### Selection & Specification Data

**Generic Type**
Aliphatic Acrylic-Polyester Polyurethane

**Description**
High build, low sheen finish that has excellent resistance to corrosion, chemicals and abrasion. Suitable for application over a number of Carboline primers and intermediates, this material provides very good weathering performance in a broad range of colors.

**Features**
- Outstanding performance properties in both mild and aggressive environments
- High build; suitable for many two-coat systems
- Suitable for application direct to inorganic zins
- Application by spray, brush or roller
- Indefinite recoatability
- VOC compliant to current AIM regulations

**Color**
Refer to Carboline Color Guide. Certain colors may require multiple coats to hide.

**Finish**
Satin

**Primer**
Refer to Substrates & Surface Preparation

**Topcoats**
Carbothane® Clear Coat when required.

**Dry Film Thickness**
3.0-5.0 mils (75-125 microns) per coat. Dry film thickness in excess of 7 mils (175 microns) per coat is not recommended.

**Solids Content**
By Volume: 57% ± 2%

**Theoretical Coverage Rate**
914 mil ft² (22.8 m²) at 25 microns
228 ft² at 4 mils (5.7 m²) at 100 microns
Allow for loss in mixing and application.

**VOC Values**
As supplied: 3.2 lbs./gal (383 g/l)
Thinned:
- 11 oz/gal w/ #25: 3.5 lbs./gal (420 g/l)
- 18 oz/gal w/ #25: 3.7 lbs./gal (449 g/l)
- 1.5 oz/gal of Additive 101 adds 0.08 lbs/gal (10g/l)
These are nominal values and may vary slightly with color.

**Dry Temp. Resistance**
Continuous: 200°F (93°C)
Non-Continuous: 250°F (121°C)
Discoloration and loss of gloss is observed above 200°F (93°C).

* The alignment of aluminum flakes in aluminum-filled finishes is very dependent on application conditions and techniques. Care must be taken to keep conditions as constant as possible to reduce variations in final appearance. It is also advisable to work from a single batch of material since variations can occur from batch to batch. For more information consult Carboline Technical Service Department.

### Substrates & Surface Preparation

**General**
Surfaces must be clean and dry. Employ adequate methods to remove dirt, dust, oil and all other contaminants that could interfere with adhesion of the coating. Refer to the specific primer’s Product Data Sheet for detailed requirements of the specified primer.

**Steel**
SSPC-SP6 with a 1.5-2.5 mil (37.5-62.5 micron) surface profile for maximum protection. SSPC-SP2 or SP3 as minimum requirement. Prime with specific Carboline primer as recommended by your Carboline sales representative.

**Galvanized Steel**
Prime with specific Carboline primers as recommended by your Carboline Sales Representative. Refer to the specific primer’s Product Data Sheet for substrate preparation requirements.

**Aluminum**
SSPC-SP1 and prime with appropriate Carboline primer as recommended by your Carboline sales representative.

**Previously Painted Surfaces**
Lightly sand or abrade to roughen and degloss the surface. Existing paint must attain a minimum 3B rating in accordance with ASTM D3359 “X-Scribe” adhesion test. Prime with specific Carboline primers as recommended by your Carboline sales representative.

### Performance Data

<table>
<thead>
<tr>
<th>Test Method</th>
<th>System</th>
<th>Results</th>
<th>Report #</th>
</tr>
</thead>
<tbody>
<tr>
<td>ASTM D4213</td>
<td>Scrub Resistance</td>
<td>1 ct. 133 HB</td>
<td>.0027 microliters erosion rate after 100 cycles with abrasive scrub medium.</td>
</tr>
<tr>
<td>ASTM G26 Weatherometer</td>
<td>Blasted Steel</td>
<td>1 ct. IOZ</td>
<td>No blistering, rusting or cracking after 3500 hours.</td>
</tr>
<tr>
<td>ASTM G53 QUV (2500 hours w/ UVA 340 bulb)</td>
<td>Blasted Steel</td>
<td>1 ct. Epoxy</td>
<td>Color change less than 2° McAdam units; no blistering, rusting, cracking or chalking.</td>
</tr>
<tr>
<td>ASTM B117 Salt Fog</td>
<td>Blasted Steel</td>
<td>1 ct. OZ</td>
<td>No rusting, or blistering on plane or scribe</td>
</tr>
<tr>
<td>ASTM B117 Salt Fog</td>
<td>Blasted Steel</td>
<td>1 ct. 133 HB</td>
<td>No rusting, or blistering on plane or scribe</td>
</tr>
<tr>
<td>ASTM D5894 QUV A</td>
<td>Blasted Steel</td>
<td>1 ct. IOZ</td>
<td>No effect on plane area and 78% gloss retention after 1008 hours of wet/dry salt fog cycle</td>
</tr>
<tr>
<td>ASTM D4585 Humidity</td>
<td>Blasted Steel</td>
<td>1 ct. 133 HB</td>
<td>No rusting or blistering after 3000 hours.</td>
</tr>
<tr>
<td>Graffiti Resistance</td>
<td>Blasted Steel</td>
<td>1 ct. Epoxy</td>
<td>All markings and stains removed by solvent after exposure to: shoe polish, Sharpie marker, crayon, lipstick, spray cans of acrylic, alkyd and epoxy.</td>
</tr>
<tr>
<td>ASTM D1735 Water Fog</td>
<td>Blasted Steel</td>
<td>1 ct. Epoxy</td>
<td>No rusting or blistering after 8600 hours.</td>
</tr>
</tbody>
</table>

Test reports and additional data available upon written request.

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April 2004 replaces August 2003

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**Carbothane® 133 HB**

### Application Equipment

**Listed below are general equipment guidelines for the application of this product. Job site conditions may require modifications to these guidelines to achieve the desired results.**

**General Guidelines:**

- **Spray Application (General)**: This is a high solids coating and may require adjustments in spray techniques. Wet film thickness is easily and quickly achieved. The following spray equipment has been found suitable and is available from manufacturers such as Binks, DeVilbiss and Graco.

- **Conventional Spray**: Pressure pot equipped with dual regulators, 3/8" I.D. minimum material hose, .070" I.D. fluid tip and appropriate air cap.

- **Airless Spray**:
  - **Pump Ratio**: 30:1 (min.)
  - **GPM Output**: 3.0 (min.)
  - **Material Hose**: 3/8" I.D. (min.)
  - **Tip Size**: .013"-015"
  - **Output PSI**: 2100-2300
  - **Filter Size**: 60 mesh
  - Teflon packings are recommended and available from the pump manufacturer.

- **Brush & Roller (General)**: Multiple coats may be required to obtain desired appearance, recommended dry film thickness and adequate hiding. Avoid excessive re-brushing or recoating. For best results, tie-in within 10 minutes at 75°F (24°C).

- **Brush**: Recommended for touch-up only. Use a medium, natural bristle brush.

- **Roller**: Use a medium-nap synthetic roller cover with phenolic core.

### Mixing & Thinning

- **Mixing**: Power mix Part A separately, then combine and power mix. DO NOT MIX PARTIAL KITS.

- **Ratio**: 6:1 Ratio (A to B)

  - **Part A**: 88 Gal. Kit
    - 1 gal. can (partial filled)
    - UC 133: 1 pint
    - 1 gallon can (partial filled)
  - **5.0 Gal. Kit**
    - 5 gal. can (partial filled)

- **Thinning**:
  - **Spray**: Up to 11 oz/gal (9%) w/ #25.
  - **Roller**: Up to 18 oz/gal (14%) w/ #25.

- **Carbothane Thinner #236E** may also be used to thin this product to minimize HAP and VOC emissions. Consult Carbothane Technical Service for guidance.

- **Pot Life**: 4 Hours at 75°F (24°C) and less at higher temperatures. Pot life ends when coating becomes too viscous to use. MOISTURE CONTAMINATION WILL SHORTEN POT LIFE AND CAUSE GELLATION.

### Cleanup & Safety Cont.

- **Ventilation**: When used in enclosed areas, thorough air circulation must be used during and after application until the coating is cured. The ventilation system should be capable of preventing the solvent vapor concentration from reaching the lower explosion limit for the solvents used. User should test and monitor exposure levels to insure all personnel are below guidelines. If not sure or if not able to monitor levels, use MSHA/NIOSH approved supplied air respirator.

- **Caution**: This product contains flammable solvents. Keep away from sparks and open flames. All electrical equipment and installations should be made and grounded in accordance with the National Electric Code. In areas where explosion hazards exist, workers should be required to use non-ferrous tools and wear conductive and non-sparking shoes.

### Application Conditions

<table>
<thead>
<tr>
<th>Condition</th>
<th>Material</th>
<th>Surface</th>
<th>Ambient</th>
<th>Humidity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Normal</td>
<td>65°-85°F (18°-29°C)</td>
<td>65°-85°F (18°-29°C)</td>
<td>65°-85°F (18°-29°C)</td>
<td>35-60%</td>
</tr>
<tr>
<td>Minimum</td>
<td>40°F (4°C)</td>
<td>40°F (4°C)</td>
<td>40°F (4°C)</td>
<td>0%</td>
</tr>
<tr>
<td>Maximum</td>
<td>100°F (38°C)</td>
<td>110°F (43°C)</td>
<td>110°F (43°C)</td>
<td>90%</td>
</tr>
</tbody>
</table>

Industry standards are for substrate temperatures to be 5°F (3°C) above the dew point. This product simply requires the substrate temperature to be above the dew point.

**Caution**: This Product is moisture sensitive in the liquid stage and until cured. Protect from high humidity, dew and direct moisture contact until cured. Application and/or curing in humidities above maximum, or exposure to moisture from rain or dew may result in a loss of gloss and/or microbubbling of the product.

### Curing Schedule

<table>
<thead>
<tr>
<th>Surface Temp. &amp; 50% Relative Humidity</th>
<th>Dry to Handle</th>
<th>Minimum Dry to Recoat*</th>
<th>Final Cure</th>
</tr>
</thead>
<tbody>
<tr>
<td>40°F (4°C)</td>
<td>20 Hours</td>
<td>20 Hours</td>
<td>28 Days</td>
</tr>
<tr>
<td>50°F (10°C)</td>
<td>12 Hours</td>
<td>12 Hours</td>
<td>14 Days</td>
</tr>
<tr>
<td>75°F (24°C)</td>
<td>5 Hours</td>
<td>5 Hours</td>
<td>7 Days</td>
</tr>
<tr>
<td>90°F (32°C)</td>
<td>1 Hour</td>
<td>1 Hour</td>
<td>4 Days</td>
</tr>
</tbody>
</table>

These times are based on a 3.0-5.0 mil (75-125 micron) dry film thickness. Higher film thickness, insufficient ventilation or cooler temperatures will require longer cure times and could result in solvent entrapment and premature failure. Additive 101 may be used at 1.5 oz/mixed gal to accelerate the cure by 30%.

**Maximum recoat times are indefinite. Surface must be clean and dry. As part of good painting practice it is recommended to test for adhesion by wiping the surface with Thinner 25. If the film shows a slight “tack” the surface is suitable for recoating. If the film shows a slight “tack” the surface is suitable for recoating.**

### Packaging, Handling & Storage

- **Shipping Weight**: .88 Gallon Kit 5 Gallon Kit
  - 11 lbs (5 kg) 64 lbs (29 kg)

- **Flash Point (Setaflash)**:
  - **Part A**: 95°F (35°C)
  - **Part B**: 91°F (33°C)

- **Storage (General)**: Store Indoors.

- **Storage Temperature & Humidity**
  - **0-90% Relative Humidity**

- **SheLF Life**
  - **Part A**: Min. 36 months at 75°F (24°C)
  - **Part B**: Min. 24 months at 75°F (24°C)

* **SheLF Life**: (actual stated shelf life) when kept at recommended storage conditions and in original unopened containers.

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April 2004 replaces August 2003

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