



**ST-1 Surface Treatment & Adhesion Promoter is designed to clean and prepare almost all surfaces for superior adhesion of paints, adhesives, powder coats, sealants, and other coating systems. ST-1 saves time by replacing hazardous chemicals and their application processes including: alkaline wash, acid brightener, solvents, chromate conversion and zinc phosphate. ST-1 provides an economical and environmentally superior alternative to more costly and hazardous processes.**

## ST-1 Provides Superior Adhesion

ST-1 chemically increases the surface energy and wets the substrate activating these surfaces for better coating performance. The thin (5-20 angstroms) layer provides more intimate contact between the coating and the substrate surface compared to traditional surface preparation technologies. Additionally, ST-1 cleans the surface of oils, fuels, dirt, and other contaminants while sequestering various metals and salts that remain on the surface.

## Environmental Health & Safety

ST-1 is chrome-free, non-toxic, non-hazardous, nonflammable, non-corrosive, CFC free, ODS free, odor free, and readily biodegradable upon disposal. ST-1 does not require additional HAZMAT shipping charges and can reduce rinse water usage and potentially eliminate waste water treatment from many processes. Please consult with your local municipality before disposing of product.

## Features & Safety Benefits

- Ready to Use
- Non-Hazardous
- Non-Flammable
- VOC Compliant
- Superior Adhesion
- Improved Flake Orientation
- Superior Color Consistency
- Advanced Corrosion Protection
- Low Odor
- Environmentally Sustainable
- Environmentally Friendly
- Reduces Labor & Material Costs
- Water-based
- No Additional HAZMAT Costs
- Biodegradable Upon Disposal
- Improved Paint Flexibility

## Safe & Effective On

- ✓ Aluminum
- ✓ Composites
- ✓ Wood
- ✓ Concrete
- ✓ Steel
- ✓ Magnesium
- ✓ Galvanized Surfaces
- ✓ Titanium
- ✓ Plastic Surfaces
- ✓ CRES

## Health & Safety Precaution

ST-1 is safe to use and apply when recommended precautions are followed. Before using this product, please read and understand the Safety Data Sheet (SDS), which provides information on health, physical and environmental hazards, handling precautions and first aid recommendations. Wear safety glasses and rain gear to keep ST-1 off skin and out of eyes. An SDS is available on [PantheonChemical.com/SDS](http://PantheonChemical.com/SDS)

**Skin:** Wash thoroughly with hand soap and rinse with water.

**Eyes:** Flush with large amounts of water. If irritation persists, seek medical attention promptly.

**Inhalation:** No issues are expected under normal use.

**Ingestion:** Drink plenty of water or fruit juice. Do not induce vomiting. Seek medical aid.

**Spill Response:** Flush with water. Mop up any remainder and dispose of in normal fashion. Please follow all federal, state or local regulation regarding the treatment of waste.

## Physical & Chemical Properties

Boiling Point	219°F (104°C)
Freezing Point	28°F (-2°C)
pH (concentrate)	9.50-11.0
Corrosive	No
Specific Gravity at 25°C	0.96 to 1.04
Vapor Pressure	17.3mm Hg at 20°C
Water Solubility	100%
Biodegradable	Yes
Appearance	Clear-hazy Amber
Odor	None
Rinsibility	No Visual Residual
Application Temp	40-110°F (4-43°C)
Application Humidity	0-100%



## Application Methods

To ensure the performance and longevity of a coating system, proper surface preparation is essential. ST-1 can be used in replacement of washing, etching, and conversion coating steps for many application procedures. Application methods vary and can include:

- ✓ **Manual Application**
- ✓ **Spray Application**
- ✓ **Ultrasonic & Other Immersion Applications**

## Manual Application

This method can be used for large panel surfaces, truck bodies, automobiles, and scuff sand applications. This method is best used in applications where the substrate surface is heavily contaminated, has minimal surface profile, and/or the substrate material is primarily considered non-porous.

Using a hand sprayer or low pressure drum pump, spray ST-1 liberally to the surface, working small areas to avoid ST-1 drying on the surface. Working from top downward, agitate the surface with a scotch-brite pad ensuring that a moderate amount of foam is generated. Be sure to scrub all crevices and corners.

Rinse the ST-1 treated area from top-down with water of adequate quality. Look for a water break free surface as you rinse (typically within ten seconds when using ST-1). Repeat steps 1 and 2 until the entire surface has been treated. Allow the surface to dry (forced hot air drying is acceptable), keeping it in an area free from contamination.

Paint the surface using primer and/or top coat as required within 24 hours.

## High Pressure Spray Application

This method can be used for large surface areas where a manual scrub application is not possible. Examples are: established spray manufacturing processes, larger complex components, water shedding applications and any application to a physically abraded surface conforming to NACE or SSPC cleaning standards. This method is best used in applications where the substrate surface has an increased profile due to the substrates natural state and/or from surface modification. This method also works well for porous substrate surfaces.

1. Use a high pressure sprayer (2000 - 3000 psi) to apply the ST-1 solution to the surface. For best results, keep the tip of the pressure wand within one foot of the area being pretreated to maximize impingement of ST-1 to the surface. Allow surface to dry (forced hot air drying is acceptable) keeping it in an area free from contamination.
2. Prepare a 2-5% solution, by volume, of ST-1. A pump and metering/mixing system can also be used. Adequate water quality should be used to dilute ST-1. Hot water can be used and will assist in the removal of contamination. Contact Pantheon Enterprises for best dilution ratio.
3. Paint the surface using primer and/or top coat as required within 24 hours.

## Ultrasonic & Immersion Applications

This method is best used for small parts and components with a complex shape, however it can also be used with larger components in an immersion line process. ST-1 immersion processes are customized to meet specific customer needs.

## Performance Results

Test Name	Test Description	Results
ASTM F519-97	Hydrogen Embrittlement	Pass
ASTM F484	Acrylic Crazeing	Pass
AMS P83310	Polycarbonate Crazeing	Pass
ASTM F483	Total Immersion	Pass
ASTM F1110	Sandwich Corrosion	Pass
ISO 1518	Paint Softening	Pass