



PATCHAID®

970X900, 970XJ037, 970XJ166, 970XA014 Resin-Based Aids for Spray Patching

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Description

The PATCHAID® products covered in this bulletin (970X900, 970XJ037, 970XJ166, and 970XA014) are pre-promoted, resin and monomer solutions that, when mixed with gel coat, improve the working properties for spray patches. Use of PATCHAID® lowers the viscosity of the gel coat, minimizing orange peel. Use of PATCHAID® will also accelerate cure and reduce surface tackiness. These Polynt PATCHAID® products are light stabilized to minimize differences in weathering between the original gel coat surface and the patch.

NOTE: Because these PATCHAIDS contain wax, they should not be added to clear gel coats as that could lead to hazing the clear gel coat film.

Features and Benefits

- Low color to provide an excellent color match between the gel coat and patch
- Low viscosity for easier spray and less orange peel
- Very fast cure (appropriate type) allows for fast working time and quicker repairs
- Long working time (appropriate type) is advantageous for repairing large defects and for mold resurfacing
- Light stabilized to minimize discoloration of patches made using clear gel coats and pigmented gel coats
- Good surface cure, which minimizes sandpaper "gumming"
- Excellent sanding and buffing due to proprietary additives and less orange peel
- Easy mold resurfacing; see Polynt's Composites Applications Guide, Chapter 12: Tooling – Mold Repair, on mold repair with Polycor® 945CJ007 patching thinner

NOTE: Patching materials for open mold processing are exempt from the MACT standard. The Environmental Protection Agency National Emission Standards for Hazardous Air Pollutants for Boat Manufacturing (NESHAP), 40 CFR Part 63, lists exemptions in subpart 63.5698, paragraph (d) (2) which states: "Pigmented, clear, and tooling gel coat used for part or mold repair and touchup. The total gel coat materials included in this exemption must not exceed 1 percent by weight of all gel coat used at your facility on a 12-month rolling-average basis."



Typical Liquid Properties (at 77°F)

The liquid properties of PATCHAID® 970X900, 970XJ037, 970XJ166, and 970XA014 are shown below. These values may or may not be manufacturing control criteria; they are listed as a reference guide only. Particular batches will not conform exactly to the numbers listed because storage conditions, temperature changes, age, and testing equipment (type and procedure) can each have a significant effect on the results. Products with properties outside of these readings can perform acceptably. Final suitability of these products is in the end use performance.

Test	PATCHAID®			
	970XJ037	970X900	970XJ166	970XA014
Viscosity	50 cps ⁽¹⁾	125 cps ⁽²⁾	100 cps ⁽²⁾	125 cps ⁽²⁾
Thixotropic Index (6/60)	N/A	1.9	2.0	1.9
Gel Time ⁽³⁾	7 minutes	9 minutes	6 minutes	6 minutes
Gel-to-Peak ⁽³⁾	N/A	5 minutes	N/A	6 minutes
Peak Temperature	N/A	410°F	N/A	430°F
Weight per Gallon	8.6 lbs.	8.8 lbs.	8.4 lbs.	8.8 lbs.

⁽¹⁾ Brookfield LVF #1 spindle @ 60 rpm

⁽²⁾ Brookfield LVF #2 spindle @ 60 rpm

⁽³⁾ POLYNT-22-TAS-TM-515.2, 100 g mass, 2% Arkema Luperox® DDM-9

Application

PATCHAID® products and appropriate application methods include the following:

970XJ037 SPEED PATCHAID®	Resin-based for aerosol bottles and conventional touchup spray guns
970X900 SPEED PATCHAID®	Resin-based for conventional touchup spray guns
970XJ166 SPEED PATCHAID®	Resin-based for conventional touchup spray guns for MC (MACT compliant) gel coats
970XA014 PATCHAID®	Resin-based for conventional touchup spray guns

PATCHAID® 970XJ037 was formulated specifically so acetone would not be necessary when using aerosol spray bottles.

For best surface cure (less sticky), PATCHAID® 970XJ037 is recommended for all products, especially Polynt's 951, 953, and 96X Series gel coats.

As with any pre-promoted polyester, patch mixtures will require the addition of an appropriate amount and type of methyl ethyl ketone peroxide catalyst to cure.



A typical patch will be ready to sand in 30 minutes to two hours under ideal conditions. Factors that will affect sanding time include the following: type of PATCHAID®; age of materials; gel and cure of the gel coat used; temperature of air, part, and material; humidity; air movement; and catalyst, both amount and type.

Gel and sanding times can vary greatly, depending on cure characteristics of the gel coat.

Gel Time of PATCHAID® and Typical Mixture (in % or cc's)				
	970XJ037	970X900	970XJ166	970XA014
Gel Coat (ARMORCOTE®)	70	70	70	70
PATCHAID®	30	30	30	30
Catalyst	2.0	2.0	2.0	2.0
Cup Gel Time	5 minutes shorter than gel coat	5-10 minutes	5 minutes shorter than gel coat	5 minutes shorter than gel coat
Sanding Time	30-45 minutes	45-60 minutes	45-60 minutes	30-45 minutes

Always shake PATCHAID® or mix before using. This assures a uniform mixture that will perform the same, from first patch to last.

If PATCHAID® has been allowed to become cooler than 70°F, it could become cloudy and, at this point, no longer be a homogenous solution. The material should be brought to room temperature and returned to its original appearance before using. Mildly agitate the PATCHAID® before use.

Secure the lid after each use. An open container will lose styrene and pick up dirt. Both can have negative effects on patches.

Catalyzed masses get very hot as they cure. Polynt recommends that excess catalyzed patching materials be placed in a bucket of water.

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, Akzo Nobel 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 may yield slightly shorter gel and cure times.

The recommended catalyst range is 1.5% to 2.5%. The ideal catalyst level is 2.0% at 77°F. Do not exceed 2.5%, nor fall below 1.5% catalyst for proper cure.

Do not make patches when temperature conditions are below 70°F, as curing may be adversely affected.



Recommended Procedure

1. Identify the area to be repaired. Locating repair edges at design lines, break lines, or other part features that visually break up the part surface can help hide patches.
2. Prepare the area to be patched by sanding with 150-grit to 320-grit sandpaper. Remove sanding dust. Wipe the area with ethyl acetate, methyl ethyl ketone or other suitable solvent to eliminate wax, oil or other contaminants. Be sure that the area to be patched is clean and dry before proceeding. Mask the area surrounding the patch area to prevent overspray from accumulating on part.
3. Shake the PATCHAID® before using. This is necessary to provide uniform mixing. Some active ingredients can settle out and can be easily reincorporated by shaking.
4. Prepare patching mix as follows:

Material	Minimum Mix (50 cc's)	Typical Mix (100 cc's)
Gel Coat	35 cc's	70 cc's
PATCHAID®	15 cc's	30 cc's
Catalyst	1 cc (40-50 drops)	2 cc's

Mixtures can be scaled up by multiplying by 1 for each additional 100 cc's, i.e. 500 cc's times 5, 1000 cc's times 10.

5. Spray appropriate PATCHAID® with a precision touchup gun or aerosol canister. Use 25-50 psi to achieve acceptable atomization. Equipment requirements will vary with the reduction. Using 970XJ037, reductions of 50/50 can be sprayed through an aerosol canister, but the viscosity will be lower, which could cause sagging, and the hiding power will be reduced.
6. Some colors, clears, or types of gel coats may require the patch to be oversprayed with a sealer, wet-on-wet, to achieve complete tack-free surface. This can be achieved with PATCHAID® 970C961 Spray Cure sprayed through a Preval or similar unit, lightly oversprayed (2 mils) on the still wet patch.
7. Allow the patch to cure before sanding. A wax spew must form before the film is sanded. Another test for film cure is the "thumbnail test;" the patch has not cured sufficiently if a thumbnail will leave an impression. Gumming and loading of the sandpaper indicates that more time is needed. Fast gel time/cure gel coats may be ready for sanding in 30 minutes to an hour. Others may require a longer cure. Cure time will vary with color, gel coat, and PATCHAID® so the best test for cure is to determine how much gumming, if any, occurs to the sandpaper.
8. Accelerating cure of the patch can be accomplished by using a heat gun or infrared lights. Best practice is to heat the part to 100-110°F just prior to patch application. Although not best practice, heating of the patch itself can be done with the following considerations:
 - a. Waiting for the patch to gel before using a heat gun.
 - b. Keep moving the heat gun. Don't concentrate the heat!
 - c. Only warm to 100-110°F or just warm to the touch.
 - d. Let the patch cool to room temperature before sanding and buffing.

Using a heat source such as heat gun or infrared light to speed cure takes special care:

- Use the heat source only where it will not be a fire hazard. Electrical appliances are an ignition source around flammable materials, including acetone and styrene-containing products.



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- The spray patch must be gelled and partially cured before heat is applied. Un-gelled patches are a fire hazard. In addition, the heat source will start to gel and cure from the surface down. This can produce unacceptable results.
 - Heat will speed up cure, but it must be done right for best results. The patch needs to be heated slowly and evenly.
 - If heated too fast, only the surface will be cured. That can result in unacceptable patches.
 - If the temperature is too high, the color of the patch may be unacceptable. Generally, surface temperature should be slightly warm to the touch. This is about 110°F and is sufficient to speed the cure.
 - Use of heat can cause additional surface distortion and fiber pattern near the patched area.
- BE CAREFUL: Do not get the part/patch too hot.

9. Sand starting with the coarsest sandpaper, 320 to 400-grit. Wet-sand scratches out with 600-grit, or finer, sandpaper.
10. Buff gloss back using appropriate polishing compounds. (Also refer to Polynt's Composites Applications Guide, Chapter 8: Field Service – Patching.)

NOTE: Because of the dilution effect of adding a PATCHAID®, some reduction in hide will occur. This is normal and will not affect the quality of the patch.

Caution

Do not add any material, other than gel coat and the recommended methyl ethyl ketone peroxide, to this product without the advice of a representative of Polynt Composites.

Storage Limitations

PATCHAID® 970X900, 970XJ037, 970XJ166, and 970XA014 have a shelf life of 90 days from date of manufacture when stored at 73°F or below in a closed, factory sealed, opaque container, and out of direct sunlight. The shelf life is cut in half for every 20°F over 73°F.

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.

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LIMITED WARRANTY.

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