Technical data sheet

FC PATCHAID®

970C961

Description

FC PATCHAID® 970C961 is a stabilized monomer solution designed to improve the processing properties of gel coat used for patching. The FC PATCHAID® 970C961 was specifically formulated to allow patch materials to be sprayed through aerosol bottles without use of acetone.

***NOTE**: Acetone can significantly extend cure times of patches and reduce field performance.*

FC PATCHAID® 970C961 mixed with gel coat will provide these properties:

- Excellent color match between the patch and gel coat
- Low viscosity for easier spray and less orange peel
- Fast curing time and quicker repairs
- Excellent sanding and buffing due to good cure and smoother surface
- Minimized sandpaper "gumming"

FC PATCHAID® 970C961 can also be used as-supplied to seal the open side of a spray patch, enhance cure, and improve sanding.

Unlike other CCP PATCHAID® products, FC PATCHAID® 970C961 does not contain any UV stabilization additives. FC PATCHAID® 970C961 should only be used at low levels - <10%. When used at low levels FC PATCHAID® 970C961 will not significantly dilute the UV stabilization of the gel coat.

***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 touch up. 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 Properties (at 77°F)

Typical liquid properties of FC PATCHAID® 970C961 are shown below. These values are not manufacturing control criteria and are listed for reference only. Particular batches may not conform exactly to these properties because storage conditions, temperature changes, age, testing equipment (type and procedure) can each have a significant effect on the test results. FC PATCHAID® 970C961 batches with properties differing from these values can perform acceptably.

Test	FC PATCHAID® 970C961
Viscosity	Water thin
Flash Point	65°F
Hazardous Air Pollutants	See MSDS for amounts
Volatile Organic Compounds	96.1%
Weight per Gallon	7.7 lbs.

Refer to the MSDS for handling precautions. MSDS's will be supplied automatically with the first order for material and are available by product code upon request from CCP's Regulatory Department or at www.ccpcompositesus.com.

Spray Repair Procedure

No matter how much care is taken in producing parts, some will have defects and require repair. The source of defects should always be investigated to determine if they can be prevented. Defect prevention is nearly always more cost effective than continuously performing repairs. In addition determine if a repair is absolutely needed. Repairing the exterior coating will result in some compromise of its appearance and field performance (weathering, blush resistance, etc.). The level of compromise depends on the type of coating and the quality of repair. See CCP's *Composites Application Guide* for general patching and finishing procedures.

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 sand paper. 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. Mix the FC PATCHAID® 970C961 before using to ensure that the material mixture is uniform. Some active ingredients can settle out but can be easily reincorporated by shaking.
4. Obtain a sample of the same batch of gel coat that was used to fabricate the part being repaired. Failure to use the same batch will almost certainly result in an off-color patch. Make sure the gel coat has been well mixed prior to obtaining the sample. Mixing is needed to obtain a good color match and also for spray properties. See the gel coat technical datasheet for mixing instructions.
5. Add only enough FC PATCHAID® 970C961 to achieve a workable viscosity. Recommended levels are 2-5%. Do not exceed 10%. Adding higher levels of FC PATCHAID® 970C961 may reduce hide and cause sagging on vertical surfaces. Catalyze the patch mixture with 2-3% MEKP peroxide.
6. Spray with a Binks #115, DeVilbiss EGA touch-up gun, or aerosol canister. For the touch-up gun, use 25 to 50 psi to achieve acceptable atomization. Equipment requirements will vary with the reduction.
7. Some types of gel coats, colors or clears, require that the patch open-side be sealed to enhance

the cure and achieve a tack-free surface. Use uncatalyzed FC PATCHAID® 970C961 for this purpose. Apply the FC PATCHAID® 970C961 using an aerosol canister while the patch is still wet (within 5-10 minutes of the patch being sprayed). Keep the area surrounding the patch masked-off when applying the FC PATCHAID® 970C961. The PATCHAID® 970C961 can reduce the gloss or cause streaking in the surrounding gel coat.
***Note**: When used as an overspray, FC PATCHAID® 970C961 does not require catalyst. For it to provide an efficient seal, it must be sprayed as a film rather than a dust coat. Do not flood it on or spray it too thick.*

8. Allow the patch to cure before sanding. Cure time will vary with color and gel coat. Fast cure gel coats may be ready for sanding in 30 – 60 minutes. Others may require longer cure. The best test for cure is sanding the patch. If the sandpaper becomes gummed or loaded, then the patch needs additional cure time. Another check for film cure is the "thumbnail" test. If the patch has not cured sufficiently, a thumbnail pressed into the patch will leave an impression. Patch cure may be accelerated by using a heat gun or infrared lights. For best results:
    a. Wait for several minutes after spraying the patch before applying heat. Heat the patch slowly and evenly. If heated too fast, only the surface will be cured and the patch will be unacceptable.
    b. Maintain the surface temperature between 100°F and 120°F. At this temperature, the surface should feel slightly warm to the touch. As described above, cure time will vary with color and gel coat. One hour at temperature should be sufficient for most gel coats. ***Note:** Do not over heat the part. If the temperature is too high, the color of the patch may be unacceptable. High temperatures can also cause surface distortion and fiber pattern near the patched area.*
    c. Let the patch cool to room temperature before sanding and buffing.

    Note: Do not use electrical appliances around flammable materials, including acetone and styrene-containing products.
9. Sand the patch using a sequence of increasingly finer grit sandpapers. A recommended sequence is 400-grit, 600-grit and 800-grit. For best results sanding should be done by hand with the 400-grit step done dry to remove any orange peel and the 600-grit to 800-grit steps done wet. A dual action sander can also be used. Wipe off sanding dust in between each step. After sanding with 800-grit sand paper, use water to remove all loose dust and grit**.**
10. Buff gloss back using appropriate polishing compounds.

Cure

Spray patch mixtures (gel coat mixed with FC PATCHAID® 970C961**)** require the addition of MEKP peroxide for cure. Typical MEKP peroxides include Arkema Luperox® DDM-9, Syrgis NOROX® MEKP-9 and NOROX® MEKP-9H, and Akzo Nobel CADOX D-50. These peroxides are expected to yield similar performance. Peroxides such as Luperox® DHD-9, Syrgis NOROX® MEKP-925 and NOROX® MEKP-925H, Akzo Nobel CADOX L-50a and CHEMTURA HP-90 may also be used, but gel times will vary.

The recommended MEKP peroxide range for patching is 2.0% to 3.0%. A typical patch will be ready to sand in 30 minutes to two hours under ideal conditions. However, sanding times can vary greatly depending on the cure characteristics of the gel coat. Patches made with short gel time gel coats will require shorter cure times prior to sanding than longer gel time gel coats.

Additional factors affecting sanding time include: level of FC PATCHAID® 970C961; age of materials;

temperature of air, part and material; humidity; air movement; and catalyst amount and type.

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

Precautions

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

Do not add any material other than gel coat and a recommended MEKP peroxide to these products without the advice of a representative of CCP Composites US.

If FC PATCHAID® 970C961 has been allowed to become cooler than 70°F, it could become cloudy and, at this point, would no longer be a homogenous solution. The material should be warmed to 76-78ºF and returned to its original appearance before using.

Secure the lid after each use. Do not punch vent holes in the can lid. An open or vented container will lose styrene and pick up dirt. Both can have negative effects on patches.

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

Storage

Uncatalyzed FC PATCHAID® 970C961 has a usage life of 60 days from date of shipment when stored at 73°F or below in a closed, factory-sealed, opaque container and out of direct sunlight. The usage life is cut in half for every 20°F over 73°F.

Data Sheets/MSDS

CCP data sheets and MSDS's are available in printable format at www.ccpcompositesus.com.

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CCP COMPOSITES US
WARRANTIES, DISCLAIMERS AND LIMITATION OF LIABILITY (Rev. 10/11)

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; 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 APPLICATION INFORMATION OR ASSISTANCE WHICH SELLER MAY FURNISH TO BUYER IS GRATUITOUS AND SHALL IN NO WAY BE DEEMED PART OF THE SALE OF PRODUCT HEREUNDER OR A WARRANTY OF THE RESULTS OBTAINED THROUGH THE USE OF SUCH PRODUCT.**

Without limiting the generality of the foregoing, if any product fails to meet warranties mentioned above, Seller shall at Seller's option either replace the nonconforming product at no cost to Buyer or refund the Buyer the purchase price thereof. The foregoing is Buyer's sole and exclusive remedy for failure of Seller to deliver or supply product that meets the foregoing warranties. Seller's liability with respect to this contract and the product purchased under it shall not exceed the purchase price of the portion 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 limitations loss of profits, capital or business opportunity, downtime costs, or claims of customers or employees of Buyer. Failure to give Seller notice of any claim within thirty (30) days of shipment of the product concerned shall constitute a waiver of such claim by Buyer. Any product credit received by Buyer hereunder, if not used, shall automatically expire one (1) year from the date the credit was granted. Notwithstanding any applicable statue of limitations to the contrary, any action by Buyer relation to a claim hereunder must be instituted no later than two (2) years after the occurrence of the event upon which the claim is based. All the foregoing limitations shall apply irrespective of whether Buyer's claim is based upon breach of contract, breach of warranty, negligence, strict liability, or any other legal theory.

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.

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