

SELECTION & SPECIFICATION DATA

Generic Type	Proprietary, chemically fused glass-flake, reinforced, multi-functional polyester
Description	This extremely durable and chemically resistant cladding utilizes a multi-step curing process that incorporates chemically-fused glass flake reinforcing in a highly cross-linked polyester matrix. The resultant layer is an extremely durable barrier against a variety of exposures including marine, fresh water, salt water, both mineral and organic acids, bleach solutions, and free chlorine. The multi-layer glass-flake reinforcement greatly impedes the penetration of water and other corrosives making this system extremely long performing.
Features	<ul style="list-style-type: none"> • Outstanding marine exposure resistance (atmospheric, tidal, subsea) • Excellent resistance to both organic and mineral acids • Excellent abrasion and impact resistance • Excellent resistance to bleach solutions and free chlorine • Outstanding long-term protection
Color	Off-white, yellow and grey. Other colours upon request.
Number of Coats	Two coats are recommended.
Dry Film Thickness	508 microns (20 mils) per coat
Typical Uses	It is ideal for long-term performance on offshore and other structures exposed to severe marine exposures above of below the water line. It is suitable for immersion, splash or spill or fume exposures in the aggressive chemicals mentioned or wherever severe impact or abrasion is required. As a tank lining for a variety of acids, hypochlorites and free chlorine. Properties such as retention of adhesion and impact resistance allow its use in lining large steel tanks. Examples of uses in chemical processing plants are the lining of filter tanks, brine tanks, vacuum dryers, settling tanks, tank trailers, etc. Other uses include tank bottoms in the petroleum industry, pulpers and storage tanks in paper mills, ship hulls and rudders and splash zone areas on offshore structures.
Solids Content	By Volume 98% +/- 2% See VOC Values.
Theoretical Coverage Rates	1,9 m ² /ltr. at 500 µm.
Theoretical Coverage Rate	38.6 m ² /l at 25 microns (1572 ft ² /gal at 1.0 mils) 1.9 m ² /l at 500 microns (79 ft ² /gal at 20.0 mils) Allow for loss in mixing and application.

Carboglas 1601 SG

PRODUCT DATA SHEET



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VOC Values	<p>As Supplied : 0.083 lbs/gal (10 g/l)</p> <p>VOC listed assumes complete reaction with a volatile monomer used in the formula.</p> <p>*Note: Since a volatile monomer is used, losses during field application are affected by the following:</p> <ol style="list-style-type: none">1. Monomer evaporation during application and cure may result in up to a 30% lower coverage rate compared to theoretical coverage.2. Application of the product when material and surface temperature are above normal will result in greater monomer loss, causing lower coverage rates.3. With recommended blast profile, up to 10% additional material will be required to fill in the blast profile.4. Due to these factors and the glass flake fillers, measurement of the wet film thickness is difficult. Film thickness reading should be made after the product has dried to touch, using a properly calibrated magnetic gauge.5. In addition to the above, material losses during mixing and spray application should be taken into consideration when estimating job requirements. Practical coverage rates of 50-60% of theoretical coverage are common.
Dry Temp. Resistance	<p>Continuous: 93°C (200°F) Non-Continuous: 121°C (250°F)</p> <p>*Immersion temperature resistance depends on exposure. Consult Carboline Technical Service for specific recommendations. Tanks operating above 140°F (60°C) must be insulated.</p>
Limitations	Immersion service in alkalis or aromatic solvents. Application on concrete or other cementitious surfaces.
Topcoats	Not Recommended
Designation	<p>This is a Carboline Specialty Product</p> <p>Minimum order quantities Contact your Carboline Sales Representative for more details.</p>

SUBSTRATES & SURFACE PREPARATION

General	<p>Properly prepared bare steel only.</p> <p>Remove all dirt, dust, oil and all other contaminants from the surface to be coated with Thinner #2 or Surface Cleaner #3 (Refer to Surface Cleaner #3 Instructions) in accordance with SSPC-SP1.</p>
Steel	<p>Immersion Service: Abrasive blast to a White Metal Finish in accordance with SSPC-SP5 and obtain a 4-5 mil (100- 125 micron) min. blast profile.</p> <p>Non-Immersion: Abrasive blast to a near White Metal Finish in accordance with SSPC-SP10 and obtain a 4-5 mil (100- 125 micron) min. blast profile.</p>
Concrete or CMU	Not recommended.

TYPICAL CHEMICAL RESISTANCE

Exposure	Fumes	Splashes & Spills
Acids	Excellent	Excellent
Alkalies	Good	Good
Salt	Excellent	Excellent
Solvents	Good	Fair
Water	Excellent	Excellent

Acids: Mineral or Organic

MIXING & THINNING

Mixing	<p>Power mix Carboglas 1601 SG Part A separately, then add the Catalyst and power mix in the following proportions: Part A: 18 ltr. Catalyst 275 ml (Normal catalyst level)</p> <p>Use of thinners other than those supplied or approved by Carboline may adversely affect product performance and void product warranty, whether express or implied.</p>
Thinning	<p>No thinner shall be used but up to 47 g/ltr. Carboline Additive #47 can be added to reduce viscosity and improve application characteristics. Other thinners must not be used</p>
Pot Life	<p>At normal catalyst levels potlife is about 90 min. at 24°C</p> <p>At double the catalyst level the potlife is reduced to 30 min. At elevated temperatures (32°C) these potlife times will be reduced by 50%. The times will vary due to job site conditions and/or volume mass of mixed material. Pot life ends when coating <u>starts</u> to thicken. Take extreme caution when using additional catalyst levels or when using at higher temperatures</p>

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)	The following spray equipment has been found suitable and is available from manufacturers.
Conventional Spray	Bottom outlet pressure pot with dual regulators, 1/2" I.D. minimum nylon lined material hose, 25' maximum material hose length, .088" to .110" I.D. fluid tip and appropriate air cap.
Airless Spray	<p>Pump Ratio: 45:1 (min.)* GPM Output: 3.0 (min.) Material Hose: 1/2" I.D. (min.) Tip Size: .027-.041" (easy clean type) Output PSI: 2200-2500 Filter Size: Not recommended *PTFE packings are recommended and available from the pump manufacturer.</p>
Brush	Not recommended.
Roller	Not recommended.

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CURING SCHEDULE USING NORMAL CATALYST LEVEL

Surface Temp.	Cure for Service	Dry to Recoat
13°C (55°F)	5 Days	24 Hours
18°C (65°F)	4 Days	16 Hours
24°C (75°F)	2 Days	12 Hours
32°C (90°F)	1 Day	8 Hours
43°C (110°F)	24 Hours	4 Hours

The above guidelines are for mixed material using **normal** catalyst levels. The Dry to Recoat times listed indicate the time at which the film is partially cured with a slight surface tack (ideal for topcoating). If the film becomes hard (without tackiness) the surface must be treated with xylol or other suitable aromatic solvent prior to recoating. Alternatively (or if solvent treatment does not create a "tacky" surface), sweep blasting may be used to prepare the surface for recoating.

Force curing is recommended for all severe or critical services as curing at elevated temperatures increases chemical resistance to some exposures. Cure the applied film for 4 hours @24°C with good ventilation and then raise the temperature approx. 15°C every 30 minutes until 55°C is achieved and hold for 24 hours.

CURING SCHEDULE USING DOUBLE CATALYST LEVEL

Surface Temp.	Cure for Service	Dry to Recoat
7°C (45°F)	4 Days	24 Hours
13°C (55°F)	2 Days	18 Hours
18°C (65°F)	36 Hours	10 Hours
24°C (75°F)	24 Hours	6 Hours
32°C (90°F)	20 Hours	4 Hours

The above guidelines are for mixed material using **double** the normal catalyst levels. The Dry to Recoat times listed indicate the time at which the film is partially cured with a slight surface tack (ideal for topcoating). If the film becomes hard (without tackiness) the surface must be treated with xylol or other suitable aromatic solvent prior to recoating. Alternatively (or if solvent treatment does not create a "tacky" surface), sweep blasting may be used to prepare the surface for recoating.

Note: Immersion exposures are limited to salt water immersion only when cured at 45°F (7°C) when using double the catalyst levels.

CLEANUP & SAFETY

Cleanup	Use Thinner #2 or Toluol. 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.
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.

PACKAGING, HANDLING & STORAGE

Shelf Life	Part A: Min. 12 months at 75°F (24°C) Catalyst: Min. 6 months at 75°F (24°C) Additive #47: 6 months at 75°F (24°C)
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PACKAGING, HANDLING & STORAGE

Storage Temperature & Humidity	Store Indoors at temperature 40°-110°F (4°-43°C) Humidity: 0-100% Carboglas 1601 SG Catalyst is a strong oxidizing agent and should be stored separately. In cases where temperatures are consistently above 75°F (24°C), refrigerating the product preserves its reactivity. The shelf life of Additive #47 is also shortened by higher temperatures.
Flash Point (Setaflash)	Part A: 90°F (32°C) Catalyst: 137°F (58°C) Additive # 47: 88°F (31°C)
Packaging	Part A: 18 ltr. Catalyst: 0,55 ltr. (1 L package size) Additive #47: 100 ml

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.