carboline®

CARBOTHANE 134 HG

VOC PLUS

SELECTION DATA

GENERIC TYPE: Acrylic aliphatic polyurethane.

GENERAL PROPERTIES: A high performance polyurethane topcoat that provides outstanding protection in a smooth, durable, high gloss finish. It has excellent flow characteristics, develops a very hard surface and has excellent depth of image. Conveniently packaged in a 4:1 mix ratio and designed for both ease of application and exceptional service life.

- Outstanding high gloss appearance
- Excellent weatherability
- Excellent chemical resistance
- Long-term corrosion protection
- Easy to apply
- Fast dry
- Hard finish with excellent impact and abrasion resistance
- Excellent flexibility
- High solids, VOC compliant

RECOMMENDED USES: As a finish coat for equipment, piping, structural steel, concrete surfaces and the exteriors of tanks where chemical resistance, toughness and weatherability are required. Frequently used in chemical processing, offshore, heavy marine, pulp and paper, petro chemical, institutional and waste treatment facilities when a durable, highly resistant and attractive finish coat is required.

NOT RECOMMENDED FOR: Immersion service.

CHEMICAL RESISTANCE GUIDE:

Exposure	Splash & Spillage	Fumes
Acids (1)	Very Good	Excellent
Alkalies (1)	Very Good	Excellent
Solvents (2)	Very Good	Excellent
Salt	Excellent	Excellent
Water	Excellent	Excellent

(1) Certain colors may discolor.
(2) Resistance may vary depending on the type of solvent.

TEMPERATURE RESISTANCE: (Non-immersion)

Continuous:	200°F	(93°C)
Non-Continuous:	250°F	(121°C)

SUBSTRATES: Apply over properly prepared primers or metals as recommended.

COMPATIBLE COATINGS: May be applied over most epoxies, polyurethanes and others as recommended.

SPECIFICATION DATA

THEORETICAL SOLIDS CONTENT OF MIXED MATERIAL:

	By Volume
CARBOTHANE 134 HG	70% ± 2%

VOLATILE ORGANIC CONTENT (VOC): The following are nominal values and may vary with color:
As supplied: 2.2 lbs/gal (264 g/l)
Thinned:

Thinner	oz/gal	lbs/gal	g/l
214	20	2.8	336
214	25	2.9	348

RECOMMENDED DRY FILM THICKNESS PER COAT:
2 mils (50 microns) over smooth surfaces.

Additional thickness may be required over rough surfaces for appearance.

Dry film thickness in excess of 4 mils per coat is not recommended.

THEORETICAL COVERAGE PER MIXED GALLON:
1123 mil ft^2 (27.5 m^2/l @ 25 microns)
561 ft^2 at 2 mils (13.7 m^2/l @ 50 microns)

Mixing and application losses must be taken into consideration when estimating job requirements.

STORAGE CONDITIONS: Store indoors.
Temperature: 40-110°F (4-43°C) Humidity: 0-80%

SHELF LIFE: When stored indoors at 75°F (24°C):
CARBOTHANE 134 HG Part A: 24 months
Urethane Converter 811: 24 months

COLORS: Available in a variety of colors. Certain colors particularly in non-leaded safety oranges, reds and yellows may require multiple coats for adequate hiding. Check color suitability before use.

FINISH: Gloss

ORDERING INFORMATION

Prices may be obtained from your Carboline Sales Representative or Carboline Customer Service.

APPROXIMATE SHIPPING WEIGHT:

	1 Gal Kit	5 Gal Kit
CARBOTHANE 134 HG	14 lbs (6.4 kg)	50 lbs (22.7 kg)
	1s	5s
Thinner 214	8.0 lbs (3.6 kg)	40 lbs (18.2 kg)

FLASH POINT: (Setaflash)

CARBOTHANE 134 HG Part A	50°F	(10°C)
Urethane Converter 811	106°F	(41°C)
Thinner 214	102°F	(39°C)

June 98 Replaces June 97N (0859)

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 Company to verify correctness before specifying or ordering. No guarantee of accuracy is given or implied. We guarantee our products to conform to Carboline quality control. We assume no responsibility for coverage, performance or injuries resulting from use. Liability, if any, is limited to replacement of products. Prices and cost data, if shown, are subject to change without prior notice. 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.

APPLICATION INSTRUCTIONS

CARBOTHANE 134 HG

These instructions are not intended to show product recommendations for specific service. They are issued as an aid in determining correct surface preparation, mixing instructions and application procedures. It is assumed that the proper product recommendations have been made. These instructions should be followed closely to obtain the maximum service from the materials.

SURFACE PREPARATION: Remove all oil or grease from the surface to be coated with Thinner 2 or Carboline Surface Cleaner 3 (refer to Surface Cleaner 3 instructions) in accordance with SSPC-SP 1.

MIXING: Power mix Part A, then combine and power mix. DO NOT MIX PARTIAL KITS.

	1 Gal Kit	5 Gal Kit
CARBOTHANE 134 HG Part A	.80 gal	4 gals (in 5 gal can)
Urethane Converter 811	.20 gal	1 gal

THINNING: May be thinned up to 25 oz/gal (20%) with Thinner 214 for normal spray application. For brush or roller application, may be thinned up to 25 oz/gal (20%) with Thinner 215.

Use of thinners other than those supplied or approved by Carboline may adversely affect product performance and void product warranty, whether express or implied.

POT LIFE: 4 hours @ 75°F (24°C) and less at higher temperatures. Pot life ends when coating becomes too viscous to use.

THIS PRODUCT IS MOISTURE SENSITIVE. AVOID MOISTURE CONTAMINATION.

APPLICATION CONDITIONS:

	Material	Surface	Ambient	Humidity
Normal	60-85°F (16-30°C)	60-85°F (16-30°C)	60-85°F (16-30°C)	40-60%
Minimum	50°F (10°C)	35°F (2°C)	35°F (2°C)	10%
Maximum	100°F (38°C)	120°F (49°C)	95°F (35°C)	80%

Do not apply when the surface temperature is less than 5°F or 3°C above the dew point.

Special thinning and application techniques may be required above or below normal conditions.

CAUTION: Product is moisture sensitive, application and/or curing in humidities above maximum or exposure to moisture from rain or dew point may result in loss of gloss and/or microbubbling.

SPRAY: This is a high solids coating and may require slight 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: Pressure pot equipped with dual regulators, 3/8" I.D. minimum material hose, .070" I.D. fluid tip and appropriate air cap.

Airless:

Pump Ratio:	30:1 (min.)*
GPM Output:	3.0 (min.)
Material Hose:	3/8" I.D. (min.)
Tip Size:	.015-.017"
Output psi:	2100-2400
Filter Size:	60 mesh

*Teflon packings are recommended and are available from the pump manufacturer.

BRUSH: Brushing is recommended only for touch-up of small areas only. Use natural bristle brush applying with full strokes. Avoid rebrushing.

ROLLER: For roller application, use a short nap mohair roller with phenolic core applying with full strokes. Avoid rerolling.

Two coats may be required when applied by brush or roller to obtain desired appearance, hiding and recommended dry film thickness.

DRYING TIMES: These times are based on a 2 mil (50 micron) dry film thickness. Excessive film thickness, insufficient ventilation or cooler temperatures will require longer cure times and could result in solvent entrapment and premature failure.

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

CLEAN UP: Use Thinner 2.

CAUTION: READ AND FOLLOW ALL CAUTION STATEMENTS ON THIS PRODUCT DATA SHEET AND ON THE MATERIAL SAFETY DATA SHEET FOR THIS PRODUCT.

June 98 Replaces June 97N (0859)

CAUTION: CONTAINS FLAMMABLE SOLVENTS. KEEP AWAY FROM SPARKS AND OPEN FLAMES. IN CONFINED AREAS, WORKERS MUST WEAR FRESH AIRLINE RESPIRATORS. HYPERSENSITIVE PERSONS SHOULD WEAR GLOVES OR USE PROTECTIVE CREAM. ALL ELECTRIC EQUIPMENT AND INSTALLATIONS SHOULD BE MADE AND GROUNDED IN ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE. IN AREAS WHERE EXPLOSION HAZARDS EXIST, WORKERS SHOULD BE REQUIRED TO USE NONFERROUS TOOLS AND TO WEAR CONDUCTIVE AND NON-SPARKING SHOES. IN CASE OF SPILLAGE, ABSORB AND DISPOSE OF IN ACCORDANCE WITH LOCAL APPLICABLE REGULATIONS.

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CARBOLINE® 890

VOC+ PLUS

SELECTION DATA

GENERIC TYPE: Cross-linked epoxy.

GENERAL PROPERTIES: A self priming, high solids, high gloss, high build epoxy mastic. It can be applied by spray, brush, or roller over hand or power tool cleaned steel and is compatible with most existing coatings and tightly adhered rust. The cured film provides a tough, cleanable surface and is available in a wide variety of colors.

- Single coat corrosion protection.
- Excellent chemical resistance.
- Good flexibility and lower stress upon curing than most epoxy coatings.
- Very good abrasion resistance.
- Acceptable for use in incidental food contact areas in federally inspected meat and poultry facilities.

RECOMMENDED USES: Where a high performance, chemically resistant epoxy coating is desired. Offers outstanding protection for interior floors, walls, piping, equipment and structural steel or as an exterior coating for railcars in various corrosive environments. Industrial environments include Chemical Processing, Offshore Oil and Gas, Food Processing, Pharmaceutical, Water and Waste Water Treatment, Pulp and Paper and Power Generation among others. May be used as a two coat system direct to metal or concrete for Water and Municipal Waste Water immersion.

NOT RECOMMENDED FOR: Strong acid or solvent exposures, immersion service other than water, or over chlorinated rubber and latex coatings.

TYPICAL CHEMICAL RESISTANCE:

Exposure	Immersion	Splash & Spillage	Fumes
Acids	NR	Very Good	Very Good
Alkalies	NR	Excellent	Excellent
Solvents	NR	Very Good	Excellent
Salt Solutions	Excellent	Excellent	Excellent
Water	Excellent	Excellent	Excellent

TEMPERATURE RESISTANCE: (Non-Immersion)

Continuous:	250°F (121°C)
Non-continuous:	300°F (149°C)

At temperatures above 225°F, coating discoloration and loss of gloss can be observed, without loss of film integrity.

SUBSTRATES: Apply over properly prepared metal, concrete, or other surfaces as recommended.

COMPATIBLE COATINGS: May be applied directly over inorganic zincs, weathered galvanizing, epoxies, phenolics or other coatings as recommended. A test patch is recommended before use over existing coatings. A mist coat is required when applied over inorganic zincs to minimize bubbling. May be topcoated with polyurethanes or acrylics to upgrade weathering resistance. Not recommended over chlorinated rubber or latex coatings.

SPECIFICATION DATA

THEORETICAL SOLIDS CONTENT OF MIXED MATERIAL:

	By Volume
CARBOLINE 890	75% ± 2%

VOLATILE ORGANIC CONTENT:
The following are nominal values and may vary with color:
As Supplied: 1.78 lbs/gal (214 g/l)

Thinned:

Thinner	oz/gal	lbs/gal	g/l
2	13	2.26	271
33	16	2.38	285

RECOMMENDED DRY FILM THICKNESS PER COAT:
4-6 mils (100-150 microns).
6-8 mils (150-200 microns) for a more uniform gloss over inorganic zincs or for use over light rust.

In more severe environments a second coat of 4-6 mils (100-150 microns) is recommended.

Dry film thickness in excess of 10 mils (250 microns) per coat is not recommended. Excessive film thickness over inorganic zinc may increase damage during shipping or erection.

THEORETICAL COVERAGE PER MIXED GALLON:
1203 mil ft^2 (30 m^2/l at 25 microns)
241 ft^2 at 5 mils (6.0 m^2/l at 125 microns)

Mixing and application losses will vary and must be taken into consideration when estimating job requirements.

STORAGE CONDITIONS: Store indoors.
Temperature: 40-110°F (4-43°C) Humidity: 0-100%

SHELF LIFE: 36 months when stored indoors at 75°F (24°C).

COLORS: Available in Carboline Color Chart colors. Some colors may require two coats for adequate hiding and may noticeably change when exposed to sunlight, even for a short time.

GLOSS: High gloss. (Epoxies lose gloss, discolor and eventually chalk in sunlight exposure.)

ORDERING INFORMATION

Prices may be obtained from your Carboline Sales Representative or Carboline Customer Service.

APPROXIMATE SHIPPING WEIGHT:

	2 Gal Kit	10 Gal Kit
CARBOLINE 890	29 lbs (13 kg)	145 lbs (66 kg)
	1s	5s
Thinner 2	8 lbs (4 kg)	39 lbs (18 kg)
Thinner 33	9 lbs (4 kg)	45 lbs (20 kg)

FLASH POINT: (Setaflash)

CARBOLINE 890 Part A	89°F	(32°C)
CARBOLINE 890 Part B	71°F	(22°C)
Thinner 2	24°F	(-5°C)
Thinner 33	89°F	(32°C)

0986

Aug 97 Replaces June 97

To the best of our knowledge the technical data contained herein are true and accurate at the date of issuance and are subject to change without prior notice. User must contact Carboline Company to verify correctness before specifying or ordering. No guarantee of accuracy is given or implied. We guarantee our products to conform to Carboline quality control. We assume no responsibility for coverage, performance or injuries resulting from use. Liability, if any, is limited to replacement of products. Prices and cost data, if shown, are subject to change without prior notice. 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.

APPLICATION INSTRUCTIONS

CARBOLINE® 890

0986

These instructions are not intended to show product recommendations for specific service. They are issued as an aid in determining correct surface preparation, mixing instructions and application procedure. It is assumed that the proper product recommendations have been made. These instructions should be followed closely to obtain the maximum service from the materials.

SURFACE PREPARATION: Remove all oil or grease from the surface to be coated with Thinner 2 or Carboline Surface Cleaner 3 (refer to Surface Cleaner 3 instructions) in accordance with SSPC-SP 1.

Steel: For mild environments Hand Tool or Power Tool Clean in accordance with SSPC-SP 2, SSPC-SP 3 or SSPC-SP 11 to produce a rust-scale free surface.

For more severe environments, abrasive blast to a Commercial Finish in accordance with SSPC-SP 6 and obtain a 1½ - 3 mil (40-75 micron) blast profile.

For immersion service, abrasive blast to a Near White Metal Finish in accordance with SSPC-SP 10 and obtain a 1½ - 3 mil (40-75 micron) blast profile.

Concrete: Must be cured at least 28 days at 70°F (21°C) and 50% R.H. or equivalent time. Remove fins and other protrusions by stoning, sanding or grinding. Abrasive blast to open all surface voids and remove all form oils, incompatible curing agents, hardeners, laitance and other foreign matter and produce a surface texture similar to that of a medium grit sandpaper. Voids in the concrete may require surfacing. Blow or vacuum off sand and dust.

MIXING: Power mix each component separately, then combine and power mix in the following proportions:

	2 Gal Kit	10 Gal Kit
CARBOLINE 890 Part A	1 gallon	5 gallons
CARBOLINE 890 Part B	1 gallon	5 gallons

THINNING: For spray applications, may be thinned up to 13 oz/gal with Thinner 2. For hot and windy conditions, or for brush and roller application, may be thinned up to 16 oz/gal with Thinner 33.

For application on concrete floors may be thinned up to 38 oz/gal with Thinner 2.

Use of thinners other than those supplied or approved by Carboline may adversely affect product performance and void product warranty, whether express or implied.

POT LIFE: Three hours at 75°F (24°C) and less at higher temperatures. Pot life ends when material loses film build.

APPLICATION CONDITIONS:

	Material	Surface	Ambient	Humidity
Normal	60-85°F (16-29°C)	60-85°F (16-29°C)	60-90°F (16-32°C)	0-80%
Minimum	50°F (10°C)	50°F (10°C)	50°F (10°C)	0%
Maximum	90°F (32°C)	125°F (52°C)	110°F (43°C)	80%

Do not apply or cure the material when the surface temperature is below 50°F (10°C) or less than 5°F or 3°C above the dew point.

Special thinning and application techniques may be required above or below normal conditions.

SPRAY: This is a high solids coating and may require slight 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: Pressure pot equipped with dual regulators, 3/8" I.D. minimum material hose, .070" I.D. fluid tip and appropriate air cap.

Airless:

Pump Ratio:	30:1 (min.)*	*Tip Size:*	.017-.021"
GPM Output:	3.0 (min.)	*Output psi:*	2100-2300
Material Hose:	3/8" I.D. (min.)	*Filter Size:*	60 mesh

*Teflon packings are recommended and are available from the pump manufacturer.

BRUSH OR ROLLER: Use medium bristle brush, or good quality short nap roller. Avoid excessive rebrushing and rerolling. Two coats may be required to obtain desired appearance, hiding and recommended dry film thickness. For best results, tie-in within 10 minutes at 75°F (24°C).

DRYING TIMES: These times are based on a 4-8 mil (100-200 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.

Dry to Touch: 2½ hours at 75°F (24°C)
Dry to Handle: 6½ hours at 75°F (24°C)

Surface Temperature	Recoating with Itself	Between Coats	Final Cure
50°F (10°C)	12 hours	24 hours	3 days
60°F (16°C)	8 hours	16 hours	2 days
75°F (24°C)	4 hours	8 hours	1 day
90°F (32°C)	2 hours	4 hours	16 hours

Excessive humidity or condensation on the surface during curing can interfere with the cure, can cause discoloration and may result in a surface haze or blush. Any haze or blush must be removed by water washing before recoating. During high humidity conditions, it is recommended that the application be done while temperatures are increasing.

MAXIMUM RECOAT OR TOPCOAT TIMES:

Surface Temperature	With Epoxies	With Polyurethane
50°F (10°C)	30 days	90 days
75°F (24°C)	30 days	90 days
90°F (32°C)	30 days	60 days

If the maximum recoat time has been exceeded, the surface must be abraded by sweep blasting prior to the application of any additional coats.

Minimum cure time before immersion service is 5 days at 75°F (24°C) surface temperature. Cure at temperatures below 60°F (16°C) is not recommended for immersion service.

VENTILATION & SAFETY: WARNING: VAPORS MAY CAUSE EXPLOSION. When used as a tank lining or 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. In addition to ensuring proper ventilation, fresh air respirators or fresh air hoods must be used by all application personnel. Where flammable solvents exist, explosion-proof lighting must be used. Hypersensitive persons should wear clean, protective clothing, gloves and/or protective cream on face, hands and all exposed areas.

CLEANUP: Use Thinner 2.

CAUTION: READ AND FOLLOW ALL CAUTION STATEMENTS ON THIS PRODUCT DATA SHEET AND ON THE MATERIAL SAFETY DATA SHEET FOR THIS PRODUCT.

Aug 97 Replaces June 97

CAUTION: CONTAINS FLAMMABLE SOLVENTS. KEEP AWAY FROM SPARKS AND OPEN FLAMES. IN CONFINED AREAS, WORKMEN MUST WEAR FRESH AIRLINE RESPIRATORS. HYPERSENSITIVE PERSONS SHOULD WEAR GLOVES OR USE PROTECTIVE CREAM. ALL ELECTRIC EQUIPMENT AND INSTALLATIONS SHOULD BE MADE AND GROUNDED IN ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE. IN AREAS WHERE EXPLOSION HAZARDS EXIST, WORKMEN SHOULD BE REQUIRED TO USE NONFERROUS TOOLS AND TO WEAR CONDUCTIVE AND NONSPARKING SHOES.

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CARBOLINE® 890 LT

VOC+ PLUS

SELECTION DATA

GENERIC TYPE: Cross-linked epoxy.

GENERAL PROPERTIES: A self priming, high solids, high gloss, high build, low temperature curing epoxy mastic. It can be applied by spray, brush, or roller over hand or power tool cleaned steel and is compatible with most existing coatings and tightly adhered rust. The cured film provides a tough, cleanable surface and is available in a wide variety of colors.

- Single coat corrosion protection.
- Excellent chemical resistance.
- Good flexibility and lower stress upon curing than most epoxy coatings.
- Very good abrasion resistance.
- May be applied at 35°F (2°C).

RECOMMENDED USES: Where a high performance, low temperature curing, chemically resistant epoxy coating is desired. Offers outstanding protection for interior floors, walls, piping, equipment and structural steel or as an exterior coating in various corrosive environments. Industrial environments include Chemical Processing, Offshore Oil and Gas, Food Processing, Pharmaceutical, Water and Waste Water Treatment, Pulp and Paper and Power Generation among others. May be used as a two coat system direct to metal or concrete for Process Water and Municipal Waste Water immersion.

NOT RECOMMENDED FOR: Strong acid or solvent exposures, immersion service other than water or application over chlorinated rubber or latex coatings.

TYPICAL CHEMICAL RESISTANCE:

Exposure	Immersion	Splash & Spillage	Fumes
Acids	NR	Very Good	Very Good
Alkalies	NR	Excellent	Excellent
Solvents	NR	Very Good	Excellent
Salt Solutions	Excellent	Excellent	Excellent
Water	Excellent	Excellent	Excellent

NR - Not recommended.

TEMPERATURE RESISTANCE: (Non-Immersion)

Continuous:	250°F (121°C)
Non-continuous:	300°F (149°C)

At temperatures above 225°F, coating discoloration and loss of gloss can be observed, without loss of film integrity.

SUBSTRATES: Apply over properly prepared metal, concrete, or other surfaces as recommended.

COMPATIBLE COATINGS: May be applied directly over inorganic zincs, weathered galvanizing, epoxies, phenolics or other coatings as recommended. A test patch is recommended before use over existing coatings. A mist coat is required when applied over inorganic zincs to minimize bubbling. May be topcoated with polyurethanes or acrylics to upgrade weathering resistance.

Oct 97 Replaces May 97

SPECIFICATION DATA

0983

THEORETICAL SOLIDS CONTENT OF MIXED MATERIAL:

	By Volume
CARBOLINE 890 LT	80% ± 2%

VOLATILE ORGANIC CONTENT:
The following are nominal values and may vary with color:
As Supplied: 1.51 lbs/gal (180 g/l)
Thinned:

Thinner	oz/gal	lbs/gal	g/l
2	13	2.01	241
33	16	2.15	258

RECOMMENDED DRY FILM THICKNESS PER COAT:
4-6 mils (100-150 microns).
6-8 mils (150-200 microns) for a more uniform gloss over inorganic zincs or for use over light rust.

In more severe environments a second coat of 4-6 mils (100-150 microns) is recommended.

Dry film thickness in excess of 10 mils (250 microns) per coat is not recommended. Excessive film thickness over inorganic zinc may increase damage during shipping or erection.

THEORETICAL COVERAGE PER MIXED GALLON:
1283 mil ft^2 (31 m^2/l at 25 microns)
257 ft^2 at 5 mils (6.3 m^2/l at 125 microns)
Mixing and application losses will vary and must be taken into consideration when estimating job requirements.

STORAGE CONDITIONS: Store indoors.
Temperature: 40-110°F (4-43°C) Humidity: 0-100%

SHELF LIFE: 36 months when stored indoors at 75°F (24°C).

COLORS: Available in Carboline Color Chart colors. Some colors may require two coats for adequate hiding.

NOTE: The low temperature formulation will cause most colors to yellow or discolor more than normal in a short period of time.

GLOSS: High gloss. (Epoxies lose gloss, discolor and eventually chalk in sunlight exposure.)

ORDERING INFORMATION

Prices may be obtained from your Carboline Sales Representative or Carboline Customer Service.

APPROXIMATE SHIPPING WEIGHT:

	2 Gal Kit	10 Gal Kit
CARBOLINE 890 LT	29 lbs (13 kg)	145 lbs (66 kg)
	1s	5s
Thinner 2	8 lbs (4 kg)	39 lbs (18 kg)
Thinner 33	9 lbs (4 kg)	45 lbs (20 kg)

FLASH POINT: (Setaflash)

CARBOLINE 890 Part A	89°F	(32°C)
CARBOLINE 890 LT Part B	73°F	(23°C)
Thinner 2	24°F	(-5°C)
Thinner 33	89°F	(32°C)

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APPLICATION INSTRUCTIONS

CARBOLINE® 890 LT

0983

These instructions are not intended to show product recommendations for specific service. They are issued as an aid in determining correct surface preparation, mixing instructions and application procedure. It is assumed that the proper product recommendations have been made. These instructions should be followed closely to obtain the maximum service from the materials.

SURFACE PREPARATION: Remove all oil or grease from the surface to be coated with Thinner 2 or Carboline Surface Cleaner 3 (refer to Surface Cleaner 3 instructions) in accordance with SSPC-SP 1.

Steel: For mild environments Hand Tool or Power Tool Clean in accordance with SSPC-SP 2, SSPC-SP 3 or SSPC-SP 11 to produce a rust-scale free surface.

For more severe environments, abrasive blast to a Commercial Finish in accordance with SSPC-SP 6 and obtain a 1½ - 3 mil (40-75 micron) blast profile.

For immersion service, abrasive blast to a Near White Metal Finish in accordance with SSPC-SP 10 and obtain a 1½ - 3 mil (40-75 micron) blast profile.

Concrete: Must be cured at least 28 days at 70°F (21°C) and 50% RH or equivalent time. Remove fins and other protrusions by stoning, sanding or grinding. Abrasive blast to open all surface voids and remove all form oils, incompatible curing agents, hardeners, laitance and other foreign matter and produce a surface texture similar to that of a medium grit sandpaper. Voids in the concrete may require surfacing. Blow or vacuum off sand and dust.

MIXING: Power mix each component separately, then combine and power mix in the following proportions:

	2 Gal Kit	10 Gal Kit
CARBOLINE 890 Part A	1 gallon	5 gallons
CARBOLINE 890 LT Part B	1 gallon	5 gallons

THINNING: For spray applications, may be thinned up to 13 oz/gal with Thinner 2. For hot and windy conditions, or for brush and roller application, may be thinned up to 16 oz/gal with Thinner 33.

Use of thinners other than those supplied or approved by Carboline may adversely affect product performance and void product warranty, whether express or implied.

POT LIFE: Three hours at 75°F (24°C) and less at higher temperatures. Pot life ends when material loses film build.

APPLICATION CONDITIONS:

	Material	Surface	Ambient	Humidity
Normal	60-85°F (16-29°C)	60-85°F (16-29°C)	60-90°F (16-32°C)	0-80%
Minimum	40°F (4°C)	35°F (-1°C)	35°F (-1°C)	0%
Maximum	90°F (32°C)	125°F (52°C)	110°F (43°C)	90%

Do not apply or cure the material when the surface temperature is less than 5°F or 3°C above the dew point.

Special thinning and application techniques may be required above or below normal conditions.

SPRAY: This is a high solids coating and may require slight 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: Pressure pot equipped with dual regulators, 3/8" I.D. minimum material hose, .070" I.D. fluid tip and appropriate air cap.

Oct 97 Replaces May 97

Airless:

Pump Ratio:	30:1 (min.)*	*Tip Size:*	.017-.021"
GPM Output:	3.0 (min.)	*Output psi:*	2100-2300
Material Hose:	3/8" I.D. (min.)	*Filter Size:*	60 mesh

*Teflon packings are recommended and are available from the pump manufacturer.

BRUSH OR ROLLER: Use medium bristle brush, or good quality short nap roller. Avoid excessive rebrushing and rerolling. Two coats may be required to obtain desired appearance, hiding and recommended dry film thickness. For best results, tie-in within 10 minutes at 75°F (24°C).

DRYING TIMES: These times are based on a 5 mil (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.

Surface Temperature	Dry To Touch	To Handle	Recoat Topcoat	Final Cure
35°F	5 hrs	18 hrs	20 hrs	7 days
40°F	4½ hrs	15½ hrs	16 hrs	5 days
50°F	3½ hrs	6½ hrs	12 hrs	3 days
60°F	2 hrs	5 hrs	8 hrs	2 days
75°F	1½ hrs	2 hrs	4 hrs	24 hrs
90°F	1 hr	1½ hrs	2 hrs	16 hrs

Excessive humidity or condensation on the surface during curing can interfere with the cure, can cause discoloration and may result in a surface haze or blush. Any haze or blush must be removed by water washing before recoating. During high humidity conditions, it is recommended that the application be done while temperatures are increasing.

Note: If applied at ambient temperatures of 50°F (10°C) or lower, and after the indicated Dry to Handle time the coating warms up to 60°F (16°C), the surface will temporarily soften for several hours. This condition is normal and will not effect system performance or cure characteristics.

Maximum Recoat or Topcoat Times at 75°F (24°C):
With Epoxies - 30 days; with Polyurethanes - 90 days

If the maximum recoat time has been exceeded, surface must be abraded by sweep blasting prior to the application of any additional coats.

Minimum cure time before immersion service is 5 days at 75°F (24°C) surface temperature. Cure at temperatures below 60°F (16°C) is not recommended for immersion service.

VENTILATION & SAFETY: WARNING: VAPORS MAY CAUSE EXPLOSION. When used as a tank lining or 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. In addition to ensuring proper ventilation, fresh air respirators or fresh air hoods must be used by all application personnel. Where flammable solvents exist, explosion-proof lighting must be used. Hypersensitive persons should wear clean, protective clothing, gloves and/or protective cream on face, hands and all exposed areas.

CLEANUP: Use Thinner 2.

CAUTION: READ AND FOLLOW ALL CAUTION STATEMENTS ON THIS PRODUCT DATA SHEET AND ON THE MATERIAL SAFETY DATA SHEET FOR THIS PRODUCT.

CAUTION: CONTAINS FLAMMABLE SOLVENTS. KEEP AWAY FROM SPARKS AND OPEN FLAMES. IN CONFINED AREAS, WORKMEN MUST WEAR FRESH AIRLINE RESPIRATORS. HYPERSENSITIVE PERSONS SHOULD WEAR GLOVES OR USE PROTECTIVE CREAM. ALL ELECTRIC EQUIPMENT AND INSTALLATIONS SHOULD BE MADE AND GROUNDED IN ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE. IN AREAS WHERE EXPLOSION HAZARDS EXIST, WORKMEN SHOULD BE REQUIRED TO USE NONFERROUS TOOLS AND TO WEAR CONDUCTIVE AND NONSPARKING SHOES.

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