EFC-100 GENFAM TRAINING

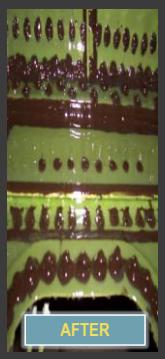
Following Manuals are Applicable for EFC

EFC-5992 Integral Fuel Tank Sealant Materials and Procedures

EF-5992 A4 (Brushable Liner); EF-5992 B¼ (Solvent-Free Fillet); EF-5992 B1 (Solvent-Based Fillet); EF-5992 B½ (Quick-Cure, Solvent-Based Fillet) June 19, 2009 150-ED-2268 Revision NR

EFC-100 Integral Fuel Tank Sealant Materials and Procedures

5992C-S (Sprayable Liner); 5992C-RS (Brushable Liner); 5992C-SF (Solvent-Free Fillet); 5992C-VRS (Solvent-Based Fillet); 5992C-NS (Quick-Cure, Solvent-Based Fillet) June 19, 2009 Revision E 150-ED-831 Revision 0B



Preface

- This manual defines the brushable and filleting (also known as grout) sealant materials and procedures for sealing Integral Fuel Tanks used in General, Commercial, and Military aircraft. The sealant materials and procedures were initially developed as a sealing technique for Integral Fuel Tanks in aircraft already in service. However, these same materials and procedures are also
- applicable to new aircraft production for Integral Fuel Tanks and general purpose applications.
- The sealant materials listed herein have been approved by PRI/NADCAP as conforming to AMS 3278 and as such are listed on the Qualified Products List (QPL) for AMS 3278.
- The Integral Fuel Tank area will be known as the cavity for discussion purposes in this procedure.
- The materials and procedures defined in this manual are specific to the applications described herein. Material substitutions and/or deviations from these written procedures are not permitted.

- Currently, EF-5992 is comprised of four versions: EF-5992 A4 (brushable), EF-5992 B¼ (solvent free grout), EF-5992 B1 (solvent-based grout), and EF-5992 B½ (quick-cure, solvent-based grout).
- The EF-5992 sealant materials are not intended to be applied over plumbing lines, pumps, fuel probes or other plumbing components and/or electrical hardware within the aircraft cavity. Proper preparation of the cavity and protection of internal hardware are the responsibility of the properly licensed aircraft maintenance facility and/or aircraft manufacturer when adopting these procedures for application of the brushable and/or filleting. It is also the responsibility of the facility using this procedure to determine the applicability of the process based on adequate access to the cavity.
- Aircraft with Integral Fuel Tanks have traditionally utilized polysulfide sealants as the main means of obtaining a sealed cavity. Due to the nature of the polysulfide materials as they age, they have the tendency to crack or lose their bond to the structure, which results in fuel leaks.

- The EF-5992 sealant materials and the procedures covered in this manual resolve the inherent problems of the polysulfide sealants. The application of a polyurethane coating in place of or over the polysulfide sealant and structure creates a one piece, continuous, flexible seal or membrane which bonds to sealants, coatings, and plated metals. EF-5992 seals even the smallest leak paths.
- Maximum service life will depend upon aircraft usage and environmental exposure. Mechanical damage to the sealant may occur during routine maintenance actions within the cavity, and may lead to corrosion or structural cracks. Such damage can be spot repaired using the specific materials and procedures specified herein.
- The EF-5992 sealant materials can be applied over the entire cavity surface or the operator may be selective and apply the sealant materials over only the specific trouble areas of the cavity, such as in the area of engine pylons, lower surface and lower vertical walls. Making selective coverage decisions requires total knowledge of the aircraft system and careful consideration of potential fuel leakage into an adjacent dry bay area.
- The EF-5992 sealant materials are to be used in aviation jet fuels such as JET A, JP-4, JP-5, JP-8, JP-8+100, JP-10, and general aviation fuels such as 80 average octane gas, 100 average octane gas, and 100LL average octane gas. Do not use EF-5992 material in alcohol based fuels. EF-5992 materials are resistant to all common fuel additives when those additives are used at or below specification limits.

Introduction, Description, and Operation

- 1.1 This manual establishes approved sealing materials and procedures developed by Engineered Fabrics Corporation (also known as EFC) in Rockmart, Georgia, for use in new aircraft assembly and/or the repair of the Integral Fuel Tanks of aircraft in service. These materials and procedures are applicable for sealing Integral Fuel Tanks used in both General Aviation, Commercial Aviation, and Military Aviation aircraft. The materials and procedures defined herein can be used for new aircraft applications or for replacing existing sealant to create a flexible sealant over the polysulfide sealant and structural members thereby sealing leaks which are difficult to resolve by the application of new or additional polysulfide sealants.
- 1.2 Since these sealants cannot be applied over large gaps between structural members or holes, the cavity structure must first be prepared for the brushable or filleting sealant using the normal procedures already in place. This would include the normal application procedures for the polysulfide sealant or would include the use of Solvent-Free (EF-5992 B¼) or Sag-Resistant (EF-5992 B1 / EF-5992 B½) filleting materials to create a uniform and continuous seal surface. For heavy maintenance applications, a fuel tank coating or aircraft manufacturer approved coating should be applied over bare metal areas and surfaces prior to the sealant application. Also for the general areas in a cavity, additional sealing can be achieved with the application of the Brushable (EF-5992 A4) sealant to obtain a continuous, one-piece seal.

- 1.3 The use of these materials and procedures is limited to those organizations which have entered into a Marketing Agreement with and which have been certified by EFC, such as Airframe Manufacturers, FAA Licensed Repair Stations, Maintenance Facilities, and Military Installations. These organizations are already experienced in the procedures for sealing Integral Fuel Tanks using the currently published procedures for the application of polysulfide sealants and have the proper facilities to meet the environmental conditions for the procedures herein.
- 1.4 Any deviations from the materials and procedures as defined in this manual can result in unsatisfactory results and violate the AMS 3278 approval of the materials listed herein.
- 1.5 The fuel side of the Integral Fuel Tank area is called the cavity.

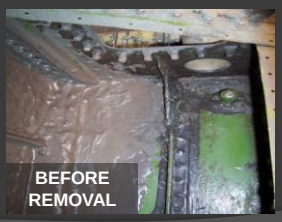
- 1.6 The purpose of the Integral Fuel Tank cavity is to satisfactorily store aviation fuel(s) under all normal static and flight conditions. For safety reasons the cavity should be free of all leaks.
- 1.7 The preferred operating temperature range of the materials, aircraft structure, and the surrounding working area is 60º F to 80º F during the mixing, application, and curing of the brushable and/or filleting sealants.
- 1.8 Exercise common sense in the handling of all materials and equipment listed herein.
- 1.9 Brushing of the sealant is the recommended method for a large cavity and for small and/or hard to reach areas. Filleting (or grout application) of the sealant is the recommended method for fasteners, step-offs, joints, and where additional thickness is necessary to avoid leaks.

Safety: WARNING TO USERS!!

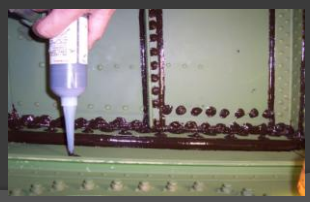
- 3.2 Observe all existing fuel system fire hazard precautionary procedures for the specific aircraft throughout all cleaning, inspection, and preparation for the brush or filleting application procedures.
- 3.3 Observe all safety procedures currently established to protect employees during the sealant application and/or repair of an Integral fuel tank.
- 3.4 Observe the Material Safety Data Sheets for the materials listed herein. Due to the safety and environmental implications associated with the use of this product, Engineered Fabrics Corporation strongly urges the user and each employee or contractor of the user to read and understand the Material Safety Data Sheets that have been supplied with the materials prior to use. EFC also urges the user to inform and train all employees and contractors on all safety and health hazards associated with the handling and application of these products prior to use. Take whatever actions are required or necessary to protect employees and contractors while these products are being used.
- 3.5 Engineered Fabrics Corporation assumes no responsibility or liability for compliance with any safety laws or regulations pertaining to the use of this product. Responsibility for the safety of employees rests solely with the user. Additionally, Engineered Fabrics Corporation assumes no responsibility for compliance with any environmental regulations pertaining to the use, handling or disposal of the products, byproducts, or wastes associated with said use. Any damages or liabilities arising, either directly or indirectly, from the use or application of these products shall be the sole responsibility of the user.

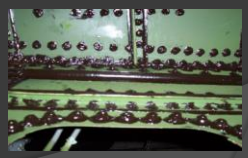
Reference to EFC Manual for the following Steps

- 4.0 Surface Preparation Procedure for Fuel Tank Coatings
- 5.0 Fuel Tank Coating Application
- 6.0 Preparation for Sealant Application
- 6.1 Pre-Application Instructions
- 6.1.4 Temperature Limits for Application
- 6.2 Material Preparation and Mixing
- 6.2.2 Material Mixing Instructions



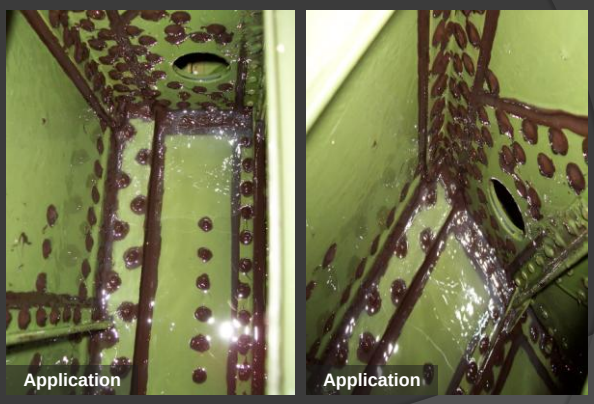
AFTER REMOVAL PREP / PRIME / SEAL IAW AMM/SRM REQUIREMENTS





Reference to Steps IAW EFC Manual for Application Requirements

- Heavy Maintenance Sealant Application
- 7.1 7002C Adhésion Promotor
- 7.2 1st Brush coat (EF-5992 A4) – When Filleting with EF-5992 B¼
- 7.3 Filleting Application (EF-5992 B¼, EF-5992 B1, or EF-5992 B½)
- 7.4 2nd Brush coat (EF-5992 A4)
- 7.5 3rd Brush coat (EF-5992 A4)
- 7.6 4th Brush coat (EF-5992 A4)
- 8.0 Traditional Sealant Applications
- 8.1 EF-5992 B¼
- 8.2 EF-5992 B1 or EF-5992 B½
- 8.3 EF-5992 B¼ with EF-5992 A4 Overcoat
- 8.4 EF-5992 B1 (or EF-5992 B½) with EF-5992 A4 Overcoat
- 8.5 EF-5992 A4 as Secondary Containment



Refer to EFC Manual for the following to finalize requirements concerning Inspection / Return to normal conditions / Repairs if Required

- **Inspection of Sealant**
  - 9.2 Unacceptable Conditions
  - 9.3 Repair
- **Return of Cavities to Normal Operation after Sealant Application**
  - 10.1 Fuel System Closure
  - 10.2 Leak Test
  - 10.3 Records
- **Field Repairs or Action Required to Rework Unacceptable Conditions**
  - 11.1 Repair by EF-5992 A4 (Brushable)
  - 11.2 Repair by EF-5992 B¼ (Grout / Fillet)
  - 11.3 Repair by EF-5992 B1 or EF-5992 B½ (Grout / Fillet)
  - 11.4 Repair by AMS-S-8802 Sealant Materials