product data

Carbothane®133 HB

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 zincs
- 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

Primers
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 ft^2 (22.8 m^2/l at 25 microns)
228 ft^2 at 4 mils (5.7 m^2/l 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 primers 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

Test Method	System	Results	Report #
ASTM D4213 Scrub Resistance	1 ct. 133 HB	.0027 microliters erosion rate after 100 cycles with abrasive scrub medium.	03403
ASTM G26 Weatherometer	Blasted Steel 1 ct. IOZ 1 ct. 133 HB	No blistering, rusting or cracking after 3500 hours.	01982
ASTM G53 QUV (2500 hours w/ UVA 340 bulb)	Blasted Steel 1 ct. Epoxy 1 ct. 133 HB	Color change less than 2 McAdam units; no blistering, rusting, cracking or chalking.	03394
ASTM B117 Salt Fog	Blasted Steel 1 ct. OZ 1 ct. 133 HB	No rusting, or blistering on plane or scribe 4,000 hours	02585
ASTM B117 Salt Fog	Blasted Steel 1 ct. IOZ 1 ct. 133 HB	No rusting, or blistering on plane or scribe 2,000 hours	02585
ASTM D5894 QUV A Prohesion	1 ct. 133 HB	No effect on plane area and 78% gloss retention after 1008 hours of wet/dry salt fog cycle	03274
ASTM D4585 Humidity	Blasted Steel 1 ct. IOZ 1 ct. 133 HB	No rusting or blistering after 3000 hours.	02585
Graffiti Resistance	Blasted Steel 1 ct. Epoxy 1 ct. 133 HB	All markings and stains removed by solvent after exposure to: shoe polish, Sharpie marker, crayon, lipstick, spray cans of acrylic, alkyd and epoxy.	03395
ASTM D1735 Water Fog	Blasted Steel 1 ct. Epoxy 1 ct. 133 HB	No rusting or blistering after 8600 hours.	02061

Test reports and additional data available upon written request.

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0840

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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 re-rolling. 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)

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

Thinning
Spray: Up to 11 oz/gal (9%) w/ #25.
Roller: Up to 18 oz/gal (14%) w/ #25.
Use of thinners other than those supplied or recommended by Carboline may adversely affect product performance and void product warranty, whether expressed or implied.

Carboline Thinner #236E may also be used to thin this product to minimize HAP and VOC emissions. Consult Carboline 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

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 MSDS for this product. Employ normal workmanlike safety precautions. Hypersensitive persons should wear protective clothing, gloves and use protective cream on face, hands and all exposed areas.

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, workmen should be required to use non-ferrous tools and wear conductive and non-sparking shoes.

Application Conditions

Condition	Material	Surface	Ambient	Humidity
Normal	65°-85°F (18°-29°C)	65°-85°F (18°-29°C)	65°-85°F (18°-29°C)	35-60%
Minimum	40°F (4°C)	40°F (4°C)	40°F (4°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. 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

Surface Temp. & 50% Relative Humidity	Dry to Handle	Minimum Dry to Recoat*	Final Cure
40°F (4°C)	20 Hours	20 Hours	28 Days
50°F (10°C)	12 Hours	12 Hours	14 Days
75°F (24°C)	5 Hours	5 Hours	7 Days
90°F (32°C)	1 Hour	1 Hour	4 Days

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 without extensive surface preparation such as abrading.

Packaging, Handling & Storage

	.88 Gallon Kit	5 Gallon Kit
Shipping Weight (Approximate)	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 40° -110°F (4°-43°C)
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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