURETHANE SERIES APPLICATION GUIDE



Once the processing equipment has been chosen, ensure you understand the operation, cleaning, and maintenance from the equipment manufacturer. Separate hoses, fittings, and spray guns are recommended when processing Polyurethane from other coating types. Compressed clean dry regulated air using specifications set by the equipment manufacturer is important. When mixing and processing any flammable liquid, ensure equipment is electrically ground and spark proofed. When necessary, you can overcoat without additional surface preparation in under 72 hours at 23°C (73°F).

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# SOLVENT-BASED SPRAYABLE POLYURETHANE SERIES

## SAFETY / PPE

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

## 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 containers when transferring and mixing materials.

## PROCESSING EQUIPMENT

- Standard airless - high volume, coating wide open space.
- Conventional - medium to low volume, coating smaller complex parts.
- Brush and Roller - Use high quality lint free applicators.

**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 under 20%.

**Conventional** equipment such as pressure pot or gravity feed guns are great options for small to medium sized coating jobs. Dilution rates can be higher to achieve proper fan pattern transfer.

## 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. Refer to the product TDS for mix ratios.

## MATERIAL CALCULATIONS

Are based on product solids content, surface area, and polyurethane thickness and expressed as a ratio of part A&B by product weight. Spray waste must be included in this calculation. We estimate this percentage from past experience, part size, level of detail, and spray equipment. Typically large open areas are under 20% while smaller more detailed parts will be greater than 20%.

**Calculation:**  $(\text{Surface Area} / \text{Coverage Rate}) \times \text{Mil thickness}$ .

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## POT LIFE / WORKING TIME

One (1) hour at 23°C (73°F) at 50% relative humidity. Only mix what you can spray in one hour. Pot life correlates with temperature and humidity. As the conditions change, so will the pot life.

## MIXING INSTRUCTIONS

- 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. A 50% dilution rate is possible but rarely required. Using the least amount of thinner to achieve desired results will save time and money.
- 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 thickening additive 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, 20g for 5kg kit and 100g for 25kg 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.

## MASKING / DEMASKING

Using paper or plastic sheet and duct tape made by 3M (3939) are our preferred consumables for masking parts. Demasking and final trimming should take place before final cross-linking and therefore trimmed using minimal force. Trimming will become more difficult as cure time lengthens.

## ULTIMATE CURE

Expect 80% material cure after 24 hours while 100% cure will be reached in 5 days at 23°C (73°F). These times may vary depending on ambient temperature. The warmer the temperature the faster the material will cure. Allow a full 5 days cure for any application involving immersion or vacuum service.

## 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.

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## SURFACE PREPARATION

Before priming, all substrates must be free from existing coatings, dry, clean, and structurally solid. Remove dirt and dust by sweeping or by dry compressed air. Contaminants like oil and grease can be cleaned using a lint free rag and a suitable solvent. When adequate surface preparation cannot be achieved, adhesion testing is done to confirm acceptable adhesion strength.

### METAL

Includes ferrous and nonferrous. Radius all sharp edges, grind uneven seam lines, and remove weld splatter. For maximum adhesion, grit-blast to standard SSPC-SPI0 near white including a 50 micron (.002") depth profile. Other forms of cleaning and profiling are possible like slow speed grinding with aluminum oxide disks but expect lower adhesion strength. Specialty hardened metals require adhesion testing to ensure results. Cast and previously used metal should be checked for contamination and may require additional cleaning.

**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 120°C (248°F) 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

Includes cured rubber, polyurethane, polyurea, and PVC belting. De-gloss using abrasive blast cleaning or power tool cleaning methods. Include a minimum depth profile of 25 micron (.001"). Grinding or sanding using slow speed rotation by wire wheel, or 36 to 50 grit aluminum oxide disks can achieve results. Avoid melting or burning the elastomer surface during preparation as this will cause adhesion failure.

### CONCRETE

Uneven and blow-holed surfaces should be repaired and allowed to cure. Grit-blasting or grinding to achieve a 50 micron (.002") depth profile. New concrete should be cured for a minimum of 28 days and contain less than 15% moisture. Concrete is sealed using NP-100 primer to prevent outgassing and to maximize adhesion. NP-100 primer can be mixed with sand to make a high strength repair mortar.

### OTHER

Includes carbon fiber, fiberglass, and wood. De-gloss using abrasive blast cleaning or power tool cleaning. Include a minimum depth profile of 25 micron (.001"). NP-9500 primer is used to maximize adhesion. 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

- A DFT of 50 microns (0.002"/2mil) is required.
- To reach the recommended DFT, two coats can be applied 30 minutes apart.
- Applied by roller, brush, or spray.
- Dilution is not required when applying by brush or roller.
- Dilute up to 20% with MEK to obtain an even spray pattern.
- A two-part system, mix ratio of 3A to 1B by weight. Shake both parts well before use.
- The 2nd coat of primer can be applied at a maximum of 5 days after the 1st coat.
- Polyurethane topcoat window is up to 6 hours. Re-prime if you are outside this window.

### NP-9600 WASH PRIMER - FOR IMMERSION AND SPECIAL BONDING APPLICATION

- A DFT of 12.5 microns (0.0005"/0.5mil) thickness is required.
- Excessive DFT will cause cohesive failure.
- Always topcoated with NP-9500 primer to complete the system.
- To reach the recommended DFT, dilution up to 50% can be applied.
- Dilute using MEK to obtain proper spray pattern and or flow properties.
- Applied by roller, brush, or spray.
- A two-part system, mix ratio of 100A to 91B by weight or 1:1 by volume.
- Applied a minimum of 6 hours before topcoating with NP-9500 primer.
- Re-suspend solids content prior to mixing by scraping the bottom of Pt A side.

## POLYURETHANE SPRAY TECHNIQUES

- Allow a minimum 15 minutes between coats at 23°C (73°F). Colder temps, longer wait.
- Experienced applicators can achieve 4mil to 6mil DFT per wet pass.
- 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 or sand any drips or sags prior to the last few coats for best finish appearance.

## OVERCOAT AND REPAIR FOR POLYURETHANE

Surface preparation for over-coating becomes necessary when more than 72 hours have elapsed, or you wish to adhere to cured polyurethane. NP-9500 primer is used to bond liquid polyurethane to cured polyurethane using one coat DFT of 25 micron (0.001") after proper surface preparation.

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### 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.

### TROUBLESHOOTING

SYMPTOM	POTENTIAL CAUSE	POSSIBLE SOLUTIONS
<b>Runs and sags</b>	Excessive thickness per pass	Spray each pass thinner Wait 15 min to overcoat
<b>Delamination</b>	Exceeding overcoat window Off ratio mixing	Recoat window is under 72 hrs Mix products according to TDS
<b>Blisters</b>	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
<b>Uneven surface finish</b>	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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