



# ArmorFlex®

## 953 Series

### HIGH GLOSS BUFFBACK® High Performance Flexible Gel Coat

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#### Description

Polynt Composites' ArmorFlex® 953 Series gel coats are high performance products formulated for the fiberglass industry. They are primarily formulated for marine and sanitary applications, but should be used in any application where water and chemical resistance are needed. ArmorFlex® 953 Series also have exceptional gloss and buffing characteristics.

While offering these benefits, the ArmorFlex® 953 Series gel coats have retained the important construction application qualities expected from Polynt Composites gel coats, such as resistance to porosity, tearing, and color separation; sag resistance; consistent liquid properties; excellent patchability; and more. These all add up to higher quality appeal in FRP parts made from Polynt's ArmorFlex® HIGH GLOSS BUFFBACK® gel coats.

ArmorFlex® 953 Series 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.

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

ArmorFlex® HIGH GLOSS BUFFBACK® gel coats are available in the same wide range of colors as other POLYCOR® gel coats. Refer to Polynt's POLYCOR® Color Card for color selection. Standard base white ArmorFlex® is 953WJ340.

#### Features and Benefits

- Excellent water resistance for reduced osmotic blistering
- Good chemical resistance for long, lasting durable finishes
- 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 patches and surrounding refinished area
- Higher gloss recoverability from lower gloss molds



### Typical Properties (77°F)

Typical liquid properties of the ArmorFlex® 953 Series are shown below. 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 <sup>(1)</sup>	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
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 <sup>(2)</sup>	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) <sup>(3)</sup>	4 to 12 mils (color dependent)

<sup>(1)</sup> Brookfield RVF #4 Spindle @ 4 rpm

<sup>(2)</sup> 100 g mass, 1.8% Arkema Luperox® DDM-9

<sup>(3)</sup> Reds, yellows and dark blues may have low hiding power. Ask a Polynt representative whether the desired red, yellow or blue requires special application procedure (increased film thickness through multiple applications).

### Application

ArmorFlex® 953 Series gel coats must be mixed prior to use. This includes prior to production spray application and when obtaining material for patching or any material that has been set aside for patching. Several suitable types of mixing equipment and styles of agitators are available for both pails and drums. Regardless of the specific type used, the equipment must have 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.

Mixing once a day for 10 minutes is typically sufficient. Do not overmix ArmorFlex® 99F gel coats. Overmixing can break down the polymer coating viscosity increasing the tendency to sag. Overmixing can also result in styrene loss which could contribute to porosity. Air bubbling should not be used for mixing. It is not effective and only serves as a potential source of water or oil contamination.

ArmorFlex® 953 Series gel coats are formulated for spray application. Brushing or rolling is not recommended. Refer to Polynt's Composites Applications Guide for additional information.



Polynt Composites does not recommend fluid lines longer than 50 feet, or pumps smaller than 20:1 ratio. Polynt 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.

When establishing the fan pattern for the spray equipment, use the lowest pump pressure needed to achieve a good fan pattern (no fingers or tails, uniform particle size of about 1/16"). Use of higher pressures can lead to a porosity or excessive overspray. Overspray can result in a leathery or chicken skin texture if it falls on the part surface. To minimize overspray that falls onto the mold, plan the spray pattern so that the beginning is closest to the vapor/air exhaust and progresses to the opposite mold end. The spray pattern should also allow for a wet line to be maintained.

A spray distance of 18 to 36 inches is recommended. Closer spray distances can result in blowing of the film or air entrapment. Spraying at distances greater than 4 feet will increase orange peel and porosity. For deep channels, recessed, and hard-to-spray areas, an extension nozzle is highly recommended.

For best overall end performance properties, a wet film thickness of  $18 \pm 2$  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 buff back properties, minimal repair/refinish work is always desirable. Sanding and compounding can hasten the chalking and loss of gloss of all gel coats.

## 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. All data referencing gel or cure refers specifically to Arkema Luperox® DDM-9 catalyst. United Initiators Norox® MEKP-9 and Norox® MEKP-9H, AkzoNobel CADOX® L-50a and CADOX® D-50 are expected to yield similar performance. Arkema Luperox® DHD-9, United Initiators Norox® MEKP-925 and Norox® MEKP-925H, and Pergan HP-90 may yield slightly shorter gel and cure times.

The recommended catalyst 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: ArmorFlex® 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. These products should not be used when temperature conditions are below 60°F, as curing may be adversely affected.



### Caution

ArmorFlex® 953 Series gel coats may not be compatible in the liquid state with other gel coats and resins. Spray and pumping equipment should be completely clean before using ArmorFlex® 953 Series products. Do not add any material, other than the recommended methyl ethyl ketone peroxide, to this product without the advice of a representative of Polynt Composites.

### Related Products

Polynt Composites recommends the use of PATCHAID® when patching ArmorFlex® 953 Series gel coats. See the technical datasheet for Polynt Composites' PATCHAID® 970X900, 970XJ037, 970XJ166 and 970XA014 products.

### Storage Limitations

Uncatalyzed, standard cure gel coats have a shelf life of 120 days from date of manufacture when stored at 73°F or below, in a closed, factory-sealed, opaque container, and out of direct sunlight. Fast Cure gel coats (gel time less than 9.0 minutes) have a shelf life of 60 days. The shelf life is cut in half for every 20°F over 73°F. Totes of product can have even shorter shelf life – only 66% of that for drums.

### SDS / Data Sheets

SDS and data sheets can be obtained by contacting your Polynt representative or Polynt Customer Service at 800-322-8103.

## POLYNT SAFETY INFORMATION

All sales of products manufactured by Polynt Composites USA Inc. and described herein, are made solely on condition that Polynt Composites USA 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 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 12th Report on Carcinogens issued by the National Toxicology Program lists styrene as a "reasonably anticipated" carcinogen, but the Report cautions that the NTP listing does not mean that styrene presents a risk to persons in their daily lives. The Styrene Information and Research Center does not agree with the classification as it did not include a review of all available data. SIRC states: "HHS included styrene in the 12th RoC despite the fact that European Union regulators have determined styrene does not represent a human cancer concern. E.U. scientists reviewed the full styrene database, weighing all of the available data in reaching their conclusion."

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 workplace 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 Safety Data Sheet for each product (identified by product number) before using. If unavailable, these can be obtained, free of charge, from your Polynt Composites representative or from: Polynt Composites USA Inc., 99 East Cottage Avenue, Carpentersville, IL 60110, 800-322-8103.

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.**

## LIMITED WARRANTY AND LIMITATION OF LIABILITY

### LIMITED WARRANTY.

Seller warrants that: (i) Buyer shall obtain good title to the product sold hereunder, (ii) at shipment such product shall conform to Seller's specifications for the product; and (iii) the sale or use of such product will not infringe the claims of any U.S. patent covering the product itself, but Seller does not warrant against infringement which might arise by the use of said product in any combination with other products or arising in the operation of any process. **SELLER MAKES NO OTHER WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING WITHOUT LIMITATION ANY WARRANTY OF MERCHANTABILITY OR FITNESS FOR ANY PARTICULAR PURPOSE, EVEN IF THAT PURPOSE IS KNOWN TO SELLER. ANY ADDITIONAL REPRESENTATIONS OR SUGGESTIONS REGARDING THE PRODUCT OR ITS POSSIBLE USES ARE BASED UPON SELLER'S GOOD FAITH OPINION AND BELIEF, BUT ARE NOT TO BE CONSTRUED AS AFFIRMATIONS OF FACT, PROMISES, OR DESCRIPTIONS, AND SHALL IN NO WAY BE DEEMED PART OF THE SALE OF PRODUCT.** In particular, and without limiting the foregoing, because of environmental and use conditions beyond Seller's control, Seller offers no warranty and makes no promise concerning the results that may be obtained by the Buyer (or the Buyer's customer) with the product or the performance of the product. Each user should satisfy itself, by adequate testing, of the suitability of the product for its particular application.

### LIMITATION OF LIABILITY.

- (a) Seller's total liability for any claim arising out of or in connection with this contract, including for breach of contract, warranty, statutory duty, or for other tort, including seller's negligence, shall not exceed the purchase price of such product as to which such liability arises. Seller shall not be liable for any injury, loss or damage, resulting from the handling or use of the product shipped hereunder whether in the manufacturing process or otherwise. **IN NO EVENT SHALL SELLER BE LIABLE FOR SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES, INCLUDING WITHOUT LIMITATION LOSS OF PROFITS, CAPITAL OR BUSINESS OPPORTUNITY, DOWNTIME COSTS, OR CLAIMS OF CUSTOMERS OR EMPLOYEES OF BUYER, WHETHER IN AN ACTION UNDER CONTRACT, NEGLIGENCE OR ANY OTHER THEORY, ARISING OUT OF OR IN CONNECTION WITH THIS CONTRACT, OR THE USE, INABILITY TO USE, OR PERFORMANCE OF THE PRODUCT.**
- (b) If Seller furnishes technical or other advice to Buyer, whether or not at Buyer's request, with respect to processing, further manufacture, other use or resale of the products, Seller shall not be liable for, and Buyer assumes all risk of, such advice and the results thereof.

The information provided is believed to be accurate at the time of preparation, or prepared from sources believed to be reliable, but it is the responsibility of user to investigate and understand other pertinent sources of information, to comply with all laws and procedures applicable to the safe handling and use of the product and to determine the suitability of the product for its intended use.