



POLY-FIL®

Tire Flatproofing Systems Using Patented Technology

DESCRIPTION

Poly-Fil® products are two component, simple, reliable and ECONOMICAL liquid poly- urethanes. Poly-Fil® is developed for converting air filled tires into a urethane solid rubber filled tire to maximize vehicle operating efficiency and to minimize downtime associated with flat tires.

Tires filled with Poly-Fil® become flatproof, composite-solid tires that will virtually eliminate flats, blowouts, and tire damage caused by improper daily maintenance which is required by standard air filled tires. Poly-Fil® filled tires will also never need to be filled with air and will never be under-inflated, thus maximizing wear and tire performance in a wide range of conditions. Poly-Fil® tires can operate at a speed of thirty-five miles per hour (35 mph) continuously and at speeds up to fifty-five miles per hour (55 mph) for a maximum of two (2) hours. Poly-Fil® is also developed to provide a softer-ride with less fatigue on vehicles and their parts, as well as the driver. Poly-Fil® will also give better traction and handling to the vehicle compared to conventional air filled tires.

USAGE

- Poly-Fil® can be used to fill vehicle tires used in:
- Airports
- Amusement Parks
- Construction Equipment
- Docking Facilities
- Factory Transportation
- Factory Transportation
- Freight Docks
- Garbage & Sanitation Vehicles
- Military
- Mining & Earth-moving Equipment
- Quarries
- Recreational Vehicles
- Steel Mills

ADVANTAGES

Tires filled with Poly-Fil® solid rubber will not have any flats, blowouts, or under- inflated tires. Poly-Fil® is suited for all varieties of pneumatic tire construction and can operate successfully at speeds up to fifty-five miles per hour (55 M.P.H.) Poly-Fil® filled flatproof tires prevent down time and provide uninterrupted service which is cost effective. The processing procedure for Poly-Fil® is very simple and ECONOMICAL. Poly-Fil® saves time and money by eliminating tire repair and replacement costs, equipment downtime, and possible production stoppage from air filled tire failures. Poly-Fil® will cure at room temperature (75°F or 24°C) and does not require any heat vulcanizing. The Poly-Fil® flatproofing system also provides prolonged casing life, permitting repeated retread with lower overall cost.

DIFFERENCES BETWEEN Poly-Fil® 22, 30, HP & LP: The main difference between the four types of POLY- FIL® is the hardness; Poly-Fil® 22's hardness ranges from 20 to 24 Shore A, Poly-Fil® 30's hardness ranges from 27 to 33 Shore A, Poly-Fil® HP's hardness ranges from XX to XX Shore A, and Poly-Fil® LP's hardness ranges from 8 to 12 Shore A. Poly-Fil® LP is primarily used for soft ride applications (bicycles and golf carts) while tires filled with Poly-Fil® HP is for heavy-slow moving equipment. Poly-Fil® 22 Material rides slightly harder than Poly-Fil® LP. Poly-Fil® 30 are used in convention tires.

PART 1 - GENERAL

1.01 DESCRIPTION

A. Scope: This processing manual covers the processing and filling procedures for tire filling and related information.

B. Work Included: Preparation of tubeless and tube-type tires to receive Poly-Fil®

1. Filling of tubeless and tube-type tires.
2. Installation procedure.
3. First aid and material safe handling procedures.

C. Related Work Specified Elsewhere:

1. Assembly of equipment according to manufacturer's instructions.
2. Assembly of pump equipment according to manufacturer's instructions.
3. Assembly of hypodermic needle according to manufacturer's instructions.

PART 2 - PROCESSING PROCEDURE

2.01 TUBELESS TIRES

See Processing Safety Section Before Proceeding.

A. Tire and Rim Preparation.

1. Rim assembly should be thoroughly cleaned. Rim should be completely free of moisture or other foreign material [NOTE: To speed processing, especially in large OTR tires, an air/water valve can be used by enlarging present valve hole to five-eighths inch (5/8" or 1.6 cm) diameter by using a five-eighths inch (5/8" or 1.6 cm) drill bit and installing a tubeless fast-flow type air/water valve complete with valve core and core housing in valve.] Brush steel shavings from rim bead seat. Do not use air. Tighten nut sufficiently to flatten rubber washer to prevent air and Poly-Fil® from escaping.
2. Remove all moisture, dust, or foreign material from the inside of the tire carcass. Contamination caused by foreign material will result in the Poly-Fil® mixture not curing.
3. Mount tire on rim and inflate with dry air to manufacturer's recommended pressure. Maintain inflation until just prior to filling operation. New tire mounting should be completed at least twenty-four (24) hours before filling to allow for tire carcass growth. Before inflating, check air supply for moisture and bleed lines, if necessary, to insure that the air is dry.
4. A check for air loss should be made periodically. Tire must be able to hold a constant air pressure and the required load. Repair all leaks or punctures on used tires prior to flatproofing with Poly-Fil®.

2.02 TUBE-TYPE TIRES

See Processing Safety Section Before Proceeding.

A. Tube Preparation: To speed processing, a large-bore tire valve can be used. A suitable method of adapting to large-

bore valves without having to replace and cement new patch-type spuds follow:

1. All heavy-duty truck tire tubes for flat-base rims design numbers 1, 2 and 3 have at the base of the stem a base repair thread. This is primarily used to replace broken stems without repairing the tube. The base repair thread is size 0.482-26, which is the same as used on large-bore extensions.
2. Cut the standard stem off just above base repair thread. Drill through the valve base with a five-sixteenth inch (5/16" or 0.8 cm) drill bit, making sure you have no obstructions such as burrs.
3. Attach a large-bore valve extension to the base repair thread. These rigid-type extensions are available in lengths from one and one-quarter inch through twenty-four and one-quarter inch (1.25" through 24.25" or 3.2 cm through 61.6 cm), and the following numbers are representative of a five inch (5" or 12.7 cm) extension made by: Dill 8966-5, Schrader 3904, and Meyers Tire Supply 26-582.
4. On some tubes a flat area is provided on the base repair threads so that a wrench can be attached to hold the tube. You will need to use a suitable rubber washer. The rubber washers that are normally used on dual-foot air chucks are suitable. Acceptable rubber washers and their part numbers are: Dill 6999RP, Schrader AH8159-11, and Meyers Tire Supply 54-345.
5. On most rims, the clearance between the rim slot and the extension is not sufficient to allow the extension to be removed after the tire has been filled. Therefore, grind the base of the extension, with a mechanical grinder, so it is round and a sufficient clearance between the rim slot and the extension is achieved.
6. Inflate the tube with air to check for leaks around the base repair thread. Remove large-bore core from the extension and fill the tire as recommended. (See Section 2.04).
7. When a full cure of material is achieved, (See Section 2.05), remove the extension and clean the cured material out. The extension is important to provide brake clearance when the wheel is mounted on the vehicle.

B. Tube-Type Tire Preparation

1. Before inserting the inner tube, drill a hole through the top/center of the tire tread with a three-sixteenth inch (3/16" or 0.48 cm) drill bit. Mark hole location on the side-wall of the tire for valve placement. Check carcass thickness by measuring needle depth into a three-sixteenth inch (3/16" or 0.48 cm) hole. In order to properly insert Poly-Fil® device during filling, this measurement is needed. NOTE: On tires with steel overheads, make sure that no wire strands are sticking through the inside of the carcass, which may prematurely puncture or rupture the tire.
2. On larger tires, awl through the crown area of the tire (using a needle-point awl) at three (3) locations ninety degrees (90°) from the three-sixteenth inch (3/16" or 0.48 cm) drill hole. The purpose of these awl holes is to allow air to escape between the carcass and the tube.
3. Apply adhesive (rubber cement) to the inside surface of the casing around the pre-drilled hole so that the tube will adhere to the inside of the casing when the tire is inflated.



4. Insert the tube and flap into the tire and place valve approximately thirty degrees (30°) to the right or left of the mark on the side wall where the hole was drilled. This is done so that when the tire is placed in a vertical position, the fill valve is at an 11 or 1 o'clock position relative to the pre-drilled hole where the hypodermic needle will be inserted, which should be at the uppermost part of the tire.
5. For new tires, tire mounting should be completed at least twenty-four (24) hours before filling, to allow the tire carcass to grow. Before inflating, check the air supply for moisture and bleed lines, if necessary, to insure that the air is dry.
6. Inflate tire in rim to manufacturer's recommended pressure. Maintain inflation until just prior to filling operation.
8. A sample will be taken at this time and marked with all pertinent data, such as batch numbers of material, date of pumping session, tire filled, etc. Place sample in plastic bag and seal. Do not use paper or styrofoam cups.
9. Close shut-off valve at the end of the material discharge hose.
10. Remove the valve core from the valve stem on the tire. If using a large-bore stem, remove housing from the valve.
11. Insert the valve core into the valve core holder on the valve stem core extractor tool. Make certain it is securely held in position, otherwise, it might be knocked loose and plug the valve stem during filling operations. Make sure the screw handle on the extractor tool is pulled completely out. If using a large-bore stem, insert the complete housing in the extractor tool.

2.03 PRE-FILLING PREPARATION FOR ALL TYPES OF TIRES

A. Place the mounted tire in a vertical position with the valve at the 11 or 1 o'clock position.

B. Deflate tire by removing valve core on standard stem or core and housing on large-bore stem.

C. Replace core on standard stem or core and housing on large-bore valve after tire is completely deflated. If it is a tubeless tire, verify that the tire beads are properly seated on the rim. If beads will not remain seated when tire is deflated, then inflate the tire with a small amount of pressure to maintain the seated beads.

2.04 FILLING PROCEDURE

A. Preparation of System for Operation: Refer to pump manufacturer's instructions for operation.

1. Before connecting main air line to air inlet connector on air motor, make certain that all the shut-off valves on the pump are in the off position. Check pump manufacturer's instructions on valve operation.
2. First material pumped will be caught in a waste container. Make sure the dispensing end of discharge hose is placed in the waste container.
3. Pull screw handle on the valve stem core extractor tool to "out" position so that it will not interfere with the flow of the material.
4. Attach (dry) air supply hose to the air regulator.
5. Hold the delivery end hose in the waste bucket.
6. Connect air source and open the pump valves. Adjust pressure regulator until pump begins to move.
7. Slowly open fluid delivery valve next to the core extractor and allow the pump to stroke five (5) full strokes. (One stroke is a complete up and down cycle.) Observe the material coming out of the end of the hose. If it is uniform in color and shows no striations (material appears striped or in layers) the system is ready to start filling tires. If the color is not uniform and striations appear in the mixture, continue pumping until an uniform mixture is obtained before filling tires.
13. Open shut-off valve which is located at the end of the material discharge hose. Increase inlet air pressure until the desired speed is achieved. Do not exceed tire manufacturer's recommended inflation pressure. Continue pumping until the tire has approximately fifteen pounds per square inch (15 psi or 1.05 ATM) back pressure. To read back pressure, check pump manufacturer's recommended procedures. NOTE: DO NOT ATTEMPT TO PUMP IF THE MATERIAL TEMPERATURE IS BELOW 65°F (18°C).
14. When the tire reaches approximately fifteen pounds per square inch (15 psi or 1.05 ATM) back pressure, close the shut-off valve which is located at the end of the material discharge hose. NOTE: To make sure there is no blockage, a thin wire should be passed through the needle hole. Make certain that the needle is venting properly by tapping periodically with your finger. Open the valve on the material discharge hose and continue filling.
 - Tubeless Tire: On tires without steel belting or eight (8) ply or less, insert a hypodermic needle into the casing between the tread grooves at the center of the tire (12 o'clock position, which is the apex of the tire). On steel belted or ten (10) ply or more tires, drill a hole through the top center groove of the tire casing (12 o'clock position) using a three-sixteenth inch (3/16 or 0.48 cm) drill bit. Insert the needle immediately into the drilled hole.
 - Tube-Type Tire: Insert the hypodermic bleeding needle into the pre-drilled hole to the predetermined depth as outlined in Section 2.02, Instruction B-1. Needle must be inserted at the 12 o'clock position, which is the apex of the tire.
15. When Poly-Fil® starts to flow out of the needle device, remove regulating device. Close the hose shut-off valve

- and remove the needle slowly to allow all the trapped air to escape. If the needle is excessively deep in the casing, then air will trap above the needle. It is mandatory to allow Poly-Fil® to continuously flow out of the needle until there are no further visible signs of escaping air. Make sure that the needle position varies only slightly from the 12 o'clock position. Slightly rotate or move the tire back and forth to facilitate air evacuation.
16. Plug the hole with a #10 sheet metal screw of a suitable length for the size tire you are filling.
 17. Pressurize the tire by opening the hose shut-off valve (Follow pump manufacturer's recommended procedure to pressurize the tire according to tire manufacturer's or site operating pressure recommendation). NOTE" Sometimes you will note that the pressure in the tire will drop after the tire has been pressurized. This is due to the growth of the tire casing.
 18. If pressure exceeds recommended final fill pressure, you can reduce the pressure in the tire by using the bypass valve and allowing excess material to escape. Check pump manufacturer's instructions for details until you reach the desired pressure. Release small amounts of material at a time into a waste container since pressure will quickly reduce, depending on the tire size.
 19. Close the hose shut-off valve.
 20. Screw the valve core into the valve stem by rotating the handle of the core extractor clockwise, until the core is securely in the stem. CAUTION: If it is a two- part valve stem, make certain the valve stem core extractor tool is unthreaded from the tire stem and the two parts of the valve stem are not being unthreaded. Also, make sure the valve core is securely in place before detaching the extractor tool. Remove extractor tool from the tire valve stem. The filling operation is now complete.

2.05 CURING

A. Poly-Fil® Room Temperature Material

1. Whenever possible, we recommend that the tire and rim assembly be laid in a horizontal position. An eighty percent (80%) cure (tires now usable) can be realized in twenty-four (24) hours with a full cure in three (3) to four (4) days at a constant room temperature of 75°F (24°C).
2. On large OTR tires which are filled in the field or on vehicles, we recommend that tires be rotated one hundred and eighty degrees (180°) every eight (8) hours. It is important that either heat lamps or portable kerosene and /or gas heaters be used to maintain a minimum temperature of 60°F (16°C) to insure a complete cure. Care must be taken to prevent localized areas of concentrated heat, if using a heating device. Safety precautions are required when attempting to fill tires mounted on vehicles. Please refer to Safety Section for recommended safety procedures. NOTE: When Poly-Fil® Side-A and POLY- FIL® Side-B are mixed, there is an exothermic reaction, therefore curing begins in the center of the mass. In the event that the temperature cannot be maintained at a constant 72°F (22°C) during the curing cycle, the curing time must be extended approximately eight (8) hours for every ten-degree temperature drop.

2.06 CLEANING EQUIPMENT

- A. After cure and before final inspection, refer to the Processing Safety Section for recommended cleaning agents, proper solvent storage, and recommended health and fire safety procedures.
- B. Clean all equipment immediately after use, using only the recommended cleaning solvents. Once Poly-Fil® cures it is insoluble. Clean all equipment thoroughly.
- C. Refer to pump manufacturer's manual for detailed cleaning procedures.
- D. Clean needle thoroughly. Insert a wire into the needle to remove any debris.

2.07 FINAL INSPECTION

- A. Occasionally a void may be found in the wall between Poly-Fil® and the tire carcass as final inspection by tapping for sound disorders in the side wall of the carcass. This void or space can be filled by injecting mixed Poly-Fil® using the needle which is attached to the valve core extractor. Although small voids in the side wall should not affect performance, it may not be acceptable to the customer and should be corrected.
 1. Lay tire flat, whenever possible, and inspect side wall for the length of the void.
 2. Drill a three-sixteenth inch (3/16" of 0.48 cm) hole through the side wall at the beginning and at the end of the void.
 3. Use a valve core extractor equipped with hypodermic needle and insert it into one of the three-sixteenth inch (3/16" or 0.48 cm) holes. Fill until material flows out the other hole. Remove hypodermic needle and plug both holes with #10 sheet metal screws.
 4. Clean all equipment immediately.
 5. Leave tire on its side to cure.

PART 3 - INSTALLATION PROCEDURE

- A. Read Safety Data Sheets (SDS) on Poly-Fil® products before proceeding to flatproofing operation.

B. SAFETY WARNING: SERIOUS PERSONAL INJURY OR DEATH MAY RESULT FROM EXPLOSION OF THE TIRE/RIM ASSEMBLY DUE TO IMPROPER MOUNTING. ONLY SPECIALLY TRAINED PERSONS SHOULD FILL AND MOUNT TIRES. WHEN FILLING TIRES WITH AIR, USE SAFETY CAGE AND CLIP-ON EXTENSION AIR HOSE. WHEN FILLING TIRES WITH Poly-Fil® MATERIAL USE SAFETY CAGE AND OPERATE VALVE ADAPTER GUN FROM OUTSIDE CAGE.

- C. The practicing of good safety procedures is an integral part of every tire shop and this applies in the full extent to your Poly-Fil® operation. We cannot emphasize enough the importance of safety in any shop operation. As a further safety aid, we are providing a set of guidelines to be followed during processing in order to promote a set of guidelines to be followed during processing in order to promote conscientious processing and adherence to standard procedures. These guidelines should be reviewed with your foreman and Poly-Fil® personnel, and post copies in the Poly-Fil® production area.



3.01 GENERAL SAFETY STANDARDS

A. All standard procedures regularly practiced in the tire-shop should be applied to the Poly-Fil® operation, including tire mounting, equipment and material handling and clean up. A qualified tire serviceman will mount the tires.

B. Before beginning each processing session, inspect equipment and verify that all the specified parts of the processing equipment are complete and in good working

3.02 CONTAINER DELIVERY, STORAGE, & HANDLING

A. Delivery: Deliver materials in originally sealed, unopened containers. All containers must contain: product identification, color, lot number, expiration date or shelf life, manufacturer's name and product labels.

B. Location: Storage of drums must be in a dry location at a temperature below 105°F (39°C). Stacking of drums is not recommended unless shelf-weight capacities have been thoroughly checked. Remember, one full drum weighs approximately five hundred pounds (500 lbs or 227 kgs).

C. Empty Drums: Avoid pressure build-up by leaving empty drums unsealed.

D. Temperature: Do not place drums near excess heat or flame. Container cannot withstand internal pressure build-up that can be caused by heat.

E. Handling Full Drums: Full drums should be moved using fork lifts or barrel dollies. Chain hoists are not satisfactory without the use of approved barrel slings.

3.03 TIRE & RIM PREPARATION

A. Tire Mounting: All safety procedures normally required for tire mounting must be utilized when preparing tires and rims for Poly-Fil® processing.

B. Inspection: Inspect all parts of tire assembly before mounting to verify that the supplier(s) have provided the properly matched components and that they are in satisfactory condition. (Damaged lock rings or used O-rings must not be used.)

C. Inflation

1. Protection: Before inflating the tire, place it into a safety cage. A safety cage must be used for all tires of a size that can fit in the cage. Tires exceeding that size must use three (3) equally spaced chains loosely double wrapped. Chains must be five sixteenth inch (5/16" or 0.79 cm) diameter link minimum. This procedure is absolutely mandatory for all shell having lock-ring assemblies. Tires should be positioned so that the tire side containing the lock-ring is facing away from the working area. The assembly must also be secured so that it will not fall over.
2. Pressures: Do not exceed manufacturer's recommended inflation pressure for any specified tire size

or ply rating for type of service intended. Consult local tire manufacturer's representative, if correct pressure ratings are not known.

3. Seating Tire Beads: Before beginning the filling operation make sure that tire beads are properly seated on the rim. Do not attempt filling these tires unless beads can be seated using normal pressures.

C. Deflating Tires: Maintain only enough internal pressure to keep beads seated on the rim, maximum ten pounds per square inch (10 psi or 0.7 ATM), until the tire is placed in safety cage or secured with a chain. Deflate tire assembly before attempting any of the tire-filling procedures or tire venting.

D. Venting Tire Casing: The hole drilled in tire casing used for bleeding out air must be located at the highest point (12 o'clock) in the tread when the tire assembly is placed in the vertical filling position. Air could otherwise be trapped in the tire cavity causing a much greater potential hazard under pressure than a fully filled liquid.

3.04 MATERIAL SAFE HANDLING PROCEDURES

A. HEALTH HAZARD: OVEREXPOSURE TO SIDE-A OR THE BLEND OF SIDE-A AND SIDE-B MAY IRRITATE RESPIRATORY TRACT; REPEATED SKIN CONTACT MAY PRODUCE ALLERGENIC SENSITIVITY. READ SAFETY DATA SHEETS (SDS).

B. Skin or Eye Contact: Liquid Poly-Fil® SIDE-A is an isocyanate-terminated prepolymer. Direct contact with SIDE-A, or the blend of SIDE-A and SIDE-B could cause skin or eye irritation. Avoid contact of Poly-Fil® SIDE-A, or the blend of SIDE-A and SIDE-B with the skin and eyes:

1. Wear rubber gloves and chemical goggles.
2. Change clothing if soiled with Poly-Fil®.
3. Soiled clothing must be laundered before reuse.
4. Wear long-sleeved shirt/uniform.

C. Cleaning: Clean up all leaks or spills promptly. Solidified Poly-Fil® is insoluble.

1. Wear rubber gloves and shoe covers.
2. Wipe up material with an absorbent cloth or paper towel, and put the towel in a covered metal trash container.
4. Scrub the remaining surface with water containing soap or detergent and a five percent (5%) ammonia solution.
5. Waste disposal should be in accordance with federal, state and local environment regulations.

3.05 FIRST AID

A. Administration: All first aid rendered in the plant must be administered by a qualified first aid attendant.

B. Skin Contact: In case of skin contact, flush area with water, followed by a soap-and-water wash. Further cleaning may be accomplished with isopropyl alcohol (rubbing al-

cohol) followed by a soap-and-water wash. If a skin rash develops, remove employee from the work area and refer to plant physician.

C. Eye Contact: In case of ingestion of Poly-Fil® SIDE A, SIDE-B or the blend of SIDE-A and Side-B, give large amounts of water and induce vomiting. Vomiting can be induced by having the patient stick his finger down his throat or by giving large quantities of warm salt water (two tablespoons of salt to one pint of warm water). Medical attention should be obtained immediately.

3.06 TIRE FILLING

A. Tire Handling: Tire assembly must be contained by chains or safety cage during entire filling operation. The same protective procedures utilized for tire inflation with air apply when filling with Poly-Fil®. Tire assembly must be in a vertical position with the vent hole at the top of the tire (i.e., 12 o'clock) in order to prevent trapped air pressure.

B. Pumping Pressures: Supply pressure to pump must never exceed pump manufacturer's recommended inlet pressure during open flow of material into the partially filled tire. Line pressures must be reduced below or at tire manufacturer's maximum inflation pressure before the tire cavity is seventy-five percent (75%) full.

C. Radial Tire Filling: Radial tire casings have very little expansion growth during or after pressurization. Care should be used to insure that the fluid pressure regulating system is used properly and at the correct pressure setting after the tire cavity is seventy-five percent (75%) full.

D. Poly-Fil® Valve: Prior to inserting the hypodermic needle, make sure that the needle hole is clean and that the regulating device is also clean. When the tire is approximately seventy-five percent (75%) full, insert the needle. After inserting the needle into the tire casing while filling, a small wire should be passed through the needle hole to make sure there is no blockage. Make certain that air is escaping during actual filling. Air is escaping when regulating device is jiggling. If it is not jiggling, stop pumping and check for blockage in needle hole or regulating portion.

E. Tire Pressure: Fluid pressure of Poly-Fil® in the tire must never exceed manufacturer's recommended inflation pressure specified for the particular tire and ply rating.

F. Observation: Never leave the tire assembly unattended when pump is in operation or air supply is hooked up to pump.

3.07 EQUIPMENT CLEAN-UP SOLVENTS

A. Cleaning Agents: Recommended solvent for cleaning Poly-Fil® components and equipment is isopropyl al-cohol.

B. Solvent Storage: No more liquid solvent that is absolutely necessary to perform operation is permissible in service area at any given time. This amount of solvent must never be permitted to exceed sixty gallons (60 gallons or 227 liters) at any one time. One additional spare drum may be stored in a cool area where no smoking is allowed (Check

local fire regulations).

C. Vapor Concentration: When containers are not in use, keep covered and use general exhaust ventilation.

D. Fire Safety: Remember, most solvents are highly flammable. "NO SMOKING" signs must be posted and enforced. Transfer of solvents from drums must be done by a UL-approved pump into approved safety cans and /or an approved closed system. When transferring flammable liquids, all proper grounding and bonding procedures must be followed.

PART 4 - RAW MATERIAL, EQUIPMENT, AND SAFETY MATERIAL

4.01 SAMPLING TECHNIQUE

A. Upon receipt of shipment, record the Quality Control Batch Numbers on all drums. Numbers are perforated on labels and stencilled on top of drums. Batch numbers consist of six digits.

B. Sample Side-A and Side-B from each respective batch using the following equipment and steps:

1. Equipment: 1 - Mixing Spatula, 1 - Plastic cup for mixing, 1 - Plastic cup or bag for curing, 2 - Basting syringes (one for each side). NOTE: Do not use styrofoam or paper cups.
2. On a clean, dry, five ounce (5 oz. or 142 gram) plastic cup or bag, mark the two batch numbers from which the particular sample is to be taken.
3. Remove the large two inch (2" or 5.1 cm) bung from the drums being sampled.
4. Using a clean, dry basting syringe or similar tool, remove about two ounces (2 oz. or 57 grams) of Side-A and about two ounces (2 oz. or 57 grams) of Side-B; place material in a clear, clean, DRY plastic cup.
5. Reseal drums from which samples were taken. Drums must be sealed and airtight for storage.
6. Mix sample material thoroughly using a clean spatula.
7. Transfer mixed material to plastic cup or plastic bag that has been identified by batch numbers as outlined in step 1.
8. Sample must be covered or sealed and placed in a warm (70°F or 21°C) dry area.

C. Sample must be checked after twenty-four (24) hours to determine if proper curing has occurred. Cut sample in half to ensure that material is completely cured.

D. If material has not cured properly at that time, immediately contact your distributor or POLYCOAT PRODUCTS.

E. For proper warranty adjustment, regardless of test results, retain the sample for at least one (1) year. The sample may be inspected by POLYCOAT PRODUCTS in the case of warranty claims.

NOTE: FAILURE TO FOLLOW ABOVE SAMPLING TECHNIQUE WILL VOID Poly-Fil® WARRANTY.



4.02 RECOMMENDED SAFETY MATERIALS

- A. ABC Type Fire Extinguisher
- B. Chemical Goggles
- C. Rubber Gloves (skin covering)
- D. Safety Cage (for protection from tire explosion because filling occurs at high pressure)
- E. Five-Sixteenth inch (5/16" or 0.79 cm) Diameter Link Here Alloy Chains
 1. One set (3 chains) 12' (3.6 meters) lengths with grab-hook.
 2. One set (3 chains) 24" (7.3 meters) lengths with grab-hook.
- F. Absorbent Cloth (cleaning towels)
- G. Metal trash container with cover for scrap. H. "No Smoking" Signs
- I. Protective Clothing
- J. Face Shield
- K. First Aid Kit
- L. Soap and Water
- M. Ground Sawdust (floor covering)
- N. Approved Grounding Clamps
- O. Approved Grounding Wire
- P. Approved Flammable Liquids Pump
- Q. Salt
- R. Air Line Chucks for Quick Disconnect

4.03 RECOMMENDED EQUIPMENT

- A. Air Compressor
- B. Tire Filling Equipment C. Hand Tools

4.04 RECOMMENDED MATERIAL AND SUPPLIES

- A. Poly-Fil® 22, 30, HP or LP
- B. Cleaning Solvent
- C. Paper towels or rags
- D. Valve cores
- E. Hypodermic needles

- F. Plastic Bags for cure samples

All standard procedures regularly practiced in the tire shop should be applied to the Poly-Fil® operation, including tire mounting, equipment and material handling and clean up. A qualified tire serviceman will mount the tires

Before beginning each processing session, inspect equipment and verify that all the specified parts of the processing equipment are complete and in good working.

FIGURE 1: Overview of POLY-FIL® Processing Procedure Layout

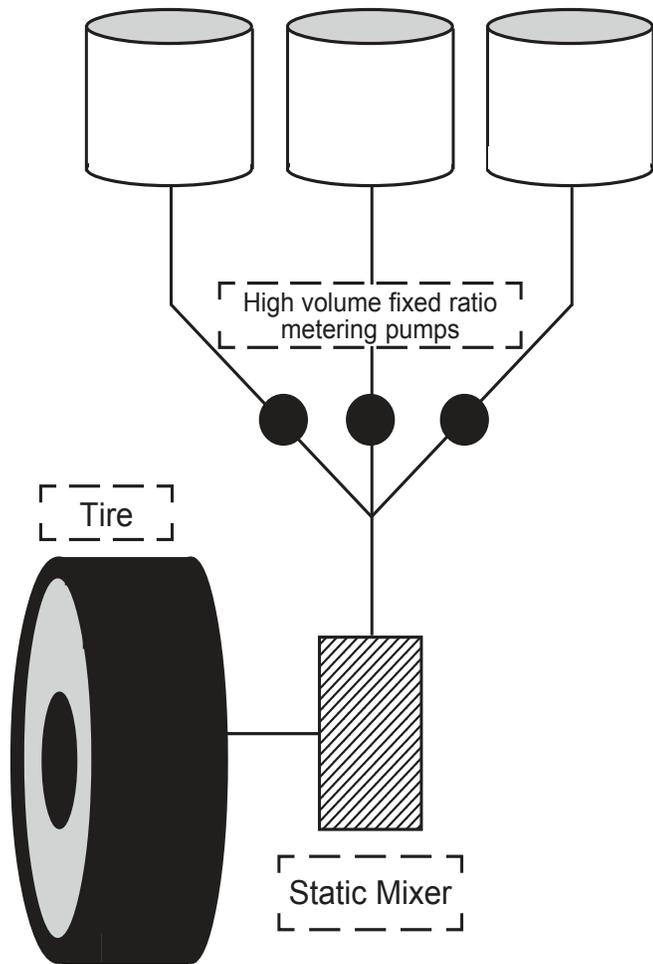
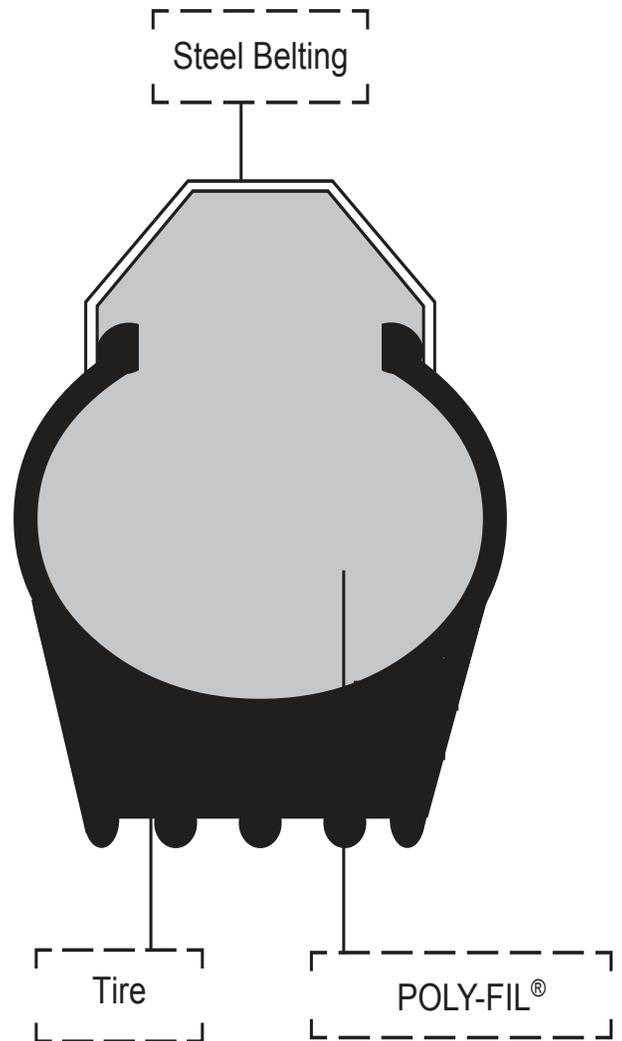


FIGURE 2: Cross-section of tire filled with POLY-FIL®



Limited Warranty: Please read all information in the General Guidelines, Technical Data Sheets, Guide Specifications and Safety Data Sheets (SDS) before applying material. These products are for professional use only and preferably applied by professionals who have prior experience with the Polycoat Products materials or have undergone training in application of Polycoat Products materials. Published technical data and instructions are subject to change without notice. Contact your local Polycoat Products representative or visit our website for current technical data, instructions, and project specific recommendations. Polycoat Products warrants its products to be free of manufacturing defects and that they will meet Polycoat Products' current published physical properties. Seller's and manufacturer's sole responsibility shall be to replace that portion of the product which proves to be defective. There are no other warranties by Polycoat Products of any nature whatsoever expressed or implied, including any warranty of merchantability or fitness for a particular purpose in connection with this product. Polycoat Products shall not be liable for damages of any sort, including remote or consequential damages resulting from any claimed breach of any warranty whether expressed or implied. Polycoat Products shall not be responsible for use of this product in a manner to infringe on any patent held by others. In addition, no warranty or guarantee is being issued with respect to appearance, color, fading, chalking, staining, shrinkage, peeling, normal wear and tear or improper application by the applicator. Damage caused by abuse, neglect and lack of proper maintenance, acts of nature and/or physical movement of the substrate or structural defects are also excluded from the limited warranty. Polycoat Products reserves the right to conduct performance tests on any material claimed to be defective prior to any repairs by owner, general contractor, or applicator.

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