

SELECTION & SPECIFICATION DATA

Generic Type	Aliphatic Acrylic-Polyester Polyurethane
Description	A high solids, high build, low sheen topcoat which provides a tough attractive finish and outstanding weathering properties. In addition, this low VOC & HAPs polyurethane demonstrates good resistance to abrasion and corrosion when applied over recommended Carboline primers and/or intermediate coats.
Features	<ul style="list-style-type: none"> • High solids, high build, aliphatic polyurethane • Outstanding weathering properties • Quick dry to recoat and dry to handle times • Good resistance to corrosion and abrasion • Low VOC and low HAPs content • Low temperature cure down to 35°F • Indefinite recoatability (no maximum recoat time) • Can be applied directly to zinc-rich primers (with a properly applied mist coat)
Color	1864 (White), 6666 (Safety Yellow), 5555 (Safety Red), C703 (Grey), C705 (Light Grey), C900 (Black). Other colors are available on request. Contact your Carboline Representative for availability
Finish	Flat
Primer	Carbozinc, Carboguard and Carbomastic or other primers as specified. Refer to Substrates & Surface Preparation.
Dry Film Thickness	<p>3 - 5 mils (76 - 127 microns) per coat</p> <p>Dry film thickness in excess of 7 mils (175 microns) per coat is not recommended.</p>
Solids Content	By Volume 72% +/- 2%
Theoretical Coverage Rate	<p>1155 ft²/gal at 1.0 mils (28.3 m²/l at 25 microns)</p> <p>385 ft²/gal at 3.0 mils (9.4 m²/l at 75 microns)</p> <p>231 ft²/gal at 5.0 mils (5.7 m²/l at 125 microns)</p> <p>Allow for loss in mixing and application.</p>
VOC Value(s)	<p>Per EPA Method 24: 211 g/l (1.76 lbs/gal)</p> <p>1.5 oz/gal of Additive 101: 219 g/l (1.83 lbs/gal)</p> <p>8 oz/gal of Thinner 214: 246 g/l (2.06 lbs/gal)</p> <p>8 oz/gal of Thinner 215: 249 g/l (2.07 lbs/gal)</p> <p>16 oz/gal of Thinner 236 E: 211 g/l (1.76 lbs/gal)</p> <p>7.3 oz/gal of Thinner 25: 249 g/l (2.08 lbs/gal)</p> <p>These are nominal values and may vary slightly with color. Product contains VOC-exempt dimethyl carbonate. Check local regulations regarding product usage.</p>
Dry Temp. Resistance	<p>Continuous: 300°F (149°C)</p> <p>Some discoloration and loss of gloss may be experienced at elevated temperatures.</p>

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. For all surfaces, prime with specific Carboline primers as recommended by your Carboline sales representative or Carboline technical service representative.
Steel	Prime with specific Carboline primers as recommended by your Carboline sales representative. Prepare the surface as required by the product data sheet of the recommended primer.
Previously Painted Surfaces	Lightly sand or abrade to roughen surface and degloss the surface. Existing paint must attain a minimum 3A rating in accordance with ASTM D3359 "X-Scribe" adhesion test. Prime with specific Carboline primer as recommended by your Carboline sales representative.

MIXING & THINNING

Mixing	Power mix separately Part A, then combine with Part B and power mix. DO NOT MIX PARTIAL KITS.
Thinning	Spray: Up to 16 oz/gal w/Thinner 236E, up to 7.3 oz/gal w/Thinner 25 or up to 8 oz/gal w/Thinner 214 Brush/Roller: Up to 8 oz/gal w/Thinner 215 Use of thinners other than those supplied or recommended by Carboline may adversely affect product performance and void product warranty, whether expressed or implied.
Ratio	Liquid Components: 5:1 Ratio (A to B) by volume
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.

APPLICATION EQUIPMENT GUIDELINES

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.

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 various equipment manufacturers.
Conventional Spray	Pressure pot equipped with dual regulators, 3/8" I.D. minimum material hose, 0.070" 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: 0.015-0.017" Output PSI: 2100-2400 Filter Size: 60 mesh *PTFE 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 re-rolling. For best results, tie-in within 10 minutes at 75°F. Brush: Recommended for touch-up only. Use a medium bristle brush. Roller: Use a 3/8" nap solvent resistant roller.

APPLICATION CONDITIONS

Condition	Material	Surface	Ambient	Humidity
Minimum	50°F (10°C)	35°F (2°C)	35°F (2°C)	0%
Maximum	100°F (38°C)	110°F (43°C)	110°F (43°C)	90%

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

Caution: This Product is moisture sensitive in the liquid stage and until fully cured. Protect from heavy humidity, dew and direct moisture contact until fully 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 micro-bubbling of the product.

CURING SCHEDULE

Surface Temp.	Dry to Handle	Dry to Recoat	Final Cure General
35°F (2°C)	36 Hours	36 Hours	14 Days
50°F (10°C)	16 Hours	16 Hours	10 Days
75°F (24°C)	8 Hours	8 Hours	7 Days
90°F (32°C)	4 Hours	4 Hours	5 Days

These times are based on a 4.0 mil (100 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.

***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 without extensive surface preparation such as abrading.

Carboline Additive 101 can be used to accelerate the film forming process in this product for conditions outside of the parameters of this data sheet. Carboline Additive 101 is added at a rate of 1.0-2.0 oz per mixed gallon or a maximum of 6 oz per mixed five gallons. At this addition rate, Additive 101 will accelerate the cure rate of the urethane product between 25-40% depending on the substrate temperature range and reduce the pot life of the product by approximately 40-50% of that stated on the product data sheet. With the use of Additive 101, this product will continue to cure at temperatures as low as 20°F (-7°C).

CLEANUP & SAFETY

Cleanup	Use Thinner 2 or Acetone. In case of spillage, absorb and dispose of in accordance with local applicable regulations.
Safety	Read and follow all caution statements on this product data sheet and on the SDS for this product and use personal protective equipment as directed.
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, workmen should be required to use non-ferrous tools and wear conductive and non-sparking shoes.

Carbothane[®] 133 FLV

PRODUCT DATA SHEET



PACKAGING, HANDLING & STORAGE

Shelf Life	Part A: Min. 36 months at 75°F (24°C) Part B (Urethane Converter 811): 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.
Storage Temperature & Humidity	40° - 110°F (4°-43°C) 0-80% Relative Humidity
Storage	Store Indoors.
Shipping Weight (Approximate)	1.2 Gallon Kit - 17 lbs (8 kg) 4.8 Gallon Kit - 65 lbs (30 kg)
Flash Point (Setaflash)	Part A - 60°F (15°C) Part B - 127°F (53°C)

WARRANTY

To the best of our knowledge the technical data contained herein is true and accurate on the date of publication and is subject to change without prior notice. User must contact Carboline to verify correctness before specifying or ordering. No guarantee of accuracy is given or implied. Carboline warrants our products to be free of manufacturing defects in accord with applicable Carboline quality control procedures. THIS WARRANTY IS NOT VALID WHEN THE PRODUCT IS NOT: (1) APPLIED IN ACCORDANCE WITH CARBOLINE'S SPECIFICATIONS, AND/OR (2) PROPERLY STORED, CURED, AND USED UNDER NORMAL OPERATING CONDITIONS. Carboline assumes no responsibility for coverage, performance, injuries, or damages resulting from use of the product. If this product is found not to perform as specified upon inspection by a Carboline representative during the warranty period, Carboline's sole obligation, if any, is to replace the Carboline product(s) proven to be defective or refund the purchase price thereof, at Carboline's sole option. Carboline shall not be liable for any other losses or damages. This warranty excludes (1) labor and costs of labor for the application or removal of any product, and (2) any incidental or consequential damages, whether based on breach of express or implied warranty, negligence, strict liability or any other legal theory. NO OTHER WARRANTY OR GUARANTEE OF ANY KIND IS MADE BY CARBOLINE, EXPRESS OR IMPLIED, STATUTORY, BY OPERATION OF LAW, OR OTHERWISE, INCLUDING MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. All of the trademarks referenced above are the property of Carboline International Corporation unless otherwise indicated. The whole text of this Product Data Sheet, as well as the documents derived from it, have been written in English, and for legal purposes the English version shall prevail.