



# 600R AND 900 COLD BOND CEMENT SERIES APPLICATION GUIDE



The key to achieving a successful bonding process when applying cold bond cements and metal primers is in fully understanding the correct application procedures and limitations, both in the field and in the workshop.

NORMAC Cements are chloroprene or polymer based and are two component, room temperature curing liquid adhesives used to bond materials together without the use of heat, pressure, or special equipment. These cements require hardener mixed at a specific ratio to achieve maximum adhesion strength. See product TDS and SDS for further detailed information.

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## 600R & 900 COLD BOND CEMENT SERIES

### SAFETY AND WORKPLACE ENVIRONMENTAL CONTROLS:

- Before product use, read and understand product SDS and follow regional safety regulations.
- Both inhalation and dermal exposure may cause allergic reactions and precautions should be taken.
- Use an approved NIOSH respirator with cartridge filter where airborne exposure limits are expected to be high. Proper ventilation such as exhaust fans should be used and placed at floor level to be effective.
- Protect skin by wearing impervious clothing, butyl viton gloves, and splash proof safety goggles.
- When using flammable products, equipment and transfer containers should be non-sparking and electrically grounded.
- Spills should be absorbed and then water added to destroy uncured isocyanate.
- It is imperative to provide suitable protection from the elements for the product and technician. The use of protective covers such as awnings and tarpaulins can provide adequate protection against adverse conditions.
- In colder conditions, use quartz halogen lighting, propane heater, infra-red heater, infra-red drying hoods to increase temperatures during the application. The use of diesel fired heaters is not recommended, as the emissions may contaminate the prepared surface and cement.

### STORAGE:

- Keep in a dry, well ventilated location away from direct sunlight and ignition source.
- 15°C to 25°C (60°F to 77°F).
- Keep containers tightly closed and locked up.
- Pay attention to the shelf life.
- Only open containers as they are required.

### MATERIAL CONDITIONING:

- All cements should be removed from storage and brought to room temperature prior to use. During colder temperatures cements may thicken or gel. To return the product to a workable state, warm to 23°C (73°F).
- All cements regardless of packaging, if left undisturbed for prolonged periods will require mixing to ensure solids re-suspension and to get ingredients back into proper solution prior to drawing or pouring.
- Mechanical mixing by stirring, shaking or using a drill and jiffy type pail/drum mixer is the best mixing option. Rolling on the floor or by device is less effective especially after long periods of storage. It is recommended to mix every 24 to 48 hours or at the start of each day.
- Further solvent dilution is not required and should be avoided.

### APPLICATION CONDITIONS:

Ambient and surface temperature should be similar and above 10°C (50°F). Warming surfaces and surrounding air is a good option when working in colder temperatures. Relative humidity should be below 80% and dew point is maintained 3°C (5°F) above substrate temperature. Always protect the surface from contaminants and direct sunlight. Once established, maintain these favorable conditions for the entire length of the application.

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### **SURFACE PREPARATION OVERVIEW:**

All substrates are completely dry and free from contamination. The substrate type and desired adhesion strength will determine the surface preparation method. For maximum adhesion to metal, grit-blasting using standard SSPC-SPI10 including minimum 50 micron (0.002") anchor depth profile is recommended. Where grit-blasting is impractical, use standard SSPC-SPI1 with minimum 25 micron (.001") profile to achieve desired adhesion strength.

See "Substrate Preparation" below for more specific detail for each substrate.

### **APPLICATION INSTRUCTIONS:**

- Mix by stirring or shaking the appropriate amount of 900 or 600R Cement and Hardener for one minute, then begin your 1st coat (dry coat) with a brush or lint free roller using a scrubbing type motion to ensure all areas are filled and covered evenly while avoiding runs and puddles. Allow this 1st coat to dry completely for a minimum of one hour (overnight is ideal) before moving to the 2nd coat (tack coat).
- Apply the second coat (tack-coat) of 900 or 600R Cement to both surfaces at the same time to ensure drying times are equal. Apply a thin even coat, similar to painting using a brush or roller. At the optimum joining time, the cement feels tacky to the touch but does not transfer to the back of the hand when testing. This takes approximately 7 to 10 minutes for all 900 series rubber cements, and 3 to 5 minutes for 600R plastic cement. If the tack coat becomes too dry, re-cement both surfaces and wait for the tack stage.
- Once the materials are placed together and positioned, and depending on material thickness, stitch vigorously using a small flat roller, rubber mallet, and or pneumatic hammer tool to apply pressure and ensure maximum surface contact. Make overlapping passes, working out towards the edges while removing any trapped air.

### **DRYING TIMES:**

- It is imperative that NP-5001 metal primer and the 1st coat of cement are completely dry before continuing with the application. We recommend a minimum drying time of 1 hour for each.
- Drying time for cements and metal primer will vary considerably depending on the ambient and substrate temperature along with relative humidity. Drying times are more adversely affected in LOW temperature HIGH humidity conditions. The use of fans to increase air circulation will increase the evaporation or flash off time for the solvents.

### **CURE RATE AND ADHESIVE STRENGTH:**

- Typical for all cross-linked cold bond cements on the market, expect 50% adhesive strength in under 4 hours, 80% after 24 hours and the balance over the next 14 days.
- As a guide, starting from 23°C (73°F), for every 5.5°C (10°F) drop in temperature you can double the cure time and vice versa for warmer temperatures.
- From experience when belt splicing, the more surface area within the splice, the more strength there will be for speedy back to service applications. Minimum 3 to 4 hours to return to service if the belt splice length is equal to the width of the belt.
- If heat curing is used, ensure the temperature stays 10°C (20°F) below the cements solvent boiling point.

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**METAL PRIMERS:** See NP-5001 TDS for product details.

NP-5001 metal primer serves three major functions when applied after proper surface preparation.

- Prevents surface rust/oxidation when applied immediately after surface preparation.
- Increases adhesion strength between cement and metal.
- Allows metal storage up to 7 days when protected from sunlight and contamination.

Always mechanically mix by stirring or shaking NP-5001 primer before applying. As with the cements, a settling or separation of the solids from the solvent base can occur. A thin even application can be accomplished using a lint free roller or brush to a dry film thickness (DFT) of 25 microns (.001”).

### TROUBLESHOOTING AND TIPS:

- **Bonding when the cement is too DRY.** This is the most common cause of bond failure. The adhesion will be poor and spotty. If this occurs, re-coat the surfaces and wait for tack stage before joining.
- **Bonding when the cement is too WET.** If surfaces are placed together when the cement is still wet, the initial bonding strength will be poor. However, the cement will cure over time, as the solvent evaporates.
- **Bonding without adequate pressure.** The ultimate strength of the bond is improved as surface contact pressure is increased. The addition of continuous weight or pressure is advantageous where insufficient pressure cannot be applied by hand. Items may be left to stand under pressure overnight if required.
- **Substrate contamination.** Adequate cleaning to remove all contamination prior to surface profiling.
- **Poor adhesion strength.** Increased surface profile will ensure a strong bond strength.
- **Improper mixing.** Re-suspension of solids is imperative for successful adhesion for cement and primer.
- **Uneven cement application.** The results are different dry and tack times which will cause some sections to stick and others to release ultimately causing inconsistent adhesion.
- **Large installations.** When rubber lining large items such as tanks and hoppers etc, applying the lining while the cement is still moist allows the lining to be re-positioned if needed. Once the lining is in place, pressure must be applied.
- **Dry fitting.** Is the term given to the pre-positioning of the rubber lagging or lining prior to applying the cement. This is a very effective method of installation and can considerably simplify the lining process.

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### SUBSTRATE PREPARATION

**RUBBER** – If the rubber has a bonding layer you have the option to move directly to the cement application. If not, prepare the bonding side of the rubber by first wiping entirely to remove contaminants with NR-TR or a non-oil-based solvent, then roughen to remove all shiny spots using a slow speed grinder with 24 to 36 aluminum oxide sanding disk or stiff wire wheel (< 2000rpm). Avoid tools with high speed rotation as this will result in burning and charring the rubber, negatively affecting adhesion.

**METAL** - Remove all weld splatter, weld seams, sharp edges, and irregularities by surface grinding. Grit-blast using standard SSPC-SPI10 near white including a minimum anchor depth profile of 50 microns (.002”). Be aware using other forms of surface preparations will reduce adhesion strength. Immediately after metal surface preparation, apply one even coat of NP-5001 metal primer. Primed metal can be stored for up to 7 days if kept cool, dry, and away from UV exposure. Cover to maintain cleanliness.

**FABRIC BELTING**– Prepare the fabric rubber belting by first wiping entirely to remove contaminants with NR-TR or a non-oil-based solvent. Be careful not to saturate the fabric with solvent as this may result in poor bond strength. While avoiding damage to the fabric, roughen rubber around the fabric to remove all shiny spots and create a profile using a slow speed grinder with 24 to 36 aluminum oxide sanding disk or stiff wire wheel (< 2000rpm). Avoid tools with high speed rotation as this will result in burning and charring the rubber, negatively affecting adhesion. Fabric that is R.F.L. treated should be cleaned and dry prior to cement application. Avoid removing R.F.L. treatment as this will reduce fabric strength. Do not sand or grind fabric.

**FIBERGLASS** – Prepare the fiberglass surface by first wiping entirely to remove contaminants with NR-TR or a non-oil-based solvent. Then sand the surface to create a profile and remove all shiny spots using hand sanding, slow speed sander or light wire wheel.

**CONCRETE** - New concrete or masonry must be thoroughly cured for a minimum of 28 days before attempting any surface coatings. Moisture content should be under 15% to be successful. Grit blast using a medium to fine grit to include a minimum anchor depth profile of 50 microns (.002”). Other forms of surface preparations such as grinding and acid pickling can be used but may reduce adhesion strength.

**PVC BELTING** – Prepare the PVC surface by first wiping entirely to remove contaminants with NR-TR or a non-oil-based solvent. Then roughen to remove all shiny spots using a slow speed grinder with 24 to 36 aluminum oxide sanding disk or stiff wire wheel (< 2000rpm). Avoid tools with high speed rotation as this will result in burning or charring the PVC, negatively affecting adhesion. There is potential to use a single coat of 600R and or less surface preparation, but this requires testing by the user to assure acceptable adhesion.

**POLYURETHANE** – If the polyurethane has a bonding layer you have the option to move directly to the cement application. If not, prepare the bonding side of the polyurethane by first wiping entirely to remove contaminants with NR-TR or a non-oil-based solvent, then roughen to remove all shiny spots using a slow speed grinder with 24 to 36 aluminum oxide sanding disk or stiff wire wheel (< 2000rpm). Avoid tools with high speed rotation as this will result in burning and charring the polyurethane, negatively affecting adhesion. There is potential to use a single coat of 600R and or less surface preparation, but this requires testing by the user to assure acceptable adhesion.

**WOOD** – Prepare the dry wood surface by grit blasting to create a profile. Because certain wood can be porous, it is possible to skip aggressive surface preparation and move directly to cement application. Testing should be carried out by the user to determine which preparation method will provide adequate bond strength for their specific application.

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### **SUMMARY**

*Cold bond adhesive systems are widely used around the world in varying climates and operating conditions with complete success.*

*These products are safe and easy to apply, and when used in accordance with this application guide and safety recommendations, will ensure a high-quality bonding process with outstanding results.*

*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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