

SAFETY FIRST REFINISHING



Health & Safety:

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HEALTH ♦ SAFETY ♦ ENVIRONMENT ♦ PRODUCT STEWARDSHIP

I. PPG VISITOR INFORMATION:

Welcome to the PPG Refinish Business Development Center!

It is important to observe all regulatory and company safety rules. They exist to ensure your safety as well as the safety of others while you are visiting us.

Please be sure to sign the **visitor log** upon your arrival and departure from this site.

The following precautions should be observed at all times:

- **Matches, Lighters, Mobile Phones, Cameras** or other similar equipment are NOT permitted in work areas. These devices may cause a spark, leading to an explosion or fire in areas where paints or solvents are present. Please leave these items in your vehicle or in the office/training room areas.
- **Emergency Evacuation:** In the event of fire or other emergency, you may be required to leave this facility. Please familiarize yourself with this location's evacuation route(s). To evacuate, walk quickly via the nearest unblocked or unobstructed exit to the parking lot of the building. Remain in that area and wait for instructions from PPG staff.
- **Report All Accidents and Injuries:** Report all "near-miss" events, accidents, and injuries of any sort to a PPG staff person.
- **Waste Disposal** – Dispose of all waste material in designated containers. Obey posted instructions. If you are unsure of how to dispose of waste, please ask your PPG representative.
- **Food and Drink** – Food and drink are only permitted in the classroom, office, and dining areas.
- **PPG Facilities are Tobacco-Free:** The possession and/or use of all tobacco products is prohibited on PPG property including parking lots, entrances, exits, and roadways.
- **No Drugs, Alcohol, or Firearms are Allowed On-site** - These items are NOT permitted anywhere inside or outside PPG property.

By commencement of training or work on-site, you have agreed to abide by the site's safety conditions and rules listed on this sheet.

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II. HEALTH RISKS:

The main potential risks to health arising from industrial finishing products are:

- **Inhalation of solvent vapors** may lead to dizziness, nausea, mental confusion and in extreme cases, loss of consciousness. Irritation to the respiratory system and internal damage may also occur.
- **Inhalation of dusts and spray mists** may also lead to irritation of the respiratory system.
- **Contact with skin** may cause irritation and, with certain products, eye damage.
- **Accidental ingestion** may cause irritation of the mouth, throat and digestive tract resulting in vomiting and abdominal pain. Significant absorption may cause drowsiness or loss of consciousness.



Eyes, Ears, Skin

Respiratory

Summary of Risk Assessments

The following table highlights the potential harm that could result from standard body shop operations, all of which may be demonstrated at PPG training centers. The column titled “Action” lists the measures to be taken and the personal protective equipment that should be worn in order to minimize the risks for users.

II. HEALTH RISKS *(continued)*:*Summary of Risk Assessments:*

Operation	Potential Harm	Action
Precleaning	Inhalation of solvent vapors Eye & skin contact Fire hazard	Ensure only performed in well-ventilated area that is free from sources of ignition Protective clothing, solvent-proof neoprene or nitrile gloves, safety glasses, vapor-protective respirator
Degreasing / Spirit wiping	Inhalation of solvent vapors Eye & skin contact Fire hazard	Ensure only performed in well-ventilated area that is free from sources of ignition. Protective clothing, solvent-proof neoprene or nitrile gloves, safety glasses, vapor-protective respirator
Hand or machine sanding	Inhalation of sanding dust Eye & skin contact with sanding dust Injury caused by vibration	Protective clothing, gloves, safety glasses, dust-protective respirator If you develop tingling or numbness in the fingers, stop sanding and exercise fingers
Mixing & application of two-pack polyester filler	Inhalation of solvent & styrene vapors Eye & skin contact with peroxide activator & stopper Fire hazard	Ensure only performed in well-ventilated area that is free from sources of ignition Protective clothing, solvent-proof neoprene or nitrile gloves, safety glasses, vapor-protective respirator
Primer application (Spraying)	Inhalation of spray mist & vapors Eye & skin contact Fire hazard	Ensure only performed in well-ventilated area that is free from sources of ignition and is designated for spraying (e.g. spray booth) Protective clothing, solvent-proof neoprene or nitrile gloves, safety glasses, air-fed mask
Primer application (Roller application)	Inhalation of vapors Eye & skin contact Fire hazard	Ensure only performed in well-ventilated area that is free from sources of ignition Protective clothing, solvent-proof neoprene or nitrile gloves, safety glasses, vapor-protective respirator
De-masking	Skin contact with not fully cured paint components	Protective clothing, neoprene or nitrile gloves, safety glasses
Paint mixing	Inhalation of solvent vapors Eye & skin contact Fire hazard	Ensure only performed in well-ventilated area that is free from sources of ignition Protective clothing, solvent-proof neoprene or nitrile gloves, safety glasses or goggles
Color application	Inhalation of solvent vapors Eye & skin contact Fire hazard	Perform in spray booth or designated area Protective clothing, solvent-proof neoprene or nitrile gloves, safety glasses, air-fed mask
Polishing	Inhalation of dust Eye contact with debris	Protective clothing, gloves, safety glasses
Spray gun cleaning	Inhalation of solvent vapors Eye & skin contact with cleaning solvents	Ensure only performed in well-ventilated area that is free from sources of ignition Protective clothing, solvent-proof neoprene or nitrile gloves, safety glasses, vapor-protective respirator
Use of aerosol cans	Inhalation of solvent vapors Eye & skin contact Fire hazard	Ensure only performed in well-ventilated area that is free from sources of ignition Protective clothing, solvent-proof neoprene or nitrile gloves, safety glasses, vapor-protective respirator
Waste disposal	Chemical exposure Fire hazard Environmental damage	Ensure waste is disposed in compliance with local regulation Neutralize isocyanate residues before disposal Drain containers containing small residues of paint Protective clothing, gloves & safety glasses or goggles
UV Lamp for curing	UV light exposure to eyes & skin	Safety glasses with 99.9% UV protection and protective clothing to cover skin

III. HEALTH HAZARDS:

PPG manufactures a wide variety of coatings. There are many raw materials or ingredients used in coatings and paint formulations including isocyanates and heavy metals. Each ingredient has a specific purpose for being used in the formulation.

Before you use a coatings product, read the entire product label and Safety Data Sheet (SDS). This way, you will know what you are working with and how to safely handle the product.

Use this information along with PPG's Product Data Sheets (PDS), Technical Data Sheets (TDS) and Technical Bulletins. There are publications on certain types of isocyanates and heavy metals which provide more details than this booklet. To request such information, contact your PPG representative or distributor.

Disclaimer regarding information provided by PPG:

The "Health Hazard" section is intended to provide INFORMATION for review by PPG's customers. In providing this information, PPG makes no separate or additional warranties, express or implied, and assumes no liability or responsibility arising out of its use. It is the responsibility of each customer, RE-SELLER and END-USER of PPG's products to independently ascertain that their practices are legal, appropriate and constitute sound product stewardship. Approaches to different issues may vary depending on individual circumstances. This information is not INTENDED to define or create legal rights or obligations. It is the responsibility of each customer, RE-SELLER AND END-USER to comply with federal, state and local laws.

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III. HEALTH HAZARDS *(continued)*:

A. ISOCYANATES

Questions & Answers About the Safe Use of Coatings Containing Isocyanates

Q1. What are isocyanates?

- A.** Isocyanates are compounds containing one or more $-N=C=O$ groups. These groups react with compounds containing alcohol (hydroxyl, OH) groups to produce polyurethane polymers, which are components of polyurethane foams, thermoplastic elastomers, spandex fibers, and polyurethane paints.¹

The term “isocyanates” herein will refer to the broad range of isocyanate products, including diisocyanates, prepolymers, and polymeric isocyanates.

Q2. Why are isocyanates used in paint?

- A.** Isocyanates are used in paints because they provide a cross-linking mechanism (chemical bond) that is unique from other coatings. As a result of these chemical bonds, isocyanates help create more durable coatings with outstanding aesthetic properties. Isocyanate-containing coatings provide films that cure quickly at low temperatures. They also have excellent application properties, producing smooth films and high gloss coatings.

Q3. Can isocyanates be used safely?

- A.** Yes. Always consult the PPG product SDS and label for proper handling instructions. If you follow the recommended procedures for handling the product and controlling isocyanate exposure, isocyanates can be used safely.

Q4. What are the major human health effects of overexposure to isocyanate products?

- A.** Overexposure to isocyanate products can cause skin, eye, nose, throat, and lung irritation. It can also lead to skin or respiratory tract sensitization. A third effect for which there is some evidence is a chronic (long-term) loss of lung function. Refer to the product SDS for a more complete list of potential health effects and symptoms.

Q5. What is sensitization?

- A.** Sensitization is the body’s allergy-like response to a substance which has been inhaled or touched by a person. Sensitization may result from a large single overexposure or from repeated overexposures at lower levels.

Respiratory sensitization may be caused by inhalation of airborne isocyanates. Symptoms of respiratory sensitization may include asthma-like responses such as coughing, wheezing, tightness in the chest, shortness of breath, and headaches. Respiratory sensitization to isocyanates may be permanent.

III. HEALTH HAZARDS (continued):

A. ISOCYANATES (continued)

Q6. What is sensitization? (continued)

- A. Many isocyanates are also skin sensitizers. Skin sensitization may occur in response to skin contact. A skin sensitizer causes normal skin tissue to have an allergic reaction after repeated exposure. The skin sensitization reaction may include rash, itching, swelling, or hives.

Onset of sensitization depends on the type of isocyanate, the dose, the route of exposure, and the susceptibility of the individual. The response may be immediate, delayed, or both. Once sensitized to an isocyanate, it may take only a small amount via inhalation or skin contact to trigger an allergy or asthma-like respiratory response or reddening of the skin. There is some evidence that sensitization to one type of isocyanate may trigger an asthma-like response when the person is exposed to a different type of isocyanate.

Q7. Are there any warning signals to indicate that I am being overexposed?

Isocyanates are difficult to detect by your senses alone. Occupational Exposure Limits (OEL) for isocyanates are typically below the concentration that your eyes or nose can detect. This means that isocyanates have “poor warning properties,” and that even if you cannot sense isocyanates you may still be overexposed.

Q8. Are there any other hazards related to isocyanate products?

- A. Consult the product SDS to review the potential health effects of other hazardous ingredients or the potential hazards of associated products. The PPG product SDS and label provide all the information necessary to safely handle, use, and store the product.

CONTROLS

Q9. How can isocyanate exposures be controlled?

- A. Exhaust ventilation, enclosure of the operation, and personal protective equipment (PPE) are typical methods of isocyanate overexposure control. For example, during spray application, spray booths are used to help enclose the isocyanate operation and prevent exposure to other employees. PPE for the eyes, respiratory tract, and skin may include chemical splash goggles, positive pressure air-supplied respirators, impervious gloves, and protective clothing. Local exhaust or general dilution (adding more air to an area) ventilation is needed to remove decomposition products when welding or flame cutting on surfaces coated with isocyanates.

III. HEALTH HAZARDS (continued):

SPILL - KIT
STATION

A. ISOCYANATES (continued)

Q10. How can I measure my potential exposure?

A. Industrial hygiene air sampling is recommended to evaluate potential airborne exposure to isocyanates. The sampling and analytical methods selected should be based upon the particular isocyanate to be sampled and the application method. Be sure to share the SDS(s) with the laboratory performing the analyses. Surfaces can be checked for isocyanate contamination using commercially available surface wipe sampling kits.

Q11. What should be done if there is a large spill of an isocyanate product?

A. Follow the spill procedures for your work location and dispose of waste in accordance with your federal, state, provincial, and local environmental control regulations. Plan to have spill control/neutralization materials and employee protective equipment located so that it is readily available in emergencies. Non-essential personnel should be immediately evacuated from the contaminated area and all sources of ignition (flames, hot surfaces, and electrical, static or frictional sparks) should be eliminated. It is important to ventilate the area. Dike or contain the spilled material and try to control further spillage. Vermiculite, Fuller's Earth, or other absorbent materials can be used to absorb the spill. Containers of spilled material should not be sealed for 72 hours due to carbon dioxide pressure buildup which could cause the container to rupture. It is recommended that the product's SDS be reviewed for specific spill and handling instructions.

Q12. How do I decontaminate an area after a large spill?

A. For most isocyanates, the following is a recommended decontamination solution:

- 20% liquid nonionic surfactant, such as Dow Tergitol TMN-10, that mixes well with water
- 80% water If the spill involves hydrogenated MDI (dicyclohexylmethane-4,4'-diisocyanate), sometimes called HMDI, a combination degreaser/monoethanol amine/water solution is recommended.

HANDLING CURED PARTS

Q13. When is it safe to touch a newly cured part?

A. Check with your PPG representative to determine the proper curing time and other requirements for the PPG product you are using. Isocyanate exposures are not expected from cured parts or films.

III. HEALTH HAZARDS (continued):

A. ISOCYANATES (continued)

Q14. Are there any hazards associated with sanding or machining isocyanate products?

- A.** For cured parts or films, it is not expected that isocyanates would be generated in the dust produced during sanding or machining processes. It is still recommended that a respirator suitable for preventing inhalation of dust particulates formed during these operations be worn.

Sanding or machining uncured isocyanate coatings poses a potentially larger hazard than with cured parts since it is possible that airborne isocyanates can be generated. "Wet" sanding reduces the total amount of sanding dust generated and should be used whenever possible. Local exhaust ventilation, such as a vacuum sander, is another control measure that can be used to minimize potential exposure to airborne contaminants. PPE should also be used to prevent skin and respiratory tract exposure to isocyanates when handling or machining uncured isocyanate products.

Q15. What types of hazardous substances can develop during heating, flame cutting, or welding substrates that have been coated with isocyanate products?

- A.** Flame cutting, brazing, welding, or fire conditions are situations that generate high temperatures which could result in thermal decomposition of the coating. Fumes, gases, and vapors that are generated by these processes may include, but are not limited to, carbon monoxide, oxides of nitrogen, traces of hydrogen cyanide, and free isocyanate. Refer to the product SDS for other possible hazardous decomposition products. The nature of the fumes, gases, vapors, or particulates may vary depending on the type of process being used to weld or cut, the nature of the base metal, and the type of coating system. Removing the coating before high-temperature processing will reduce the potential exposure to isocyanate-containing fumes and vapors. Ventilation (local or general area) is needed to remove decomposition products during these operations.

REFERENCE LIST

1. US Department of Labor: Occupational Safety & Health Administration. <http://www.osha-slc.gov/SLTC/isocyanates/>. (Accessed: June 2003)
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3. *Desmodur N: Hexamethylene Diisocyanate Based Polyisocyanates, Health & Safety Information*; Bayer: Pittsburgh, 1999; p4.
4. Meyer, H. E.; *Blocked Isocyanates: Questions and Answers About Use and Handling*; Bayer: Pittsburgh, 1993.
5. *Isocyanates: Questions and Answers About Use and Handling in Coatings Applications*; Bayer: Pittsburgh, 2002.

Disclaimer

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III. HEALTH HAZARDS *(continued)*:

B. HEAVY METALS

(Hexavalent Chromium, Lead, Nickel, Cadmium, Manganese, Selenium)

There are regulations in the U.S. (OSHA standards) and other countries that are designed to limit exposures to specific heavy metals due to environmental, health and/or safety concerns. These standards set Permissible Exposure Limits (PEL) for the workplace. Managers of coatings operations have the responsibility to be familiar with these regulations and assess how they may affect their employees and their business. Compliance activities may include: workplace monitoring, medical surveillance, Personal Protective Equipment (PPE) including respiratory protection, hygiene practices, housekeeping, hazard communication training, establishment of regulated areas and engineering controls.

Questions & Answers About the Safe Use of Coatings Containing Heavy Metals

Q1. What is hexavalent chromium?

A. Hexavalent Chromium is a toxic form of the element chromium. Hexavalent Chromium is man-made and widely used in many different industries.

Q2. What are the sources of hexavalent chromium and other heavy metals? *(Lead, Cadmium, Nickel, Chromium, Manganese and Selenium)*

A. Some major sources are:

- chromate pigments in dyes, paints, inks and plastics.
- added as anti-corrosive agents to paints, primers and other surface coatings.
- chrome plating by depositing chromium metal onto an item's surface using a solution of chromic acid.
- particles released during smelting of ferro-chromium ore.
- fumes from welding stainless steel or nonferrous chromium alloys.
- impurity as present in Portland cement.

Q3. How can hexavalent chromium and other heavy metals be harmful?

A. Workplace exposure/overexposure may cause the following health effects:

- lung cancer in workers who breathe airborne particles
- irritation or damage to the nose, throat and lungs if heavy metal particles are breathed at high levels
- irritation or damage to the eyes and skin if chromium contacts these organs in high concentrations

Q4. How can hexavalent chromium affect the nose, throat and lungs?

A. Breathing in high levels can cause irritation to the nose and throat. Symptoms may include runny nose, sneezing, coughing, itching and burning sensation. Repeated or prolonged exposure can cause sores to develop in the nose. If the damage is severe, the nasal septum (wall separating the nasal passage) develops a hole or perforation.

III. HEALTH HAZARDS (continued):

B. HEAVY METALS (continued)

Q5. How can hexavalent chromium affect the skin?

A. Some employees can develop an allergic skin reaction, called allergic contact dermatitis. This occurs when handling liquid or solids containing hexavalent chromium. Once an employee becomes allergic, brief skin contact causes swelling and a red, itchy rash that becomes crusty and thickened with prolonged exposure. Allergic contact dermatitis is long lasting and more severe with repeated skin contact.

Q6. How can one be exposed to hexavalent chromium and other heavy metals?

A. One can inhale airborne particles as a dust, fume or mist while:

- producing chromate/lead pigments and powders, chromic acid, chromium catalysts, dyes and coatings.
- working near chrome electroplating.
- welding and hot working stainless steel, high chrome alloys and chrome-coated metal.
- applying and removing chromate/heavy metal containing paints and other surface coatings.

Q7. How can one be protected from hexavalent chromium and other heavy metals?

A. OSHA has taken steps to protect employees from health hazards caused by hexavalent chromium. The OSHA standard requires employers to:

- limit eight-hour time-weighted average exposure in the workplace to 5 micrograms or less per cubic meter of air.
- perform periodic monitoring at least every 6 months if initial monitoring shows exposure at or above the action level (2.5 micrograms per cubic meter of air calculated as an 8 hour time weighted average).
- provide appropriate personal protective clothing and equipment when there is likely to be a hazard present for exposure.
- implement good personal hygiene and housekeeping practices to prevent exposure.
- prohibit employee rotation as a method to achieve compliance with exposure limit (PEL).
- provide respiratory protection as specified in the standard.
- make available medical examinations to employees within 30 days of initial assignment, annually, to those exposed in an emergency situation, to those who experience signs or symptoms of adverse health effects associated with exposure, to those who are or may be exposed at or above the action level for 30 or more days a year, and at termination of employment.

(Visit www.osha.gov for more detailed information.)

The PPG Refinish website, www.PPGRefinish.com (under the [Safety](#) section) offers a list of [Products Containing Metals](#). These are PPG Refinish products that contain intentionally-added lead, hexavalent chromium, cadmium and/or selenium, coatings regulated under RoHS (Direction on the Use of Certain Hazardous Substances). Replacement products that do not contain these substances are listed and can be purchased through your PPG distributor.

IV. HEALTH PRECAUTIONS - EMPLOYEE PROTECTION:

A. GENERAL PRECAUTIONS

Know the product that you are using:

Before handling PPG refinish products, read and understand the information on the label and product Safety Data Sheet (SDS) which is explained in SECTION V of this handout, and product use instructions. The product label and SDS contain all of the information necessary for the safe handling, storage and use of PPG products including health and physical hazards specific to each product.

Housekeeping:

High standards of housekeeping are the basis of creating and maintaining a safe and healthy working environment. Strict attention to good housekeeping is therefore essential.

- Avoid contaminating work surfaces with overspray, sanding dust or spills.
- Clean spills immediately.
 - Make sure there are no ignition sources nearby.
 - Use proper Personal Protective Equipment.
 - Contain and collect large spillage with non-combustible or absorbent material (sand, earth, kitty litter, etc.). Do NOT allow spillage to enter drains. Exclude sources of ignition and ventilate the area.
 - After absorption, put spill clean-up material in hazardous trash for disposal.
- Maintain high standards of personal hygiene, e.g. operators should wash their hands before eating, drinking, and using the lavatory at the end of your shift.

Mixing and Handling:

Used or partially used containers should be securely closed, properly labeled and returned to the storage area as soon as possible after use.

Application:

- Operators should be protected against the inhalation of dusts, vapors and spray mists at all stages in the process by the provision of good standards of general ventilation, where necessary to keep atmospheric concentrations below dangerous levels. Local exhaust ventilation should be provided at all points where emissions to the workroom atmosphere may occur.
- Spraying must be confined to spray booths or enclosures fitted with mechanical exhaust ventilation.
- The mechanical exhaust ventilation systems should be kept running for a short period after spraying has stopped to ensure the complete removal of vapors and spray mists.

IV. HEALTH PRECAUTIONS - EMPLOYEE PROTECTION *(continued)*:

B. PERSONAL PROTECTIVE EQUIPMENT (PPE)

Observe all PPE signs in the facility. Appropriate PPE in the work areas include safety glasses with side shields and fully enclosed leather shoes. Additional PPE will be required in specific areas and for specific tasks.

Supplied Fresh Air Respirators: (recommended by PPG for spray applications)

A positive-pressure, supplied-air respirator or an air-supplied hood, approved under NIOSH/MSHA TC-19C, should be used when spraying isocyanate/heavy metal coatings. This respirator may also need to be used when performing hot work (welding, cutting, or brazing) on surfaces coated with isocyanate/heavy metals. Wear the respirator for the whole time of spraying and until all vapors and mists are gone.

Powered Air Purifying Respirators (PAPR):

These are motorized systems that use a filter to clean ambient air before it is delivered to the breathing zone of the user. Typically they include a blower, battery, headpiece and breathing tube. In low concentration areas, determined by industrial sampling and proper evaluation of air quality, the PAPR systems have proven to be an adequate source of protection.

Non-Supplied Air Respirators:

PPG does NOT recommend air purifying respirator (APR) use with isocyanate/heavy metal containing coatings. These respirators use a cartridge filter and no airline.

Eye/Face Protection:

A full-face respirator, or air-supplied hood, will protect the eyes and face from spray mist and solvent vapors.

Skin Protection:

Regarding gloves, substantial nitrile, neoprene or butyl rubber materials are highly preferred with 8 mil or similar being recommended. The use of latex gloves is not recommended. Protective anti-static paint suits are highly recommended and should also be used to prevent skin contact.

In the event of skin contact, wash with soap and water immediately to remove the product *before* it has a chance to act on the skin. If waterless hand cleaner is present, use it and then, again, use soap and water. **Solvents and thinners should NOT be used!**

Some examples of proper PPE usage follow on pages 14 and 15.

IV. HEALTH PRECAUTIONS - EMPLOYEE PROTECTION (continued):

B. PERSONAL PROTECTIVE EQUIPMENT (continued)

Eyes:













- Wear safety glasses when handling wet paint.
- Wear goggles when cleaning equipment.
- Two-pack spray mist can irritate eyes. Use a visor-type mask or a full-face mask to reduce risk of irritation.

Skin:

- Wear your anti-static spray suits with hat or hood to protect yourself and your job.
- Wear appropriate gloves for protection against solvents.
- Use hand cleaner, not thinner, to clean hands.

Inhalation:

- In areas like spray booths, correct, properly fitted respirators are required.
- Booth ventilation must be as designed, maintained, and operated correctly.
- It is a best practice to use a full-face air-supplied respirator for all spraying operations as this prevents the inhalation of any and all spray mists in the operating environment.
- An air-fed half-mask used in combination with safety glasses is also an acceptable form of protection.
- A mask must be worn when sanding.

	Eyes	Skin	Respiratory
Sanding			
Cleaning			
Mixing/ Setup			
Spraying			

IV. HEALTH PRECAUTIONS - EMPLOYEE PROTECTION (continued):

B. PERSONAL PROTECTIVE EQUIPMENT (continued)

Prep Station Example:

- Quality paint cap
- Safety goggles
- Lint-free, anti-static coveralls
- Leather gloves
- Safety shoes
- Approved dust respirator



Spray Booth Example:

- Quality paint cap
- Safety goggles
- Lint-free, anti-static coveralls
- Nitrile gloves
- Safety shoes
- Approved air-supplied mask or hood respirator



IV. HEALTH PRECAUTIONS - EMPLOYEE PROTECTION *(continued)*:

C. ELECTRICAL - BONDING AND GROUNDING

Static electricity is generated when liquids such as paints, resins, and solvents move in contact with other materials. This occurs with movement in pipes, mixing, pouring, pumping, filtering, filling and agitating. In some cases, especially with non-polar organic solvents, static electricity may even accumulate in the liquid. If the accumulation is sufficient, a static spark may occur. If the spark occurs in the presence of a flammable vapor-air mixture, an ignition and fire may result.

Controls need to be practiced by all associates handling flammable and/or combustible liquids to eliminate the potential for static build-up and discharge. These controls are commonly referred to as BONDING and GROUNDING.

Bonding: The connection of two (2) or more metal objects together by means of a conductor (bond wire).

Grounding: The connection of one (1) or more metal objects to building or earth ground by means of a conductor (ground wire).

General Guidelines:

1. For any flammable liquid transfers of more than one gallon (five liters), always use bonding and grounding techniques to control static electricity. Bonding assures equal charge between two objects or points, while grounding assures any charges are dissipated to the ground.
2. Always use clamps with two sharp points that are clean and in good condition. Do not use alligator clamps. Alligator clamps are all-purpose in nature and may not provide the best contact needed on a rim-type container.
3. Connections should be made before containers are opened. Always make sure to maintain good metal-to-metal contact.
4. Stretch wrap must be removed in a solvent-free area prior to moving material to the mixing or spray areas. Stretch wrap may cause static electricity.

IV. HEALTH PRECAUTIONS - EMPLOYEE PROTECTION *(continued)*:

D. FIRE and EXPLOSION

Volatile solvents make PPG products flammable and/or combustible. Work areas must be clean and properly designed for use and storage of flammable liquids. Paint and solvent products should be kept away from all sources of ignition including heat, sparks, flame, motors, burners, heaters, pilot lights, welding and static electricity generated by liquid transfer. Explosion-proof equipment, proper fire extinguishers and other extinguishing devices are prudent precautions to be taken in all operations.

Sources of Ignition:

- All possible sources of ignition should be strictly controlled including cell phones.
- Smoking should be prohibited in all areas where paint is stored, handled or used.
- Matches, lighters and cell phones should not be taken into any workroom.
- Electrical apparatus should be to a recognized standard.
- Vehicle engines should not be switched on or allowed to run where a flammable concentration of vapors may reasonably be expected to be present.
- Static electricity may be generated from activities in workrooms, e.g. from handling flammable liquids or from the wearing of unsuitable clothing and footwear. Under certain conditions, static charges may accumulate to dangerous levels giving rise to the risk of explosion.

To minimize the static risk, the following precautions should be observed where flammable liquids are handled or used:

- Dispensing equipment must be properly bonded and grounded.
- Paint/spray suits should be anti-static.
- Floors should be conductive and paint deposits regularly removed.
- Operators mixing, decanting or transferring flammable liquids should wear non-insulating footwear.
- Working surfaces should be constructed from conductive materials.

Fire Precautions:

- Means of escape should be adequate, clearly identified and kept free from obstruction at all times. Fire escape doors should be kept unlocked while the premises are occupied.
- Adequate fire prevention and fire fighting equipment should be provided and maintained in all areas where industrial finishing products are used, handled, and stored. Fixed automatic sprinkler systems may be appropriate to provide fire protection for some installations.

Environmental:

- Waste materials must be treated as a fire hazard.
- Empty containers can retain vapors of solvents present in the original product and are therefore hazardous with respect to fire, explosion, and noxious vapor risks. Storage in a non-combustible, clearly labeled container with a secure lid is recommended prior to disposal.










V. GLOBALLY HARMONIZED SYSTEM (GHS) OF CLASSIFICATION AND LABELING OF CHEMICALS:

A. OVERVIEW

The United States Occupational Safety and Health Administration (OSHA), on March 26, 2012, published the final rule on the Hazard Communication Standard (HAZCOM 2012) that will adopt the Globally Harmonized System of Classification and Labeling for Chemicals (GHS). The legislation became effective sixty (60) days after publication and provides several transition dates for employee training and revised safety data sheets and labels. In addition to the hazards defined in the GHS, OSHA has included requirements for disclosing additional hazards known about chemicals under a “hazards not otherwise classified” section. OSHA's new standard will classify chemicals according to their health and physical hazards and establish consistent labels and safety data sheets for all chemicals made in the United States or imported from abroad.

Visit <https://www.osha.gov/dsg/hazcom/hazcom-faq.html> for more information.

GHS Pictograms:

Health Hazard <ul style="list-style-type: none"> • Carcinogen • Mutagenicity • Reproductive Toxicity • Respiratory Sensitizer • Target Organ Toxicity • Aspiration Toxicity 	Flame <ul style="list-style-type: none"> • Flammables • Pyrophorics • Self-Heating • Emits Flammable Gas • Self-Reactives • Organic Peroxides 	Exclamation Mark <ul style="list-style-type: none"> • Irritant (skin and eye) • Skin Sensitizer • Acute Toxicity • Narcotic Effects • Respiratory Tract Irritant • Hazardous to Ozone Layer (non-mandatory) 
Gas Cylinder <ul style="list-style-type: none"> • Gases Under Pressure 	Corrosion <ul style="list-style-type: none"> • Skin Corrosion/Burns • Eye Damage • Corrosive to Metals 	Exploding Bomb <ul style="list-style-type: none"> • Explosives • Self-Reactives • Organic Peroxides 
Flame Over Circle <ul style="list-style-type: none"> • Oxidizers 	Environment <i>(non-Mandatory)</i> <ul style="list-style-type: none"> • Aquatic Toxicity 	Skull and Crossbones <ul style="list-style-type: none"> • Acute Toxicity (fatal or toxic) 

V. GLOBALLY HARMONIZED SYSTEM (GHS) OF CLASSIFICATION AND LABELING OF CHEMICALS (continued) :

B. SDS INFORMATION

PPG has adopted the 16-section SDS based on the ANSI z.400 Standard (an industry consensus standard for SDS content). The format is compliant with requirements of the U.S. OSHA Hazard Communication Standard, Health Canada Workplace Hazardous Materials Information System (WHMIS), and Mexican NOM-018-STPS-2000. The following outlines what information is contained in each section.

Section 1 - Identification

- Product identifier
- Contact information for the manufacturing company
- Emergency phone numbers
- Recommended use
- Restrictions on use

Section 2 - Hazard(s) Identification

- All hazards regarding the chemical
- Required label elements

Section 3 - Composition/Information on Ingredients

- Information on chemical ingredients
- Trade secret claims

Section 4 - First Aid Measures

- Important symptoms/effects, acute, delayed
- Required treatment

Section 5 - Fire Fighting Measures

- Suitable extinguishing techniques and equipment
- Chemical hazards from fire

Section 6 - Accidental Release Measures

- Emergency procedures
- Protective equipment
- Proper methods of containment and cleanup

Section 7 - Handling and Storage

- Precautions to be taken during handling and storage
- Incompatibilities

Section 8 - Exposure Controls & Personal Protection

- OSHA's Permissible Exposure Limits (PELs)
- Threshold Limit Values (TLVs)
- Appropriate engineering controls
- Personal Protective Equipment (PPE)

V. GLOBALLY HARMONIZED SYSTEM (GHS) OF CLASSIFICATION AND LABELING OF CHEMICALS (continued):

B. SDS INFORMATION (continued)

Section 9 - Physical & Chemical Properties

- Lists the chemical's characteristics

Section 10 - Stability and Reactivity

- Chemical's stability and possibility of hazardous reactions

Section 11 - Toxicological Information

- Routes of exposure
- Related symptoms, acute and chronic effects
- Numerical measures of toxicity

Section 12 - Ecological Information*

Section 13 - Disposal Considerations*

Section 14 - Transportation Information*

Section 15 - Regulatory Information*

Section 16 - Other Information

- Includes date of preparation or last revision

*Note: Since other agencies regulate this information, OSHA will not be enforcing Sections 12 through 15 (29 CFR 1910.1200(g)(2)).

Employers must ensure that SDS are readily accessible to employees.

How to get PPG SDS Information

Any PPG Automotive Refinish customer can order SDS information on CD or in printed form from their **authorized PPG Distributor**.

Both *distributors* and *end users* can obtain individual PPG SDS information by calling toll-free, **PPG Technical Support** at **1-800-647-6050** Monday through Friday between 8AM and 6PM EST or by visiting the PPG Website at www.PPGRefinish.com.

V. GLOBALLY HARMONIZED SYSTEM (GHS) OF CLASSIFICATION AND LABELING OF CHEMICALS (continued):

C. PROPER LABELING OF INTERMIX COLORS

The Federal Occupational Safety and Health Administration's (OSHA) "Right to Know Law" requires the proper labeling of paint cans designed to correspond with the proper SDS information. This must also take place any time a pre-packaged paint product is transferred into a different container. By law this means anyone who intermixes, packages, or transfers paint products, will be held accountable for the proper labeling of the container. To help the PPG Intermix user comply with the law, they must understand the intermix labeling system. To further simplify the labeling system, **PPG intermix label numbers correspond with SDS numbers.**

Example:

- #1 - all formulas without lead, chromium, cadmium, manganese, or nickel
- #2 - Inactive identifier, not currently used
- #3 - formulas containing nickel *may also contain trivalent chromium and/or manganese, but no lead, hexavalent chromium or cadmium*
- #4 - formulas containing lead, hexavalent chromium, and/or cadmium *may also contain nickel, trivalent chromium and/or manganese*
- #5 - formulas containing trivalent chromium and/or manganese *but no nickel, lead, hexavalent chromium, or cadmium*

Example of a PPG intermix formula showing location of SDS number:

Manufacturer: TOYOTA Description: DESERT SAND, FROSTED MINK
Brand Code: 6653 Usage: Trim,Body
OEM Code: 4Q2,A4419
Paint System: DELTRON 2000 (DBC MET) variant: PRIME
VOC Reg.LWLE: 5.71 lbs/gal VOC Act: 5.71 lbs/gal MSDS DBC1
Color Box: SBVD TOY102 BRN
Instructions
Use undercoat G3 for best results; Lead-Free Formula;
Formula Display Layer 1/1
Main Layer 5653
Code Descr.
DMD649 CLEAR
DMD1690 CRS. ALUM.
DMD1687 MED. ALUM.
DMD1683 BLACK
PRL93 GOLD PEARL
DMD1610 ORANGE
DMD1605 MAGENTA
DBX1689 CLEAR
U.S. Quarts
7 8 9
4 5 6
1 2 3

Be sure to use the proper label for each intermix formula. It is not just a "good idea" or a suggestion, **it's the LAW!**

- PPG distributors can order intermix labels through PPG's online ordering system.
- Anyone using a PPG Automotive Refinish mixing system should contact their PPG distributor for assistance in ordering, maintaining an inventory and using the correct intermix labels.

VI. WASTE PROCEDURES:

- Information supplied in our SDS for coatings and cleaners can be used to define wastes generated for processes using these products. When disposing of wastes, it is essential to know what hazardous chemicals are contained in the waste and any flammable, corrosive and/or toxic natures that might exist. Federal, state and local regulations define the requirements for waste collection, transport and disposal. Only qualified, licensed waste transporters and disposal facilities should be used.
- Used booth filters would be contaminated with the same chemicals described in the SDS and should be handled appropriately. All wastes can be tested by certified environmental laboratories to determine the proper regulatory disposal requirements.
- Rags and wipes also can be contaminated with the same chemicals but rules vary by location. Dry, used wipes may be considered hazardous or non-hazardous depending on the listed composition of products they have been used to clean. However, saturated wipes, particularly those used with cleaning solvents, are frequently rated hazardous. In this situation, it is best to get a ruling from the local agency responsible for enforcing the hazardous waste program in your area (EPA and/or your state or local agency).
- Liquid waste can be flammable and must be counted as inventory.
- The U.S. EPA and most states exempt empty containers from the Resource Conservation and Recovery Act (RCRA) controls if they meet the definition of “empty” found in 40 CFR 261.7(b). According to 40 CFR 261.7(b), the EPA allows a container that once held a non-acute hazardous waste to be considered empty and NOT subject to hazardous waste regulation when all waste that can be removed has been removed using common practices such as pouring, pumping and aspirating. The regulation also specifies the following:
 - Individual containers less than or equal to 119 gallons - No more than one inch of residue can remain in the bottom or on the inner liner of the container representing no more than 3% (by weight) of the container’s total capacity. Container examples include pint, quart and gallon cans, 55 gallon drums, etc.
 - Individual containers greater than 119 gallons - No more than 3% (by weight) of the container’s total capacity can remain in the container.



However, the local interpretation of this rule can vary. When in doubt, consult with the local agency responsible for enforcing the hazardous waste program in your area.

VI. WASTE PROCEDURES *(continued)*:

TCLP WASTE CHARACTERIZATION *(Toxicity Characteristic Leaching Procedure)*

Facilities that use refinish coatings will generate waste streams that must be managed and disposed of following federal, state and local regulations. Waste streams including used booth filters must be handled properly. Regulations typically require that these waste streams be characterized as either hazardous or non-hazardous prior to disposal.

If a waste stream is known to contain leachable/soluble heavy metal pigments/additives (e.g. leads, hexavalent chromium, cadmium, barium, selenium and mercury), specific methods of treatment and disposal may be required. The composition of these waste streams would likely be classified as hazardous waste due to its characteristic of toxicity, using the Toxicity Characteristic Leaching Procedure (TCLP), test Method 1311 (40 CFR 260.11). In addition, some waste streams are specifically identified as hazardous waste regardless of their characteristics. Reference should be made to the Resource Conservation and Recovery Act regulations located at 40 CFR 260 through 40 CFR 270 or applicable state regulations to determine whether a waste stream should be managed as hazardous waste. The generator of the waste stream is responsible for characterizing the waste. It is the generator's responsibility to consult appropriate local agencies to determine which wastes must be managed as hazardous.



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VII. FACILITY OPERATING REQUIREMENTS:

In order to maintain a safe and productive facility operating within government specifications, managers must be aware of local, state and federal requirements and (when necessary) consult with those government bodies for licensing approvals. A manager of a refinish facility must consider a number of regulations which impact day-to-day operations and long-term growth plans, including:

Permits:

- When considering building a facility or major renovation, before construction, building location, designs for the building, plumbing, electrical and mechanical systems installation typically must be approved by the local planning department, building department or plan examiners' office to obtain building permits. Building permit approval will be based on nationally recognized building codes such as the International Building Code (IBC), National Fire Protection Association (NFPA) and local requirements. Permits are also the basis for periodic inspections during construction by local municipality building inspectors, including but not limited to fire department, plumbing, and electrical inspectors.
- The state or local environmental agency may require a "permit to build" or "permit to operate".
- Title V operating permits issued mostly by states or local authorities, are required for large sources and some smaller sources. Emissions monitoring, tracking, recordkeeping and regular certifications of compliance are common procedures specified in a Title V operating permit.
- State and local environmental agencies may require an air permit for a smaller emission source similar to a Title V permit or permit to operate. This permit may require periodic renewals. It is possible that an application for a change in the permit would be required if an increase in emissions is projected.
- The local fire department must be notified of the facility's intent to operate within their jurisdiction. This can be done independently or is often done by the local municipality's building department during the plan review process. The fire department will want to know the nature of the chemicals found in the products used in the operation, especially the flammability but also possibly corrosivity, reactivity and toxicity. The fire marshal will likely want to inspect the facility. Typically there are limits on the amount of flammables that can be stored within a facility. They may also provide requirements on fire protection equipment.

VII. FACILITY OPERATING REQUIREMENTS (continued):

Application Process Limits:

- Only the largest facilities can be described as major sources of hazardous air pollutant (HAP) emissions which fall under federal rules called NESHAPs (National Emission Standards for Hazardous Air Pollutants) found at 40 CFR Part 63 MMMM and 40 CFR Part 63 PPPP. The Federal EPA created the list of Hazardous Air Pollutants, chemicals that cause or may cause cancer or other serious health effects, such as reproductive or birth defects, or adverse environmental and ecological effects. To be a major source, these facilities must emit at least 10 tons per year of any single HAPs or 25 tons of mixed HAP. For these facilities, HAP limits on a lbs/gal coatings solids or lbs/lb coatings solids are specified with recordkeeping required for validation.
- At a minimum, all refinish and fleet operations (disregarding the size of the facility) must comply with the national rule for refinish coatings found at 40 CFR Parts 9 & 59. This regulation sets ready-to-spray VOC limits for coatings by the intended use definition. Many states have similar rules and some localities also have lower limits intended to reduce VOC emissions for coatings and cleaners. Rules may also impact content (heavy metals, exempt solvents...) and equipment requirements (spray booths, HVLP...).
- VOC and HAP documentation is frequently a reporting requirement of regulating agencies. On its VOC charts and Product Data Sheets (PDS), PPG supplies “as packaged” and “ready-to-spray” VOC information. This information is also available on www.PPGRefinish.com or from your local PPG distributor.
- SDS are available on www.PPGRefinish.com or upon request from your local PPG Territory Manager. SDS contain hazardous ingredients, correct personal protective gear and address EH&S concerns. More detail on this subject is addressed in Section V of this manual.

Air permits may also define requirements related to booth filters. This may include inspection or replacement frequency and pressure drop requirements.

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VIII. INSPECTIONS:

As previously discussed, the local fire department and local municipality inspectors for building, electrical and plumbing may examine your facility - including spray booths, storage areas, emergency lighting, sprinkler systems and any number of aspects concerned with the safe operation of your business. Maintaining these structures and support functions is an absolute necessity.

- The state and/or local agencies may review your permits, emissions and waste generation protocols.
- OSHA can inspect with respect to worker safety including hazardous chemicals exposures, training, housekeeping and right to know issues.

It is in every facility's best interest to run a safe and compliant operation. This summary is not intended to be all inclusive as protocols vary widely among localities. The key for an efficient operation is to maintain lines of communication with regulating authorities, to know where to find regulations that impact your operations and to understand them. The final rule as always... "When in doubt, consult with the appropriate authorities."



Health, Safety and Environmental Awareness

The materials used in PPG products have been specially selected for their contribution to the high performance and long-life characteristics of the coating: gloss, toughness, fast dry, etc. This high performance is achieved through the use of ingredients which may be hazardous if used improperly. Specific warnings are applied to each PPG product to alert the user to these hazards. Appropriate attention to these precautions are essential to the proper use of the coating. Read all labels and instructions carefully and fully understand their content.



Automotive Refinish

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