



100% SOLIDS SPRAYABLE POLYURETHANE SERIES APPLICATION GUIDE



Processing 100% solids sprayable Polyurethane requires the use of heated plural component equipment. These Polyurethanes require heating to ensure both A&B parts have similar viscosities for proper ratio mixing. Refer to product TDS as processing temperature may differ between products, application equipment, and desired finish. Overcoat time without additional surface preparation is under 2 hours at 23°C (73°F) for most of these products.

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100% SOLIDS SPRAY POLYURETHANE SERIES

SAFETY / PPE

- Read and understand the SDS for each product used.
- Always use in a well ventilated space.
- Use respirators including organic vapor cartridges and pre-filters.
- Full face mask or respirator with disposable lens covers are recommended.
- A supplied clean air system when working in a confined space environment.
- 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.
- Part A (resin) once opened, should be purged with nitrogen if storing for a period of time.

SPRAY PROCESSING EQUIPMENT

DUAL CARTRIDGE DISPENSER SYSTEM

- Simple training, minimal investment.
- Used for smaller applications, R&D, repair, special locations.
- See Normac Youtube video - Processing and Operating Instructions.
- Additional equipment - microwave, clean dry compressed air, and PPE.

SFLP-D PROCESSING MACHINE (SOLVENT FREE LOW PRESSURE - DIGITAL)

- Custom design to maximize efficiencies.
- Requires Normac certificate training.
- Used for all sized projects.
- Additional equipment - pail heaters, clean dry compressed air, and PPE.

HIGH PRESSURE APPLICATION SYSTEM (GRACO, PMC)

- Requires training and support from the OEM/distribution.

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.

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MATERIAL CALCULATIONS

Are based on surface area and polyurethane thickness and expressed as a ratio of part A&B by weight. Spray and general 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%. Theoretical coverage rate for any 100% solid system is 34sqm @ 25micron/kg (166sqft @ .001"/lb).

POT LIFE / WORKING TIME

Under 2 minutes at 23°C (73°F) at 50% relative humidity. Pot life correlates with temperature, humidity, and mass. The higher the temperature, the larger the mass, the shorter the pot life. Typically, the softer the durometer the longer the pot life.

POLYURETHANE CONDITIONING

It is critical to understand that at no time during heating should the prepolymer (part A) be heated above 88°C (190°F). Excessive heating will reduce material quality quickly, lowering physical properties. Please monitor and record temperatures and times when heating to assure quality.

- Warming methods: microwave, electrical band heater, industrial oven.
- Dual cartridge processing temperatures should not exceed 50°C (122°F).
- Heating the cartridge above this may affect the integrity of the plastic container.
- Machine processing temperatures Part A 80°C (177°F), Part B 23°C (73°F)
- Refer to individual product TDS for processing temperatures.
- Part A - No mixing is required.
- Part B – Power mix or shake thoroughly to achieve a uniform mixture.
- If resin (Pt A) is highly viscous and has a “frozen” like appearance, slowly warm back to processing temperature. This “unfreezing” can take up to one day at 50°C (120°F) depending on volume.
- For more information see “Heat History during Pre-heating and Processing Polyurethanes” data sheet.

MASKING / DEMASKING

Using paper or plastic sheet along with 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% cure after 24 hours while 100% cure will be reached in 5 days at 23°C (73°F). The warmer the ambient temperature the faster the material will cure. Allow a full 5 days cure for any application involving immersion or vacuum service. While post heating is not necessary, heating to a maximum of 60°C (140°F) for 24 hours will speed up ultimate cure times.

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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.

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-SPI10 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-100/200 primer to prevent outgassing and to maximize adhesion. NP-100/200 primer can be mixed with sand to make a high strength repair mortar.

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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.

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 top-coat window 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

- Expect 250 micron (0.010") 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.

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OVERCOAT AND REPAIR FOR POLYURETHANE

Surface preparation for overcoating becomes necessary when more than 2 hours have elapsed, or you wish to adhere to cured polyurethane. 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 PREPARATION 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 2000rpm or less and a 24, 36, 50 grit aluminum oxide sanding disk. 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 2000rpm. Plan to remove the gloss and 50 micron (.002") of existing coating.

TROUBLESHOOTING

SYMPTOM	POTENTIAL CAUSE	POSSIBLE SOLUTIONS
Runs and sags	Excessive thickness per pass	Spray each pass thinner Wait one min to overcoat
Delamination	Exceeding overcoat window Off ratio mixing	Recoat window is under two 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	Material Temperature Air Atomization	Part A 80C, Part B 23C Adjust 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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