Tire Fill Flatproofing Safe Handling Guide

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About This Guide

This booklet will serve as your technical guide for the safe use and handling of the chemicals used for TyrFil Flatproofing, including important health and safety information. As you read this booklet, you will notice references to the Safety Data Sheets (SDS) for each chemical. You will want to refer to these sheets for more specific health and safety information.

Everyone involved in your tire fill operations should read this booklet and the SDS' before using these chemicals and should be trained and supervised in their proper use and handling. In addition, everyone should also read and familiarize themselves with your Tire Filling equipment's Owner's Manuals. By following the guidelines in this booklet, the SDS' and the Owner's Manuals, you will find the TyrFil Flatproofing to be both safe and efficient. If you have any questions, please call (800) 821-4147.

Carlisle TyrFil is committed to giving you prompt, personal service.

About the Chemicals

The TyrFil Flatproofing system consists of two chemicals:

ISO Component
CAT Component

We will refer to the Prepolymer (ISO) and the Catalyst (CAT) Components by those names throughout this booklet, even though they may have other product names associated with them. For more specific information on each, refer to the applicable SDS.

Before we look at the general characteristics of the chemicals, please note the rating scale below which describes the hazards associated with the everyday use and handling of the chemicals. Three categories are used: Health, Flammability, and Reactivity. Each chemical has been rated using the standards developed for the Hazardous Materials Information System (HMIS). The ratings are:

0 – Minimal Hazard
1 – Slight Hazard
2 – Moderate Hazard
3 – Serious Hazard
4 – Severe Hazard

ISO Component
The ISO Component is a petroleum mixture which contains toluene diisocyanates (TDI). It will react with water, sodium hydroxide, ammonia, primary and secondary amines, acids and alcohols. Reactions can range from mild to violent and may cause a buildup of pressure forceful enough to rupture the container.

For additional information on the ISO Component, see “Maintaining Healthy Conditions”, page 7.

HMIS Hazard Code

Health 3*
Flammability 1
Reactivity 1

*Denotes Chronic Health Hazard

Signal Word: Danger!

CAT Component

The Cat Component is a polyol petroleum mixture. It reacts with isocyanates, the Cat Component is stable; however, it may be corrosive to copper-based metals. For additional information on the CAT component, see “Maintaining Healthy Conditions”, page 7.

HMIS Hazard Code

Health 2
Flammability 1
Reactivity 0

Signal Word: Danger!

Isopropyl Alcohol

Isopropyl Alcohol can be used to flush material out of mixer and fill hose. It is a stable material that presents little reactivity hazard, but keep it away from sparks, open flame or sources of heat. The liquid and vapors from the solvent are highly flammable and can be easily ignited. This material should be stored in grounded and bonded FM approved containers with a pressure release valve and should be kept closed when not in use. It should be used with adequate ventilation and in accordance with local building codes.

HMIS Hazard Code

Health 1*
Flammability 3
Reactivity 0

Signal Word: Danger!

Installing the System

Ventilation

Adequate air circulation is required in order for the TyrFil Flatproofing system to operate safely. Do not operate the TyrFil Flatproofing system in an enclosed or poorly ventilated area. Air circulation should be maintained in accordance with local building code requirements or such as found in BOCA, ICBO or SBCCI. If your work area maintains 6-10 air exchanges per hour, the level of vapors from your TyrFil Flatproofing system should remain below the OSHA limits (as defined on page 7). However, regular testing should be performed to make certain that the applicable requirements are being met.

If you are using a circulating fan or exhaust vent to improve air circulation, it should be placed behind or to the side of the work area to direct air flow away from the operator. It should not, however, be directed at other workers situated nearby. Exhaust vents should be placed to draw vapors away from the operator's work zone. Of course, each facility is different. If you have any questions about ventilation, you should call a qualified engineer.

Smoking

Smoking is not allowed in the processing and curing areas. Smoking around tire fill materials or isopropyl alcohol increases the risk of fire. NO SMOKING and FLAMMABLE MATERIALS warning signs should be posted in the processing and curing areas. See page 11 for further discussion regarding the risk of fire.

Exposure Limits

In the United States, exposure limits are recommended by the American Conference of Government Industrial Hygienists (ACGIH) and established by the Occupational Safety and Health Administration (OSHA). If a chemical has an established exposure limit, then the concentration of that chemical in the operator's breathing zone must be maintained below the limits.

The ACGIH may recommend one or more of the following exposure limits: a ceiling value (C), a short-term exposure limit (STEL), or a time-weighted average (TWA). Each of these exposure limits is defined by ACGIH as a threshold limits value (TLV).

The TLV-STEL is the maximum concentration to which workers may be exposed continuously for a short time, not to exceed 15 minutes. The TVL-C (ceiling) is the vapor concentration that should not be exceeded during any part of the working exposure. The ACGIH TLV-TWA is the time-weighted average concentration for the normal eight-hour work day. Exposures above the limit should be offset by equivalent time periods below the limit and must not exceed STEL or ceiling value.

OSHA establishes exposure limits by defining permissible exposure limits (PEL). The PEL is a legally enforceable limit and may be either a ceiling (PEL-C), a short term exposure limit (PEL-STEL), or a time weighted average value (PELTWA)

Isocyanates

All ISO components formulations contain TDI. Maximum exposure levels for TDI are:

OSHA PEL	ACGIH TLV
C = 0.02 ppm	TWA = 0.005 ppm
	STEL = 0.02 ppm

In order to accurately measure isocyanate vapor levels during normal use of the TyrFil Flatproofing system, you should arrange to have your workplace monitored by an industrial hygiene consultant. Your Carlisle TyrFil representative can assist you in this effort.

In addition to TDI, which is found in all the ISO Component formulations, other substances for which exposure limits have been established may be present in the ISO and CAT Component formulations. Consult your SDS to see which of these are present in your system.

Aromatic Oils

Oils similar to those found in both the ISO and the CAT components have been shown to cause skin cancer in laboratory rats when applied in excessive dosages. Please review precautionary measures for skin protection as outlined on page 8.

Amine Catalysts

Each CAT component formulation contains an amine catalyst. Exposure limits have not been established for the catalysts used in the TyrFil Flatproofing system.

Inhalation Sensitivity to Chemicals

A small percentage of the general population is born with a hypersensitivity to the isocyanate chemicals used in the TyrFil Flatproofing system, which causes them to have an allergic reaction upon exposure to these chemicals. In addition, others who have experienced repeated overexposure to the chemicals may develop a sensitization to the chemicals over time. If a person has become sensitized, exposure to isocyanate vapors, even at concentrations well below the TLV or PEL values, can result in the person developing symptoms of asthma or respiratory distress. These symptoms may appear immediately or may be delayed for several hours.

Processors who have or developed sensitivity to these chemicals should be reassigned immediately. In addition, they should be restricted from areas where isocyanates are being used. Also, individuals who are heavy smokers, asthmatic or have pulmonary disease or pre-existing sensitivity to other chemicals should not be assigned as flatproofing processors.

Specific Reactions

When used in accordance with this booklet, the applicable SDS and the Operator's Manuals, the TyrFil Flatproofing system operates well below the exposure limits for TDI vapor concentrations. However, if operating guidelines are not followed and exposure exceeds the limits, the vapors of the ISO component can irritate the membranes of the nose, throat, lungs and eyes. Symptoms may include watery eyes, dryness of the throat, tightness of the chest (some with breathing difficulty) and headaches. Symptoms may not occur until hours after exposure. Individuals who exhibit these symptoms should leave the vicinity immediately and should be administered oxygen if they have breathing difficulty. A physician should be contacted immediately. Symptoms generally subside after the person is removed from the area and long-term effects are unlikely.

Effects on the Eyes

The ISO component has a mild tanning action if it comes into contact with the skin. Occasionally, contact dermatitis can result as part of the specific skin allergy.

The CAT component can be irritating to the skin.

Isopropyl Alcohol may cause irritation if the skin contact is repeated or prolonged.

Skin contact with any of the above can and should be avoided by wearing butyl, nitrile or latex rubber gloves and other protective clothing. All three materials can be removed from the skin by washing the area thoroughly with soap and water.

Ingestion

DO NOT swallow any TyrFil Flatproofing system chemicals. In addition, anyone working with chemicals of any kind should wash their hands thoroughly before eating, drinking or smoking. If accidental ingestion occurs, call a physician immediately. Refer to your SDS for more specific information.

Storing and Handling Procedures

Personal Protective Equipment

TyrFil Flatproofing system chemicals are safe when they are stored and transported in containers which have remained closed and intact. However, they can cause irritation if they come into contact with the skin or eyes. Butyl, nitrile or latex rubber gloves and other protective clothing, such as smocks, aprons or Tyvek® coveralls, and safety goggles or a face shield should be worn while changing chemical containers, cleaning or replacing parts of the dispensing system, processing tires or any other time that individuals are working with TyrFil Flatproofing system chemicals. Safety glasses are recommended at all times when handling our flatproofing products.

Storage

TyrFil Flatproofing system chemicals should be stored away from direct sunlight at temperatures between 65^{o}F (18^{o}C) and 100^{o}F (38^{o}C). If possible, containers of these chemicals should be stored indoors. If they must be stored outside, containers should be covered to prevent moisture from settling on the top. If water is allowed to get into a closed container of the ISO Component, carbon dioxide gas will be generated and will build up pressure inside the containers. If you suspect a container of the ISO Component has become pressurized, the special handling procedures described in this booklet in the section titled “Container Depressurization” under “Handling: Emergency Conditions” on page 11 must be followed.

In the unlikely event of a fire, advise the fire department where you regularly store your containers of TyrFil Flatproofing system chemicals.

Handling: Normal Conditions

To facilitate proper performance, ISO & CAT Components should be used at room temperature (72^{o}F/22^{o}C). We advise you to let these chemicals rise to room temperature prior to use because the ISO & CAT Components become more viscous if allowed to cool below 72^{o}F/22^{o}C. To bring the ISO & CAT Components to the proper temperature of at least 72^{o}F/22^{o}C you should move the containers into the normal work area for several days. Never attempt to warm a container with hot water or direct heat of any kind. The Chemical could become overheated and result in container pressurization accompanied by the emission of irritating fumes. If any container of TyrFil Flatproofing system chemicals appear to be bulged or under pressure, emergency handling precautions should be followed. See guidelines outlined under “Container Depressurization” in the section titled “Handling: Emergency Conditions” on page 11.

Handling: Emergency Conditions

As mentioned earlier, all TyrFil Flatproofing system chemicals are safe while being properly stored or transported in containers which have remained closed or intact. However, in the event of a fire, leak or spill, or container pressurization, special procedures should be followed. In case of emergency, contact:

CHEMTREC	**800-424-9300**
Carlisle TyrFil	**800-821-4147**

Personal Protective Equipment: Spills or Leaks

During a clean-up from a spill or leak, respiratory protection, butyl, nitrile, or latex rubber gloves, safety goggles, face shield, and other protective clothing should be worn. If there is a leak or spill of the ISO Component, self-contained breathing apparatus or supplied air respirators should be used. However, cartridge-type respirators should not be used because the odor threshold is greater than the PEL; thus, chemical break-through of the cartridge may occur without being detected. Wherever respirators are used, there must be a respirator program in place which complies with the OSHA minimum requirements (29 CFR 1910.134).

If there is a large spill of the CAT Component, or if it is spilled in a poorly ventilated area, respirators equipped for use with cartridges for removing organic vapors are appropriate. These respirators should only be used when an adequate supply of oxygen is present; otherwise, a self-contained breathing apparatus must be worn.

Leaking Containers

Any leaking containers of TyrFil ISO & CAT Components or isopropyl alcohol should be turned so that the leaking portion is uppermost and then covered to prevent water or dirt from getting into the container. The materials should be salvaged if possible.

Spills

As a precaution, it is a good idea to keep a quantity of deactivating solution and absorbent material on hand wherever you keep or store the ISO Component. Deactivating solution is composed of 90% water, 8% concentrated ammonia and 2% liquid detergent. The recommended ratio of decontamination solution to isocyante is 15:1.

<u>ISO Component Spills</u>

In the case of an ISO Component spill, the following procedures apply:

1. Cover with absorbent material such as sawdust, cat litter or vermiculite.
2. Pour deactivating solution over the spill and allow it to react for about 30 minutes
3. Collect material in open top containers (no more than half full), move outdoors and pour more deactivating solution on top.
4. Allow the containers to remain uncovered for 24 to 48 hours to allow the carbon dioxide generated to escape. However, make sure they are protected against the elements (e.g., rain, snow).
5. Wash the spill area thoroughly with deactivating solution.
6. After the absorbed material has become deactivated, it becomes a solid material. Dispose of waste material in accordance with applicable regulations governing disposal of solid waste.
7. Some formulations of spilled TyrFil ISO Component have been classified as hazardous wastes, and therefore must be disposed of in accordance with applicable hazardous waste regulations (see page 13). Spilled material should be absorbed in an absorbent material.

CAT Component Spills

In the case of a CAT Component spill, the following procedures apply:

1. Contain and cover the spill with absorbent material.
2. Place the material in a container.
3. Dispose of waste material in accordance with applicable regulations governing disposal of solid waste.

Isopropyl Alcohol

In the case of an isopropyl alcohol spill, the following procedures apply:

1. Eliminate all ignition sources (flames, pilot lights, electrical sparks, etc.).
2. Contain and cover the spill with absorbent material.
3. Place the material in a container.
4. Dispose of waste material in accordance with applicable regulations governing disposal of solid waste.

Container Depressurization

Any container of the TyrFil ISO or CAT Components which looks like it may be pressurized, misshapen or bulged, should be isolated immediately and depressurized. Safety goggles and/or face shield, butyl, nitrile, or latex rubber gloves, an organic vapor mask, coveralls, a rubber apron and rubber boots should be worn to protect against possible splatter or vapor contact. Safety glasses must be worn at all times when working with TyrFil materials. With ISO Component, pressure may be relieved by carefully loosening the bung. The CAT Component that appears to be pressurized should be moved to a cool place. Open the container slowly to relieve the excess pressure or cool the containers to 80^{o}F (27^{o}C).

Fire

In the event of fire, evacuate the building immediately. Response team must wear full emergency equipment including self-contained breathing apparatus. Use dry chemical, carbon dioxide, foam or large amounts of water spray (do not use direct water stream) to control fire. Use water spray to cool exposed containers and reduce risk of rupture. If incipient fire fighting is used to extinguish a fire, personnel must be trained in accordance with OSHA standards.

TyrFil ISO and CAT Components

ISO & CAT Components have very high flashpoints, the temperature at which the vapors can be ignited if exposed to flame. Containers that are located near the fire but are not actually on fire should be sprayed with water to minimize the risk of rupture. Good extinguishing agents include dry chemical powder, carbon dioxide, foam or water. Water should be used in large quantities, since the reaction between water and isocyanates can be vigorous.

Isopropyl Alcohol

Although isopropyl alcohol is available in non-pressurized 5 or 55 gallon cans, caution must be used in opening the containers in order to avoid producing sparks. It has a flashpoint of approximately 53^{o}F (12^{o}C). Spark proof tools are recommended when working with flammable materials.

Carbon dioxide or dry chemical powder should be used for small fires, while water spray should be used for large fires. Water spray (not directed streams) should be used to control fire.

Disposal

Empty Containers

TyrFil - ISO Component

Residue from TyrFil ISO Component is an EPA hazardous waste, as it contains an RCRA listed material, toluene diisocyanate, waste code #U-223. Residual liquid drained from an ISO Component drum should not be added to the next container because the residue will produce crystals that can clog the pump resulting in poor fill quality.

To dispose of an ISO Component Container, refer to federal regulations.

TyrFil - CAT Component

Empty TyrFil CAT Component containers are not considered hazardous waste under current RCRA regulations. The Environmental Protection Agency (EPA) defines an empty container as one from which all waste has been removed using practices commonly employed, e.g., pouring, pumping and aspirating. TyrFil CAT Component containers should be "drip dry" so that they contain less than one inch of material or .3% capacity before being discarded or returned. No flammable liquids.

Empty TyrFil Component containers should never be reused unless first cleaned by a licensed reconditioner.

Never use a torch on any empty TyrFil Flatproofing system container, even if it has been rinsed or treated. Like most materials, TyrFil chemicals decompose at very high temperatures emitting fumes that can be irritating or toxic.

Isopropyl Alcohol Drums

Isopropyl alcohol used in cleaning and equipment flushing operations is considered a hazardous waste (see 40 CFR 261.21). It should be disposed of in accordance with applicable federal, state and local regulations. Empty isopropyl alcohol drums should be drip dried, triple-rinsed with water (see 40 CFR 261.7) and disposed of in an approved landfill. Do not cut or weld any empty isopropyl drums since any residual vapors are extremely flammable and explosive.

Other Regulatory Information

Workers Right-To-Know

OSHA has issued a regulation known as the Hazard Communication Standard (29 CFR 1910.1200), more commonly referred to as the "Right-To-Know" standard. It was developed to protect employees working with hazardous chemicals in the workplace. The Hazard Communication Standard now includes the Purple Book, OSHA's adaption of part of the Globally Harmonized System. The Globally Harmonized System is a standardized system of labeling and classifying hazardous materials. All employees must be trained in this new standard. Employees have a right to know hazards associated with chemicals they work with and how to protect themselves against these hazards.

Carlisle TyrFil complies with this standard by providing SDS' to our customers as well as by labeling our chemical containers in accordance with the updated Hazardous Communication Standard. The SDS' provide specific health and safety information regarding a particular chemical. The labels on the containers also contain important health and safety information. The SDS' and labels, together with the information in this booklet and Operator's Manuals, provide valuable information regarding the TyrFil Flatproofing system and should be an integral part of your hazard communication training program.

Community Right-To-Know

The EPA has also enacted "Community Right-To-Know" regulations pursuant to the Superfund Amendment and Reauthorization Act (SARA), commonly known as SARA Title III or the "Emergency Planning and Community Right-To-Know Act of 1986 (EPCRA)". These regulations require companies that manufacture, store or use certain hazardous chemicals to comply with various reporting standards. Even though these regulations are federal, they require reporting to state and local agencies responsible for emergency planning.

The SARA regulations are divided into several sections which are used to support emergency planning efforts by state and local governments concerning chemical hazards within their community. Sections 311, 312, and 313 of the SARA regulations will have little impact on TyrFil Flatproofing system customers unless large quantities of chemicals are stored or used at the facility. Each section under SARA has reporting requirements for listed chemicals if the specified inventory or usage amounts are exceeded.

SARA Section 311 and 312 regulations may apply to Carlisle TyrFil Flatproofing customers who store more than 10,000 pounds of materials at any one time during the year.

Filing under Sections 311 and 312 is not required as long as the applicable limit is not exceeded. Customers should evaluate the quantity of TyrFil Flatproofing system chemicals stored at their facilities to determine whether or not they are subject to the reporting requirements of Sections 311 and 312.

SARA Section 313 requires a report; known as Form R, to be submitted for any facility that employs ten or more full-time employees, is classified under designated SIC codes, and manufactures or processes more than 25,000 pounds of a listed chemical in a calendar year. The following chemicals, which are listed in the SARA 313 Toxic Chemical Listing, may be present in some TyrFil Flatproofing system formulations:

- Toluene Diisocyanate, mixed isomers (CAS# 26471-62-5)
- m-Phenylenediamine (CAS# 108-45-2)

You should consult the applicable SDS provided by Carlisle TyrFil to determine if the reporting requirements of SARA Sections 311, 312 or 313 apply to your facility. Carlisle TyrFil recommends that these requirements be reviewed annually.

Glossary

Air Purifying Respirator: A respirator designed to remove air contaminants (I.e. dust, fumes, mist, gases, vapors, or aerosols) from ambient air or air surrounding the respirator user.

Air Supplied Respirator: An atmospheric-supplying device which provides the wearer with respirable air from a source outside the contaminated area.

American Conference of Government Industrial Hygienist (ACGIH): An organization of professionals in governmental agencies or educational institutions engaged in occupational safety and health programs. They develop and publish recommended occupational exposure limits for chemical substances and physical agents.

Building Officials and Code Administrators (BOCA): is an association of professionals employed in the establishment and enforcement of Building Codes, which are the rules and regulations that govern the design and construction of buildings.

Catalyst (CAT): A substance that modifies (slows, or more often quickens) a chemical reaction without being consumed in the reaction.

Ceiling: The concentration of a hazardous material not to be exceeded at any time.

Decontamination: The physical or chemical process of reducing and preventing the spread of contaminants from persons and equipment used at a hazardous materials incident.

Emergency Planning Community Right to Know Act (EPCRA): Emergency planning requirements are designed to help communities prepare for and respond to emergencies involving hazardous substances. Every community in the United States must be part of a comprehensive plan (Tier II Reporting).

Environmental Protection Agency (EPA): Agency which administers the federal environmental laws.

Flammability: Is how easily something will burn or ignite, causing fire or combustion.

Flammable Liquid: A liquid that gives off vapors readily ignitable at room temperatures.

Globally Harmonized System (GHS): An international standard for communicating chemical hazards through signs, labeling, and safety data sheets.

International Council of Building Officials (ICBO): ICBO building inspectors inspect building plans to ensure safety and code compliance. They inspect building sites and soil conditions before foundations are poured to inspect footings positioning and depth. A primary concern for ICBO building inspectors is fire safety--they inspect fire equipment, alarms, exits and possible risks from adjoining buildings.

Isocyanate: Any of a family of nitrogenous chemicals that are used in industry and can cause respiratory disorders, especially asthma, if inhaled.

Listed material: By definition, EPA determined that some specific wastes are hazardous. These wastes are incorporated into lists published by the Agency. These lists are organized into three categories: the "F" list (non-specific waste source), the "K" list (source-specific waste), and the "P" & "U" list (discarded commercial chemical products).

Occupational Health and Safety Administration (OSHA): The regulatory vehicle to ensure the safety and health of workers in firms larger than ten employees. The goal is to set standards of safety prevent injury and illness among workers.

Permissible Exposure Limit: This may be expressed as a time weighted average (TWA) limit, a short term exposure limit (STEL), or as a ceiling exposure limit.

Personal Protective Equipment: Specialized clothing or equipment worn to help isolate a worker from direct exposure to hazardous materials (i.e. glasses, gloves, respirators, ear plugs, etc.)

Parts Per Million (PPM): parts of vapor or gas per million parts of air by volume at 25°C and 1 atmospheric pressure.

Prepolymer (ISO): A monomer or system of monomers that have been reacted to an intermediate molecular weight state. This material is capable of further polymerization by reactive groups to a fully cured high molecular weight state.

Reaction: The interaction of two or more substances to form new substances.

Reactivity: is the tendency of a substance to undergo chemical reaction, either by itself or with other materials, and to release energy.

Resource Conservation Recovery Act (RCRA): Established in 1976, its major emphasis is the control of hazardous waste disposal.

Safety Data Sheet (SDS): A fact sheet summarizing information about material identification; hazardous ingredients; health, physical, and fire hazards; first aid; chemical reactivities and incompatibilities; spill, leak, and disposal procedures; and protective measures required for safe handling and storage.

SARA Title III: The Superfund Amendments and Reauthorization Act. It provides citizens and local governments with information about potential chemical hazards in their communities.

Short Term Exposure Limit: The acceptable average exposure over a short period of time, usually 15 minutes as long as the Time weighted average is not exceeded.

Tier II: Facilities covered by Emergency Planning and Community Right-to-Know Act (EPCRA) requirements must submit an Emergency and Hazardous Chemical Inventory Form to the Local Emergency Planning Committee (LEPC), the State Emergency Response Commission (SERC), and the local fire department annually.

Time Weighted Average: The average exposure to a contaminant or condition (such as noise) to which workers may be exposed without adverse effect over a period such as in an 8-hour day or 40-hour week.

Threshold Limit Value: The level where the first effects occur.

Toxicity: A chemicals intrinsic ability to cause adverse health effects when exposure is excessive.

Toxic Release Inventory (TRI): a publicly available database containing information on toxic chemical releases and other waste management activities in the United States. Companies across a wide range of industries (including chemical, mining, paper, oil and gas industries) that produce more than 25,000 pounds or handle more than 10,000 pounds of a listed toxic chemical must report it to the TRI.