



ArmorFlex®

953 Series

HIGH GLOSS BUFFBACK® High Performance Flexible Gel Coat

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Description

CCP 953 Series ArmorFlex® gel coats are high performance, ISO/NPG products that display desirable HIGH GLOSS BUFFBACK® qualities.

BUFFBACK® qualities of these gel coats are demonstrated as:

- Easier, quicker gloss recovery (less buffing time to achieve gloss).
- Higher gloss recovery when polishing back aged or exposed gel coat surfaces.
- Higher gloss in the repair patch and surrounding refinished area.
- Higher gloss recoverability from lower gloss molds.

Higher gloss can be perceived as a deeper, richer color, providing an enhanced cosmetic appearance to the gel coated part.

While offering these benefits, the ArmorFlex® 953 Series gel coats have retained the important construction application qualities expected from CCP gel coats, such as resistance to porosity, tearing, and color separation; sag resistance; consistent liquid properties; excellent patchability; and more. All of these properties contribute to the high quality appeal in FRP parts made from CCP HIGH GLOSS ArmorFlex® BUFFBACK® gel coats.

Gel coats in this series resist weathering and blistering because they are formulated to give high performance against water and certain chemicals, although blister resistance is best with gel coats in the 943 series. Gel coats in the 953 series are made with neopentyl glycol (NPG) and were primarily developed for sanitary and quality marine applications; however, they should be used in any FRP application where high performance characteristics are desired. 953 gel coats utilize this unique glycol to provide a gel coat that surpasses previous commercial gel coats in its resistance to blistering. They also contain isophthalic acid (ISO) as a co-component rather than orthophthalic acid. The isophthalic functionality is used, (rather than the orthophthalic) to complement the NPG for better end use properties. These gel coats provide durable, reduced maintenance products.

These gel coats have enabled customers to meet and surpass all requirements of the American National Standard for plastic bathtubs, shower receptors and shower stalls, ANSI Z124.1, .2 and .3 –1995, Sec. 6.1.1.



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Gel coats in the 953 Series require only the addition of the proper amount of the appropriate methyl ethyl ketone peroxide to cure.

HIGH GLOSS ArmorFlex® BUFFBACK® gel coats are available in the same wide range of colors as other POLYCOR® gel coats. Refer to CCP's POLYCOR® Color Card for color selection. Standard base white ArmorFlex® is 953WJ301.

Typical Properties (77°F)

These values may or may not be manufacturing control criteria; they are listed for a reference guide only. Particular batches will not conform exactly to the numbers listed because storage conditions, temperature changes, age, testing equipment (type and procedure) can each have a significant effect on the test results. Gel coats outside of these readings can perform acceptably.

| Test | Value | |
|---------------------------|------------------------------------|--------------------------------|
| | Colors | Whites |
| Viscosity ⁽¹⁾ | 12,000–18,000 cps | 13,000-19,000 cps |
| Thixotropic Index (2/20) | 5.5–7.0 | 5.0-7.0 |
| Flash Point | 79-82 °F | 79-82 °F |
| Hazardous Air Pollutants | See MSDS for amounts | |
| Volatile Organic Compound | 36.0-40.0 % | 33.0-37.0 % |
| Weight per Gallon | 9.0–11.0 lbs. (color dependent) | 10.50-11.00 lbs. |
| Gel Time ⁽²⁾ | 13.0-17.0 minutes | 13.0-17.0 minutes |
| Lay-up Time | 45–80 minutes | 45–80 minutes |
| Sag Resistance | Good at 20 mils | Good at 20 mils |
| Hide (Most Formulations) | 3 to 20 mils wet (color dependent) | 4 to 12 mils (color dependent) |

⁽¹⁾ Brookfield RVF #4 Spindle @ 4 rpm

⁽²⁾Method CCP-22-TAS-TM-515.2, 100 g mass, 1.8% Arkema Luperox® DDM-9

Reds, yellows and dark blues may have low hiding power. Ask a CCP Representative whether the desired red, yellow or blue requires a special application procedure (i.e. increased film thickness through multiple applications).



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Application

ArmorFlex® 953 gel coat should be mixed prior to use. This includes mixing before production spray applications and when obtaining material for patching or any material that has been set aside for patching. Use mixing equipment with sufficient horsepower (relative to container size) to achieve thorough circulation from top to bottom and out to the sides of the container. The agitator must be properly sized for the container and must allow for uniform mixing regardless of the liquid level in the container. It is typically sufficient to mix the gel coat once a day for 10 minutes. Air bubbling should not be used for mixing. It is not effective and only serves as a potential source of water or oil contamination. Do not over mix ArmorFlex® 953 gel coats. Over mixing can break down the gel coat viscosity increasing the tendency to sag.

ArmorFlex® gel coats achieve high performance properties through the incorporation of neopentyl glycol in the basic resin structure. Gel coats in the 953 series are higher molecular weight polymers than those in the 944 Series. This affects the handling and curing properties of the gel coat. The 953 gel coats require closer control of the application procedure than isophthalic gel coats, and may be harder to pump and spray. Slightly higher pumping pressures and atomizing air pressures are normally required than are typically necessary for isophthalic gel coats. Also, the balance of fluid flow, atomizing air and catalyst level is more critical.

Gel coats in the ArmorFlex® 953 Series are generally formulated for airless as well as conventional spray application. Brushing or rolling is not recommended. Refer to CCP's online Application Guide, *Open Molding: Conventional Gel Coat*, application and equipment sections for additional information and recommendations.

CCP recommends a gel coat delivery rate of no more than 2.5 pounds per minute with conventional air atomized equipment, and no more than 4 pounds per minute with airless equipment.

For optimum results, uniform catalyst mix must be achieved. Even with the equipment properly calibrated, potential problems can occur due to: poorly atomized catalyst; surging problems (gel coat or catalyst); poor tip alignment (catalyst to gel coat mix); contamination; and poor application procedures, which will quickly negate all benefits of calibration. The equipment (and application procedures) must be monitored on a routine basis to ensure proper application and cure of the gel coat. Ask about and adhere to all equipment manufacturers' recommendations.

For best overall end performance properties, a wet film thickness of 18 ± 2 mils is recommended as ideal. Films less than 12 mils may not cure properly, may be hard to patch, have more print-through, and are more susceptible to water blisters. Films above 24 mils may pre-release, trap porosity, or crack, and are more subject to weathering discoloration. If water blisters are of a great concern (boat hulls), 20 to 24 mils would perform better than a thinner film, but sag, porosity and cracking resistance could suffer. If weathering (yellowing from sunlight, decks) is of great concern, then thinner films (12 to 16 mils) would perform better, but patchability and resistance to print-through and blistering could suffer.

Proper mold maintenance is important. Although ArmorFlex® gel coats have excellent patching and buffback properties, minimal repair/refinish work is always desirable. Sanding and compounding can hasten the chalking and loss of gloss of all gel coats.

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Avoid overspray settling on mold surfaces by beginning the spray pattern closest to the vapor/air exhaust and progressing to the opposite mold end. Maintain recommended spray distances from the mold surface. Closer spray distances or larger tips may be required in hot weather to avoid dry spray buildup.

Cure

It is recommended that gel time be checked in the customer's plant because age, temperature, humidity, and catalyst will produce varied gel times. ArmorFlex® 953 is quality control tested using Arkema Luperox® DDM-9 catalyst. Norac NOROX MEKP-9 and NOROX MEKP-9H, Akzo Nobel CADOX L-50a and CADOX D-50 are expected to yield similar performance. Arkema Luperox® DHD-9, NOROX MEKP-925 and NOROX MEKP-925H, and Crompton HP-90 may yield slightly shorter gel and cure times.

The catalyst level should not exceed 3% or fall below 1.2% for proper cure. The recommended range is 1.2% to 3.0% with 1.8% at 77 °F being ideal. Normally, the gel coat film is ready for lamination in 45 to 80 minutes. This time element is dependent on material temperature, room temperature, humidity, air movement, and catalyst concentration. *Note:* 953 series films have a tendency to air dry and lay-up times may be deceiving. If lay-up time is checked by the finger method, slight pressure and rubbing should be used. Special fast-cure versions are available but must be requested. These products offer lay-up times of 30 minutes or less depending on gel times. Fast cure products have shorter stability and should not be inventoried over 45 days.

These products (standard or fast cure) should not be used when temperature conditions are below 60 °F, as curing may be adversely affected.

Caution

ArmorFlex® 953 series ISO/NPG gel coats are not compatible in the liquid state with isophthalic gel coats or with isophthalic resins. Spray and pumping equipment must be completely clean of these gel coats or resins before gel coats in the 953 Series can be used.

Do not add any material, other than the recommended methyl ethyl ketone peroxide, to this product without the advice of a representative of CCP Composites US. Under no circumstances should glycerin be added to these products.

Storage Limitations

Un-catalyzed, standard cure ArmorFlex® 953 gel coats have a shelf-life of 90 days from date of shipment when stored at 73°F or below, in a closed, factory-sealed, opaque container, and out of direct sunlight. Fast cure gel coats (i.e. gel time less than 9.0 minutes) are stable for 45 days. The usage life is cut in half for every 20°F over 73°F. Totes of product can have even shorter usage life--66% of that for drums.

MSDS / Data Sheets

MSDS and Data Sheets are available in printable format at www.ccpcompositesus.com



COMPOSITES SAFETY INFORMATION (October 2011)

All sales of products manufactured by CCP Composites US (CCP), and described herein, are made solely on condition that CCP's customers comply with applicable health and safety laws, regulations and orders relating to the handling of our products in the workplace. Before using, read the following information, and both the product label, and Material Safety Data Sheet pertaining to each product.

Most products contain styrene. Styrene can cause eye, skin and respiratory tract irritation. Avoid contact with eyes, skin and clothing. Impermeable gloves, safety eyewear and protective clothing should be worn during use to avoid skin and eye contact. Wash thoroughly after use.

Styrene is a solvent and may be harmful if inhaled. Reports have associated repeated and prolonged occupational overexposure to solvents with permanent brain and nervous system damage. Extended exposure to styrene at concentrations above the recommended exposure limits may cause central nervous system depression causing dizziness, headaches or nausea and, if overexposure is continued indefinitely, loss of consciousness, liver and kidney damage.

Do not ingest or breathe vapor, spray mists or dusts caused by applying, sanding, grinding and sawing products. Wear an appropriate NIOSH/MSHA approved and properly fitted respirator during application and use of these products until vapors, mists and dusts are exhausted, unless air monitoring demonstrates vapors, mists and dusts are below applicable exposure limits. Follow respirator manufacturer's directions for respirator use.

The International Agency for Research on Cancer (IARC) reclassified styrene as Group 2B, "possibly carcinogenic to humans." This revised classification was not based on new health data relating to either humans or animals, but on a change in the IARC classification system. The Styrene Information and Research Center does not agree with the reclassification and published the following statement: Recently published studies tracing 50,000 workers exposed to high occupational levels of styrene over a period of 45 years showed no association between styrene and cancer, no increase in cancer among styrene workers (as opposed to the average among all workers), and no increase in mortality related to styrene.

Styrene is classified by OSHA and the Department of Transportation as a flammable liquid. Flammable products should be kept away from heat, sparks, and flame. Lighting and other electrical systems in the work place should be vapor-proof and protected from breakage.

Vapors from styrene may cause flash fire. Styrene vapors are heavier than air and may concentrate in the lower levels of molds and the work area. General clean air dilution or local exhaust ventilation should be provided in volume and pattern to keep vapors well below the lower explosion limit and all air contaminants (vapor, mists and dusts) below the current permissible exposure limits in the mixing, application, curing and repair areas.

Some products may contain additional hazardous ingredients. To determine the hazardous ingredients present, their applicable exposure limits and other safety information, read the Material Safety Data Sheet for each product (identified by product number) before using. If unavailable, these can be obtained, free of charge, from your CCP representative or from: CCP Composites US, P.O. Box 419389, Kansas City, MO 64141-6389; 816-391-6053.

FIRST AID: In case of eye contact, flush immediately with plenty of water for at least 15 minutes and get medical attention; for skin, wash thoroughly with soap and water. If affected by inhalation of vapors or spray mist, remove to fresh air. If swallowed, get medical attention.

Those products have at least two components that must be mixed before use. Any mixture of components will have hazards of all components. Before opening the packages read all warning labels. Observe all precautions. Keep containers closed when not in use. In case of spillage, absorb with inert material and dispose of in accordance with applicable regulations. Emptied containers may retain hazardous residue. Do not cut, puncture or weld on or near these containers. Follow container label warnings until containers are thoroughly cleaned or destroyed.

FOR INDUSTRIAL USE AND PROFESSIONAL APPLICATION ONLY. KEEP OUT OF REACH OF CHILDREN.



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