

CARBITHANE 12 SERIES is an aliphatic acrylic polyurethane, two component satin and gloss coating. It is designed for interior and exterior exposures where long term durability and high performance are required. It contains an ultraviolet (UV) inhibitor for additional protection. It is suitable as a product finish or maintenance coating for metal, plastic, wood, and other related surfaces. It is recommended for metal fabrication and equipment that require extended coating service. Typical applications include diesel locomotives, trucks, trailers, bridges, pipelines, chemical plants, water tower exteriors, windows and doors, outdoor signs and playground equipment.

#### PRODUCT FEATURES

##### Durability:

1. High impact, mar, and abrasion resistance
2. Extremely hard, yet flexible film
3. Excellent adhesion over many substrates

##### Resistance to Severe Exposures:

1. Excellent gloss retention and UV resistance
2. Excellent chemical and corrosion resistance
3. Excellent humidity and water resistance
4. Excellent resistance to lubricating and cutting oils

##### Handling Advantages:

1. Quick dry. Handles in minutes.
2. Air dry or force dry, cures to baked-on hardness.
3. No induction time is required after the catalyst is added.
4. 505-16 Polyurethane Accelerator may be added to decrease dry time.

##### Appearance and Color:

1. Full gloss and satin finishes in an unlimited number of colors.
2. Full range of OEM, Munsell, RAL and designer colors with Carbitane Intermix System.

##### Safety:

1. CARBITHANE 12 Series Polyurethane is free of lead and other heavy metals.
2. CARBITHANE 12CO Catalyst does not contain Toluene Diisocyanate (TDI).

#### MIXING:

Hand stir each component before combining. Combine by volume 3-parts 12 Series Base with 1-part 12CO and stir thoroughly. Add reducer as required. For spraying, add one half part of T64 Polyurethane Fast Reducer, or more as required. Monitor viscosity to avoid over thinning. May be used immediately after mixing. No induction time is required.

#### PREPARATION: (Metal)

Surface must be free of dust, dirt, grease, oil, rust, mill scale, soap residue, and other surface contaminants. Remove surface contaminants by mechanical and/or chemical means. Steam cleaning, high pressure hot water detergent cleaning, and phosphate stage cleaning are common preparation methods. Water-based detergent cleaners must be thoroughly rinsed to remove soap residue. SSPC-SP1 Solvent Cleaning, if used, should utilize a solvent cleaner that meets the requirements of WHMIS and has a flashpoint above 100°F (38°C) and below 200°F (94°C) T3 Solvent Cleaner is suitable.. 707K3 Prepaint Cleaner is water-based and preferred for hand wiping. If corrosion is present, remove in accordance with SSPC-SP6 Commercial Blast Cleaning. For additional corrosion protection, use a primer listed below and follow its preparation guidelines.

#### Preparation (Plastic)

Airborne contaminants and film residue on most surfaces can be removed with a solution of 50% water, 50% Isopropyl alcohol. Some adhesives may require special surface cleaners or removers. Follow substrate manufacturer's recommendation for surface preparation.

#### APPLICATION

Apply when the air, product and surface temperatures are above 50°F (10°C) and at least 5°F (3°C) above the dew point.

#### SPRAYER TYPES

Conventional Spray: Binks Trophy Gun, Nozzle Set-up: 1.8 mm. (.070") X 12C. air: 35 psi 5-10 fp

HVLP Spray: Binks Trophy Gun, nozzle Set-up: 1.8 mm (.070") X 32H. air: 30 psi 8-12 fp

Air-Assisted Airless: Graco G15 Gun, AAM-515 tip.(.015") air: 25-30 psi 400 psi fp

Airless Spray: Graco XTR Gun with XHD tip: 011"-.013" 1200-1500 psi fp

Electrostatic Spray - Ransburg 65VK, Nozzle 80265-00, Tip 80264-14 14 mm

#### CURE SCHEDULE

Normal temperature: 77°F (25°C), 50% RH  
12W1 Gloss White catalyzed with 12CO Polyurethane Catalyst reduced with T-64 Polyurethane Fast Reducer.

Mixing ratio:	3:1:0.5.
Set to touch:	10 minutes
To handle:	105 minutes
Recoat:	When tack free. Abrade surface after seven days.
To pack:	Overnight
Force dry:	Allow 10 minutes for solvent to flash off. Heat parts for 20 min. at 180°F; or 30 minutes at 150°F.
Accelerated Cure:	Add 2 oz. of 505-16 accelerator to catalyzed gallon.

Drying rates will increase with lower ambient temperature, increased humidity, lower part temperature, lower coating temperature, increased part metal mass, increased line speed of force dry oven and increased film thickness.

#### Primers

Iron and Steel: <3.5 lbs/gal VOC

3E19 Gray Universal Primer

3W5 White Universal Primer

3R25 Red Oxide Universal Primer

> 3.5 lbs/gal VOC

3E11 Gray Universal Primer

3R17 Red Universal Primer

23R2 Red Oxide Epoxy Primer with

V-196 Catalyst.

See PDS for instructions and limitations for the specific primer.

Primers on ferrous metal surfaces increase corrosion protection of the substrate but are not required on many DTM (direct-to-metal) applications. Use 23R2 for highly corrosive conditions.

Plastic and Wood: Consult Carbit Sales Department for recommendations.

Clean up: Clean equipment after use with T-64 Polyurethane Fast Reducer.

## TYPICAL PROPERTIES

12W1 Gloss White as packaged, and catalyzed and reduced at 3:1:0.5 at normal temperatures.

Product Number/Color: 12 Series/ Color Chart, and as specified

Gloss (60°)Head): 90 units, minimum

Solids by Weight: 494% catalyzed and reduced

Solids by Volume: 34.3% catalyzed and reduced

Wt/Gal: 10.91 lbs.packaged

VOC: 4.6 lbs/gal. catalyzed and reduced

Viscosity #2 Zahn cup: 35 sec ± 2 sec. catalyzed and reduced

Pot Life: 8 hours catalyzed and reduced

Accelerated: 4 hours when 2 ounces of 505-16 Accelerator is added per unreduced gallon

Flash Point - Seta: 45°F packaged

Shelf Life: 1 year packaged from manufacturing date when stored inside.

Packaging: 55 gal, 5 gal, 1gal

Theo. Spreading rate 743 sq.ft/gal, at 1 mil DFT: packaged. 550 sq.ft/gal catalyzed and reduced.

Recommended Film Thickness: 1.25-1.5 mils dry, 3.6-4.0 mils wet.

Recommended 408-366 sq.ft/gal.

Spreading Rate: When computing working coverage, allow for application losses, irregular surfaces, etc.

## Performance Tests

The following tests were conducted on Bonderite 1000 panels spray coated with 12W1 White Gloss Polyurethane 1.25-1.5mils DFT, and aged for nine days at 77°F (25°C) at 50% RH. Tests meeting ASTM Standards are noted.

1. Salt Spray. ASTM B117, 2000 hrs unscribed area. No corrosion. With a prime coat of 3E19 Universal Gray Primer, 1.5mils DFT, 2000 hrs; less than 1/16" creepage from scribe.

2. 100% Relative Humidity. ASTM D2247, 1000 hrs No blisters.

3. Ultraviolet Accelerated Weathering. ASTM G53. UVB-340nm lamps. Test cycle: 8 hrs UV/4 hrs continuous for 2500 hrs, 85% of original gloss retained. UVB-313nm lamps. Test cycle: same, 2500 hrs, 74% of original gloss remaining. Color change < 1.0 DE.

4. Florida Environment Exposure-45° Facing South. 3 yrs exposure: 90% of original gloss.

5. Abrasion Resistance-Taber Abraser. ASTM D4060. CS-17 wheel, 1000g load: 1000 cycles < 90mg loss.

6. Impact Resistance. ASTM 2794. Direct impact: 160 inch-pounds. Indirect impact: 160 inch-pounds.

7. Pencil Hardness. ASTM D3363: >2H

8. Cross-hatch Tape Adhesion. ASTM D3359 Method B, 5B (100% adhesion).

9. Flexibility. ASTM D522: 1/8" conical mandrel bend.

10. Solvent Resistance. Panels aged at room temperature for two weeks. No film degradation in 200 double rubs with the following solvents: Lacquer Thinner, Acetone, Xylene, MEK, Gasoline.

11. Acid and Alkali Resistance. Panels aged at room temperature for two weeks. Spot test method under watch glass-24 hrs duration. The following solutions had no effect: 5% Hydrochloric Acid, 5% Nitric Acid, 5% Sulphuric Acid, 5% Acetic Acid, 5% Ammonium Hydroxide.

12. Oil and Stain Resistance. ASTM D1308, Panels immersed in lubricating oil for 72 hrs at 100°C-105°C and 200 hrs at room temperature: No effect. Panel spot tested, covered watch glass for 24 hrs with food coloring. Wiped clean with soap and water. No staining.

13. Water Immersion. Panels aged for thirty days at room temperature. 1000 hours. No effect.

## Product Limitations

1. CARBITHANE Acrylic Polyurethane 12 Series MUST BE CATALYZED at recommended mixing ratios for each catalyst. For Spray: 3:1 with 12CO. Do not vary ratios as product performance could be affected. Slight over or under catalyzation will not seriously affect performance.

2. Heat and accelerators shorten pot life. If used, plural component spraying systems are recommended. Do not pump catalyzed material through recirculating systems since this will result in additional heat build-up and potential hardening in the fluid lines.

3. Dip, flo-coat, tumbling, and other applications that require long material open times are not recommended.

4. Protect CARBITHANE Polyurethane catalysts and reducers from moisture. Gaseous reaction may occur. Store indoors.

5. Do not mix CARBITHANE 12 Series products with any other polyurethane products, catalysts, additives or reducers. Lacquer thinner and alcohol containing solvent blends are not to be used for reduction.

6. Plastic applications should be tested on individual substrates to ensure product performance prior to use. When coating plastic surfaces, the cure temperature of the coating must not exceed the heat distortion temperature of the plastic.

7. Do not package CARBITHANE 12 Series coated parts in air-tight plastic bags until the parts are fully cured.

8. CARBITHANE 12 Series may form small blisters if immersed in water before fully cured.

9. Some of CARBITHANE 12 Series brighter reds, yellows, and oranges may require a primer for improved hiding.

Toxicity

CARBITHANE 12 Series Polyurethanes are free of lead and heavy metals and are non-toxic

Safety

This product must be mixed with a CARBITHANE catalyst containing isocyanates. DO NOT BREATHE VAPOR OR SPRAY MIST. INDIVIDUALS WITH LUNG OR BREATHING PROBLEMS OR PRIOR REACTION TO ISOCYANATES MUST NOT BE EXPOSED TO VAPOR OR SPRAY MIST. If overspray is present, wear an air-purifying, positive pressure respirator (NIOSH/MSHA) approved for isocyanate mist environments. If unavailable, wear a combination organic vapor and particulate respirator (NIOSH/MSHA) approved. Avoid contact with eyes, skin, and clothing. Wear appropriate eye and skin protection.

VAPOR AND LIQUID ARE FLAMMABLE. VAPOR IS HARMFUL AND MAY AFFECT THE BRAIN AND CENTRAL NERVOUS SYSTEM CAUSING DIZZINESS, HEADACHE, OR NAUSEA. Keep away from heat, sparks, and flame. Use with adequate ventilation.

First Aid: Eye Contact: Flush with water for 15 minutes; get medical attention. Skin Contact: Wash with soap and water. If Swallowed: Get medical attention immediately. If Inhaled: If affected, remove to fresh air. Restore breathing. Get medical attention immediately.

Delayed effects of long term exposure: Reports have associated repeated and prolonged occupational overexposure to solvents with permanent brain and nervous system damage. Intentional misuse by deliberately concentrating and inhaling the contents may be harmful or fatal. Overexposure may result in upper respiratory tract irritation with central nervous system (CNS) depression. Overexposure may damage the lungs, liver, kidneys, and cause dermatitis of the skin.

Spill and Waste: Contain spill and remove with inert absorbent. Dispose of in accordance with local, state, and federal regulations. Consult Product MSDS for additional safety and health information.

Note: To the best of our knowledge, the technical data contained in this data sheet are accurate at the date of issuance and are subject to change without prior notice. No warranty is expressed or implied since customer methods of application are unknown to us and beyond our control.

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