



Australian Paint Manufacturers' Federation Inc.

# Code of Practice for the Automotive Refinishing Industry

**NOVEMBER 2015**

This Code of Practice has been developed by the Australian Paint Manufacturers' Federation Inc. (APMF) in the interests of a safer and healthier workplace. Its purpose is to identify the precautions which should be taken when using automotive refinish products and the equipment and methods of application most likely to achieve the desired standard of safety.

It should not, however, be regarded as prescriptive as, to a large extent, each application is unique. Spray shop operators should consult with their paint supplier as to the particular precautions to be taken when using that supplier's product.

Regulations for spray painting and storage of paint materials vary from region to region and users should familiarise themselves with the local regulations.

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## Table of Contents

1	INTRODUCTION .....	5
1.1	Scope of this Code of Practice .....	5
1.2	Basic Handling Requirements .....	5
2	CHEMICAL SUBSTANCES .....	6
3	WORKSHOP OPERATIONS .....	7
3.1	General .....	7
	Personal Protection and General Hygiene .....	7
	Paint Specifications.....	8
	Special Handling Precautions .....	8
	Housekeeping.....	9
3.2	Surface Preparation Prior to Painting.....	10
3.3	Mixing and Decanting .....	11
3.4	Application .....	11
	Hazards of Dust, Fumes, Vapours and Sprays .....	11
	Peroxide, Acid and Organic Catalysts and Activators .....	12
	Isocyanate Catalysed Paint.....	12
3.5	Drying and Finishing .....	12
4	GUIDE TO PERSONAL PROTECTIVE CLOTHING AND EQUIPMENT .....	13
	Sanding/Dust-Producing Jobs, eg, Sweeping .....	13
	Wet Sanding/Wet Jobs, eg, Detergent Cleaning .....	13
	Paint Stripping Using Chemical Strippers.....	13
	Metal Pre-Treatments.....	14
	Lacquer and Enamel Spray Painting (not containing isocyanates).....	14
	Enamel Spray Painting (containing isocyanates).....	14
5	STORAGE OF MATERIALS .....	15
5.1	Regulations.....	15
5.2	Approvals .....	15
5.3	Product Classification .....	16
5.4	Packaging and Labelling.....	17
5.5	Paint and Thinner Storage .....	18
5.6	Workroom Storage .....	18
5.7	Storage of Peroxides.....	18
5.8	Precautions with Certain Ancillary Products.....	19
5.9	Safety Data Sheets.....	19
	Responsibility of Spray Shop Operator .....	19
	What You Will Find in a SDS .....	20
6	FIRE: PRECAUTIONS AND FIGHTING .....	21
	Risks	21
	Source of Ignition.....	21

Ventilation.....	22
Emergency Planning .....	22
Fire Protection.....	22
APPENDIX I.....	23
RECOMMENDED HEALTH AND HYGIENE GUIDELINES FOR HANDLING ISOCYANATE CONTAINING PRODUCTS.....	23
1 Introduction .....	23
2 Toxicity Summary .....	23
3 Personnel .....	23
4 Protective Clothing and Equipment.....	24
5 Storage, Mixing and Handling .....	24
6 Application .....	24
7 First Aid .....	25
8 Contaminated Clothing .....	26
9 Spills.....	26
10 Labelling .....	26
APPENDIX II .....	27
AUSTRALIAN STANDARDS REFERRED TO IN THIS CODE OF PRACTICE .....	27

# 1 INTRODUCTION

## 1.1 Scope of this Code of Practice

This Code of Practice relates to the tasks associated with vehicle refinishing only and no other trade market sectors are considered.

State and Commonwealth legislation and regulations with regard to the following should be studied and complied with:

- Health and safety at work;
- Storage and transport of flammable and dangerous substances;
- Spray painting;
- Welding;
- Fire prevention;
- Protection of the environment;
- Other topics associated with vehicle refinishing.

## 1.2 Basic Handling Requirements

Products for vehicle refinishing may be used with safety provided all the following points are observed:

- Label, Manufacturer's Product Specification Sheet and Material Safety Data Sheet instructions and recommendations are followed.
- Safe working practices are maintained.
- Paints and other products including machinery are handled carefully.
- High standards of housekeeping and fire prevention are maintained.
- Protective clothing and equipment are supplied, correctly maintained and used.
- High standards of industrial and personal hygiene are maintained.
- Effluent is treated and disposed of in a correct manner.
- Location, design and work practice are such that the environment both within and outside the workplace is not polluted by fumes, dust or liquid effluent.

All refinish paints, by their nature, possess properties which, if improperly stored or used, may result in fires and explosions and other health hazards.

## 2 CHEMICAL SUBSTANCES

Chemicals used in the surface coatings industry have become safer over time; however the hazards are still significant. Chemical hazards can vary from dermatitis, burns and flash fires through to cancer detected many years after exposure. It is not only paints, thinners, strippers and cleaning products that must be considered, it is also dusts that are created from work activities. Chemicals are classified according to their properties.

A new system of hazard classification and communication for workplace chemicals came into effect with the model work health and safety laws on 1 January 2012.

This system is called the Globally Harmonised System of Classification and Labelling of Chemicals (the GHS).

The GHS has been developed by the United Nations. The GHS is an important new tool that countries can use to develop or enhance their own national chemical regulation systems. The GHS provides a uniform way of classifying chemicals, as well as informing chemical users about chemical hazards they may be exposed to.

The GHS builds on the attributes of existing national regulatory systems to form a single international system that has application across a wide range of chemicals and hazard types. The GHS when implemented will:

- enhance the protection of human health and the environment by providing an internationally comprehensible system for hazard communication;
- provide a recognised framework for those countries without an existing system;
- reduce the need for testing and evaluation of chemicals; and
- facilitate international trade in chemicals whose hazards have been properly assessed and identified on an international basis.

### GHS Pictograms

Pictograms are a key hazard communication tool within the GHS. They are designed to appear on chemical labels. The pictograms give an immediate indication of the type of hazard that the chemical may pose. They are intended to be used in combination with other harmonised GHS elements which together convey information about the type, severity and management of chemical hazards.

A link to the new pictograms can be found at:

<http://www.unece.org/trans/danger/publi/ghs/pictograms.html>.

After 1 January 2017 all chemicals supplied for use must comply with the new requirements. These changes do not apply to requirements under the ADG Code for the transport of dangerous goods.

## 3 WORKSHOP OPERATIONS

### 3.1 General

#### Personal Protection and General Hygiene

##### Risks

The main health risks which may arise from incorrect use of vehicle refinishing products are:

- Inhalation of solvent vapours which may lead to dizziness, nausea and mental confusion. Severe exposure may lead to loss of consciousness and even death. Irritation to the respiratory system and internal damage may also occur.
- Inhalation of dusts and spray mists may also lead to irritation or permanent sensitisation of the respiratory system.
- Contact with skin may cause irritation which, if repeated and prolonged, may lead to dermatitis. Skin absorption may occur with certain products and in the long term may result in damage to internal organs.
- Contact with the eye may lead to irritation and, with certain products, to 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.

In addition, many repair and refinishing processes involve risks associated with the use of machinery and compressed gases or air. For instance:

- Welding equipment and angle grinders can give rise to sparks, projectiles, hot metal and fumes and provide sources of ignition.
- Soldering and leading can give rise to inhalation and ingestion of lead and other metal.
- Rotary sanders and polishers can produce projectiles, dust and accidental cuts and abrasions.
- The misuse of compressed air can lead to explosions or produce dusts or spray mists.
- All equipment generates noise to a greater or lesser degree.

##### Precautions

Precautions to be observed to control these hazards include the following:

- High standards of housekeeping. Refinishing shops should complete a hazardous substance assessment to determine the presence of hazardous substances and a hazardous substance training assessment in accordance with guidance provided in each State or Territory jurisdiction.
- High standards of personal hygiene. Operators should wash their hands before eating, drinking, smoking or using the toilet.
- Eating, drinking and smoking should be prohibited in all working areas so as to avoid accidental ingestion. Food and drink should not be brought into, stored or prepared in work rooms and storage areas where paint and thinners are handled and stored.
- To avoid the accidental drinking or other misuse of products, these should be kept in their correctly identified original containers.
- Operators should be protected against the inhalation of dusts, vapours and spray mists at all stages in the process. Preferably this should be done by local mechanical exhaust ventilation or if this is not practicable by good standards of general ventilation. All paint spraying should be conducted in a spray booth.



- In addition to adequate standards of control maintained by exhaust ventilation or general ventilation, respiratory protective equipment should be worn.
- Protective clothing should be worn to prevent skin contact. Overalls and gloves should be worn. Splashes of paint on the skin should be removed promptly with soap and water. If necessary, a proprietary skin cleaning material should be used. Solvent thinners should not be used for skin cleansing. A suitable barrier cream may help to protect exposed areas of skin.
- Whenever there is a risk of material splashing into the eyes, for example when opening tins or mixing, chemical-type goggles conforming to *AS/NZS 1337:2010 Eye Protectors for Industrial Applications* should be worn. Contact lenses afford no protection to eyes and wearers should also wear goggles if there is a risk of eye contamination.
- Splashes of paint may irritate the eyes and should be treated promptly by flushing with copious amounts of clean water for at least 10 minutes holding the eyelids apart. Medical attention should be sought immediately.
- For contact lens wearers, if material splashes into the eyes the contact lenses must be removed immediately and decontaminated, and the eyes treated promptly by flushing with copious amounts of water for at least 10 minutes holding the eyelids apart. Medical attention must be sought immediately.
- Whenever there is a risk of material or projectiles entering the eyes, for example when sanding, safety spectacles should be worn.
- Ear muffs should be worn to protect against high noise levels.
- Refinishing shops should develop procedures to ensure that visitors are not exposed to hazards related to tasks associated with vehicle refinishing processes.

## Paint Specifications

Where low VOC systems are required, body fillers, primers, base coats and clears used are to be either EU or US compliant. The current EU and US Regulations are as follows:

### EU

In Europe VOC emissions from automotive refinish products are regulated by the European Commission Paints Directive 2004/42/EC.

[http://ec.europa.eu/environment/air/pollutants/stationary/paints/paints\\_legis.htm](http://ec.europa.eu/environment/air/pollutants/stationary/paints/paints_legis.htm)

### US

The regulatory reference for the US is the South Coast Air Quality Management Districts (SCAQMD) VOC regulations called, MOTOR VEHICLE AND MOBILE EQUIPMENT NON-ASSEMBLY LINE COATING OPERATIONS Rule 1151. Rule 1151 regulates the VOC content of automotive refinish coatings for vehicles painted in a non-assembly line operation such as body shops. SCAQMD has the lowest VOC requirements in the US, so compliance with these requirements means compliance with all of the other states VOC rules regardless of whether the states VOC rules are state or federal mandated regulations, hence 50 state compliant. A link to the regulation follows.

<http://www.aqmd.gov/docs/default-source/rule-book/reg-xi/rule-1151.pdf?sfvrsn=6>

## Special Handling Precautions

### Catalysts

The introduction of new formulations and/or the possible identification of new hazards in existing products may also require additional precautions. Users should take note of information and advice made available from manufacturers and from the Federal and State Authorities.

Peroxide catalysts, acid catalysts and organic catalyst activator/hardeners and accelerators should be washed off thoroughly with soap and water. Paint thinners or solvents should not be used. Medical attention should be sought immediately if any material splashes into the eye, or if skin irritation persists or a rash develops.

### **Isocyanate Hardeners**

This section refers to two-pack paint systems, one part of which consists of an isocyanate adduct containing a small percentage of free volatile isocyanate.

As with all paints, precautions have to be taken when spraying them, but there are hazards peculiar to these paints arising from the use of the isocyanates. Unless proper precautions are taken, there is a potential hazard from the isocyanate because they are respiratory sensitisers.

A sensitised person will react to very low concentrations of isocyanate. Symptoms of chest tightness or wheezing may occur. However, there is a rapid recovery when exposure ceases.

Persons with a history of asthma should not be engaged in any process which involves the use of isocyanates. Workshops engaged in spraying products containing isocyanates are advised to have spray operators medically examined before employing them in this work. Persons showing adverse symptoms should obtain medical advice immediately. Workshops should check State or Territory regulations for Health Surveillance requirements for isocyanates.

For more information on the handling of isocyanate-containing paints see Appendix I.

### **Preparatory Materials**

When using preparatory materials containing phosphoric acid and methylene chloride, eye protection, PVC gloves, boots and an apron should be worn and a protective cream applied on the hands.

### **Other Products**

The paint manufacturers' Safety Data Sheets, (SDS), product data sheets and labels should be consulted regarding the selection of the correct respiratory protection for all products. Cartridge respirators conforming to *AS ISO 16900.11:2015 Respiratory Protective Devices* must be worn as the minimum protection when any refinish product is being sprayed. A vapour/particulate cartridge designed for paint spray and light fume protection should be used.

For dry sanding operations, a cartridge respirator conforming to *AS ISO 16900.11:2015 Respiratory Protective Devices* and fitted with a particulate cartridge is recommended, but the use of the vapour/particulate cartridge type used when spraying will suffice.

### **Housekeeping**

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

- Containers not in use should be kept tightly lidded.
- Ideally, products should be retained in original containers with their labels intact. However, where material is transferred for storage from the original to a different container, that should be labelled to show contents and hazards.
- The accumulation of spray deposits on booths, trunking and fans should be prevented by frequent cleaning and removal.
- Spillages should be cleaned up immediately. A supply of dry sand or other suitable non-combustible absorbent material should be readily available.
- Dried deposits of all paints should be removed.

- Sweepings and scrapings should be placed immediately in a metal container, wetted down with water and kept covered with a metal lid until removed from the building to a safe place. They should be disposed of in an environmentally safe way in accordance with local/state recommendations or regulations.
- Rags and other combustible materials should be deposited after use in a metal container with a suitable metal cover, or be removed without delay to a safe place outside the building. They should be disposed of in an environmentally safe way in accordance with local/state recommendations or regulations.
- Similarly, spray booth residues must not be stored or mixed with other products.
- Waste and rubbish should be removed from all working and storage areas at least daily.
- Peroxide catalysts must be disposed of with extreme care, because of the fire risk.
- Isocyanate hardener residues should be absorbed onto sand or earth or other inert material, and placed in a sealed container. Empty hardener containers should be filled with water, capped and disposed of in an approved manner.
- Other residues and paint waste produced during chemical stripping should be placed in a metal container and lidded. Disposal should be in an environmentally safe way in accordance with local/state recommendations or regulations. No residues or waste should be allowed to enter the sewerage system.
- All flammable products or those which constitute a serious health hazard must be disposed of with the utmost care. All vehicle refinishing products should be considered as potentially environmentally hazardous chemicals which must be disposed of in an approved manner and should not be allowed to enter the sewerage system or stormwater drains. Respiratory protection should be used as required.

### 3.2 Surface Preparation Prior to Painting

The following precautions should be observed at the different stages of operation:

- *Hot Work* such as cutting, welding or brazing should be strictly controlled to minimise fire risk. This may be done by separating these activities from flammable materials by partitioning, ensuring an adequate distance between activities, or by scheduling the work so that the activities are not undertaken when flammable vapours are likely to be present. Minimum distances are specified by regulation in some States.
- Paint surfaces subjected to high temperatures may emit complex harmful fumes, which may include lead, isocyanates, etc. To avoid inhalation of these fumes respiratory protective equipment should be worn.
- *Hot Work* on isocyanate or polyurethane foam filled cavities should not be carried out until as much foam as possible has been scraped away and removed.
- Dry sanding of painted surfaces may produce high levels of inhalable and ingestible lead, zinc chromate and other harmful substances. This applies to machine and hand operations. During such operations respiratory protective equipment should be worn.
- Wet sanding or dustless (vacuum) dry sanding methods should be used where possible to avoid the creation of dust.
- Protective gloves should be worn during all wet and dry sanding operations to avoid the risk of skin irritation.
- Paint removers and metal pre-treatment solutions should be used strictly in accordance with the manufacturer's instructions. Contact with skin and eyes and the inhalation of vapours should be avoided by the use of suitable protective clothing and adequate ventilation.

### 3.3 Mixing and Decanting

All decanting and mixing should be carried out in a well-ventilated area away from the storage and application areas. All possible sources of ignition should be strictly controlled. Smoking should be prohibited in all areas where paint materials are handled or used.

All operatives should wear gloves and goggles to avoid skin and eye contact with paint products, and suitable respirators should be used to prevent inhalation of vapours.

The installation and use of electrical apparatus must be carefully specified and controlled to eliminate the risk of ignition where a high concentration of vapour from highly flammable liquids is likely to be present, e.g. electric lighting and ventilation fans should be flame proofed.

After decanting the new container should be correctly labelled.

Matches and lighters should be banned and care should be taken to eliminate other sources of ignition, for example, sparks from static. Adequate ventilation must be provided to prevent dangerous concentrations of vapours from highly flammable liquids. Accumulation of potentially flammable solid paint residues should be avoided.

The strictest attention to good housekeeping must be observed. Products which are potentially hazardous must be separated, all containers must be kept lidded and all places where dry paint deposits can accumulate should be cleaned frequently. All ventilation ducts should be fire-resistant and regularly cleaned. Any sweepings or scrapings should be placed immediately in metal receptacles, with a suitable cover, wetted down and removed from the building.

All spillages should be cleaned up as they occur, and the material absorbed onto sand or earth or other inert material.

Any rags or other combustible material must be deposited after use in a metal container with a suitable metal cover, or be removed without delay to a safe place outside the building. Any waste material collected must be treated as a fire hazard and disposed of in accordance with local regulations.

It is imperative that no material be allowed to enter the drains.

### 3.4 Application

#### Hazards of Dust, Fumes, Vapours and Sprays

Spraying should be confined to spray booths or enclosures fitted with mechanical exhaust ventilation. Spraying outside the spray booth may be permitted under local regulation but it is recommended that in normal vehicle refinishing all spraying, including the spraying of cleaning solvents, is conducted within a spray booth conforming to local regulations.

Booths and similar enclosures should be designed, installed and maintained to provide sufficient air flow velocity to prevent any vapours or spray mists escaping into the general atmosphere of the workroom or the operator's breathing area. Exhaust ventilation should be designed so that vapours and filtered spray mists are conducted away to a safe place in the open air without the possibility of re-entry into any buildings, e.g. by a suitable chimney conforming to local regulations. Design parameters are usually contained within State spray painting and environmental regulations.

Booths should be constructed of fire resistant materials and fitted with either replaceable dry filters or a water wash system to prevent the discharge of residues into the general atmosphere.

Water washed or water backed booths are recommended because of their greater effectiveness and safety.

The accumulation of spray deposits on booths, trunking and fans should be prevented by frequent cleaning and removal.

Mechanical exhaust ventilation should be kept running for a short period after spraying has stopped to ensure the complete removal of vapours and spray mist.

Spray operators must wear suitable respiratory protective equipment.

### **Peroxide, Acid and Organic Catalysts and Activators**

These products are used because of their reactive characteristics. The effects of these products and mixtures of these products with base paint when in contact with skin and eyes are more severe than with other products.

Special care must be taken to avoid contact with the skin and with the eyes. During spraying, as with all paint products, suitable respiratory protective equipment must be worn.

### **Isocyanate Catalysed Paint**

(For a fuller treatment of this subject see Appendix I)

When isocyanate paints are applied by spray, the aerosol mist droplets produced are mainly in a respirable size range and precautions to avoid inhalation are necessary.

Air fed respiratory protective equipment must be worn by spray operators and observers even when good ventilation is provided. Spray booths must be designed and maintained to ensure that persons nearby who may be unconnected with the spraying operation are not affected by spray droplets or vapour. Operators should work inside the spray booth. They should wear air-line respirators complying with *AS ISO 16900.11:2015 Respiratory Protective Devices*, or other air-fed equipment which provides equivalent protection both during the spraying process and until such time as the spray mist has cleared.

Persons entering the spray booths or enclosures for short periods when spraying is taking place must also be protected from inhaling the spray mist by wearing suitable air fed respirators.

When operators are required to work within the booth, a monitoring system shall be provided for sensing airflow such that if the airflow falls below an acceptable level or fails, spray painting cannot be carried out in accordance with *AS/NZS 4114.1:2003 Spray Painting Booths – Design, Construction and Testing* Section 4.2.2.1 (d).

## **3.5 Drying and Finishing**

Ventilation in drying/curing enclosures should be sufficient to prevent the accumulation of flammable vapours evaporating from the paint film together with petrol evaporating from the tank of the vehicle whether the enclosure is heated or not.

Heated drying enclosures should be designed, constructed, operated and maintained in accordance with local regulations. Explosion panelling should be built into such enclosures.

Operators should spend as little time as possible inside the enclosure during the drying/curing period.

Operators engaged in compounding or polishing procedures involving the use of machine polishers should wear safety spectacles or goggles to prevent splatter into the eyes, and preferably overalls and gloves.

Operators engaged in hand polishing should wear gloves.

## 4 GUIDE TO PERSONAL PROTECTIVE CLOTHING AND EQUIPMENT

The selection of personal protective clothing and equipment, particularly respiratory protective equipment must be done carefully and with proper consideration to the circumstances in which it will be used. Wherever possible, equipment manufactured in accordance with an Australian Standard should be used.

Equipment should not only be suitable for the hazard to be met but also suitable for the person using it. All operators engaged in or in the vicinity of the following operations should wear the following protection:

### Sanding/Dust-Producing Jobs, eg, Sweeping

- **Inhalation**

A dust mask, or preferably a cartridge respirator conforming to *AS ISO 16900.11:2015 Respiratory Protective Devices*, and fitted with a vapour/particulate cartridge type used when spraying, is recommended.

- **Eye Protection**

Safety glasses or goggles should be worn.

- **Skin Protection**

Wear an overall and hood, e.g. a boiler suit, and gloves. Gloves should be of the cotton, PVC, leather or rubber types.

NB: Treat all sanding, sweeping operations, etc. as if the dust contains lead or other toxins. High levels of personal hygiene must be maintained. Use of barrier cream recommended.

- **Ear Protection**

Ear Muffs should be worn when required to protect against high noise levels.

### Wet Sanding/Wet Jobs, eg, Detergent Cleaning

- **Inhalation**

Unless solvent vapour is present, no mask is necessary.

- **Eye Protection**

Safety glasses or goggles should be worn where there is a danger of splashing.

- **Skin Protection**

Wear an overall, e.g. a boiler suit, and gloves. Gloves should be of the PVC or rubber types.

NB: Treat all sanding operations, etc. as if the dust contains lead or other toxins. High levels of personal hygiene must be maintained. Use of barrier cream recommended.

### Paint Stripping Using Chemical Strippers

- **Inhalation**

For solvent based chemical strippers an organic vapour respirator conforming to *AS/NZS 1716:2012 Respiratory Protective Devices*, must be worn. As the activated carbon canister has only a limited working life depending on time and organic vapour concentration (which depends on the degree of ventilation/extraction), an air supplied breathing apparatus should be considered.

- **Eye Protection**

Goggles conforming to *AS/NZS 1337:2010 Eye Protectors for Industrial Applications* must be worn. If air supplied breathing apparatus is chosen it should be full face to cover the eyes, otherwise goggles must be worn.

- **Skin Protection**

Wear a PVC apron over an overall and long (i.e. gauntlet type) PVC gloves and boots.

NB: Persons engaged in handling these products must wear protective clothing to avoid skin and eye contact. In the event of splashes on the skin or in the eye, wash the affected part with copious amounts of water and seek medical attention.

## Metal Pre-Treatments

- **Eye Protection**

Goggles conforming to *AS/NZS 1337:2010 Eye Protectors for Industrial Applications* must be worn. If air supplied breathing apparatus is chosen it should be full face to cover the eyes, otherwise goggles must be worn.

- **Skin Protection**

Wear a PVC apron over an overall and long (i.e. gauntlet type) PVC gloves and boots.

## Lacquer and Enamel Spray Painting (not containing isocyanates)

- **Inhalation**

As a minimum, an organic vapour respirator conforming to *AS ISO 16900.11:2015 Respiratory Protective Devices*, must be worn. As the activated carbon canister has only a limited working life depending on time and organic vapour concentration (which depends on the degree of ventilation/extraction), an air supplied breathing apparatus should be considered.

- **Eye Protection**

If there is a risk of spray mist entering the eye, e.g. when *double gunning*, or if extraction is inadequate, goggles conforming to *AS/NZS 1337:2010 Eye Protectors for Industrial Applications* must be worn. If air supplied breathing apparatus is chosen it should be of a full face type to cover the eyes.

- **Skin Protection**

Wear an overall with hood and gloves. Disposable spray painters' overalls are suitable. Gloves may be cotton, leather, PVC or rubber.

NB: Treat all spraying operations, etc. as if the spray mist contains lead or other toxins. High levels of personal hygiene must be maintained. Use of barrier cream recommended.

## Enamel Spray Painting (containing isocyanates)

- **Inhalation and Eye Protection**

An air supplied full face respirator or hood respirator conforming to *AS ISO 16900.11:2015 Respiratory Protective Devices* must be worn. The filters on an air-fed mask should be checked and maintained at regular intervals.

- **Skin Protection**

Wear an overall with hood and gloves. Disposable spray painters' overalls are suitable. Gloves may be cotton, leather, PVC or rubber.

NB: Treat all spraying operations, etc. as if the spray mist contains lead or other toxins. High levels of personal hygiene must be maintained. Use of barrier cream recommended.



## 5 STORAGE OF MATERIALS

### 5.1 Regulations

Throughout Australia nearly all vehicle refinishing products are defined as *dangerous goods*. This is because they are either flammable, toxic, corrosive, assist combustion or have a combination of two or more of these properties. All States and Territories have regulations governing how these products must be stored, packaged, labelled, handled and transported.

The storage requirements vary with the quantities and types (classification) of the various products. They also vary from State to State, but have two principal areas of uniformity:

- product classification is based on the Australian Code for the Transport of Goods by Road and Rail;
- storage of flammable and combustible liquids is based on *AS 1940-2004: The Storage and Handling of Flammable and Combustible Liquids*.

### 5.2 Approvals

In most States it is necessary to notify the relevant dangerous goods authorities if quantities in excess of 2500 litres of Packaging Group II (flammable liquids) are being stored.

The relevant authorities are:

<b>New South Wales</b>  State Coordinator, Compliance Coordination Team WorkCover NSW Level 3, 92–100 Donnison Street GOSFORD NSW 2250	         Tel: 02 6207 6355 Fax: 02 6207 7249
<b>Queensland</b>  Director-General Department of Transport Land Transport & Safety, Transport House 230 Brunswick Street FORTITUDE VALLEY QLD 4006	         Tel: 07 3320 4446 Fax: 07 3253 4453
<b>Victoria</b>  The Manager, Dangerous Goods Victorian WorkCover Authority Level 18, 222 Exhibition Street MELBOURNE VIC 3000	         Tel: 03 9641 1551 Fax: 03 9641 1552



<b>Western Australia</b>	
Executive Director, Resources Safety Division Dangerous Goods Safety Branch Department of Consumer and Employment Protection 100 Plain Street EAST PERTH WA 6004	Tel: 08 9358 8002 Fax: 08 9358 8188
<b>South Australia</b>	
Manager Dangerous Substances Safe Work SA Department of Premier and Cabinet GPO Box 465 ADELAIDE SA 5001	Tel: 08 8303 0401 Fax: 08 8303 0444 <a href="http://www.safework.sa.gov.au">www.safework.sa.gov.au</a>
<b>Tasmania</b>	
The Delegate of the Competent Authority Department of Justice Workplace Standards Tasmania PO Box 56 ROSNY PARK TAS 7018	Tel: 03 6233 3420 Fax: 03 6233 8338 <a href="http://www.wst.tas.gov.au">www.wst.tas.gov.au</a>
<b>Northern Territory</b>	
Chief Inspector of Dangerous Goods NT WorkSafe GPO Box 4821 DARWIN NT 0801	Tel: 08 8999 5010 Fax: 08 8999 5141
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### 5.3 Product Classification

Products commonly used in the industry are classified as follows:

#### Class 2.1 - Flammable Gases

- LPG cylinders
- acetylene cylinders
- natural gas

#### Class 2.2 - Non-Flammable, Non-Toxic Gases

- oxygen cylinders

### **Class 3.1 – Extremely Flammable Liquid and Vapour**

- spraying enamels, lacquers, putties, fillers
- primers
- spraying thinners
- petrol
- contact adhesives

### **Class 3.2 – Highly Flammable Liquid and Vapour**

- brushing enamels
- knifing fillers
- some polishes and compounds
- brushing thinners (including mineral turps, kerosene)
- wax removers, degreases, etc.

### **Class 3.3 - Flammable Liquid and Vapour**

- distillate
- some bituminous products

### **Class 5.2 - Organic Peroxides**

- peroxide catalysts for fillers, paints and fibreglass resin

### **Class 6.1 – Toxic Substances**

- isocyanates
- some catalysts
- methylene chloride based products

### **Class 8 – Corrosive Substances**

- metal pre-treatment products
- acid catalysts

### **Sources of information regarding product classification are:**

- labels
- product specification sheets
- delivery dockets
- safety data sheets (SDS)

## **5.4 Packaging and Labelling**

Products supplied by APMF members are packed and labelled as specified by:

- Australian Code for the Transport of Dangerous Goods by Road & Rail;
- Safe Work Australia "Labelling of Workplace Hazardous Chemicals – Code of Practice – December 2011;
- Uniform Weights and Measures legislation.

They therefore meet all requirements for storage, safe handling and transport throughout Australia.

Care should be taken with products from other sources to ensure their packaging and labelling meet Australian standards.

## 5.5 Paint and Thinner Storage

Flammable paints and thinners must be stored as specified in *AS 1940-2004: The Storage and Handling of Flammable and Combustible Liquids*.

### a Minor Storage

The minor storage provisions for factories and workshops (indoors) are laid down in Table 2.1 of AS 1940-2004. For manufactured products, in packages only, the limit is 2000 L.

Manufactured product includes paints, lacquers, primers, putties, fillers, resins and adhesives.

Minor Storage must:

- not be in a hot location
- be away from potential ignition sources
- not jeopardise escape in event of fire
- have access restricted to those familiar with the hazards
- be for closed containers except when in use
- be immediately cleared of any spillage
- be kept free of combustible wastes or residues

### b Major Storage

Quantities in excess of minor storage must be kept in one of the following:

- a fire-rated storage cabinet (max 250L)
- an indoor storage room or compartment
  - bunded
  - vented
  - fire-rated walls, etc.
- separate external storage
  - bunded
  - vented
  - fire separated

Full specifications are in *AS 1940-2004: The Storage and Handling of Flammable and Combustible Liquids*.

Installation of Major Storage usually requires the approval of the dangerous goods authority, as well as local council.

## 5.6 Workroom Storage

The quantity of vehicle refinishing products in the workroom should be kept as low as is reasonably practicable, e.g. one day's working requirements. It must not exceed the Minor Storage provisions of *AS 1940-2004: The Storage and Handling of Flammable and Combustible Liquids*. All containers should be securely closed immediately after use.

Used or partially used containers should not be allowed to accumulate in the workroom and should be returned to the store or disposed of at the end of the working day.

## 5.7 Storage of Peroxides

Peroxide solution catalysts normally supplied for vehicle refinishing work are not extremely hazardous in themselves if handled correctly. However, care must be taken in their storage and use because they are powerful oxidising agents and may cause fire by spontaneous combustion when in

accidental contact with flammable and combustible products or if they become hot. They will burn fiercely if involved in a fire. These catalysts:

- are prohibited from storage and transport with flammable materials unless properly packed in a two pack kit;
- must not be allowed to come into contact with easily combustible materials such as rags, sawdust, paper, etc. and dry paint sanding residues;
- must be stored in a separate, cool location. The use of a dedicated, specially modified fire-rated cabinet is recommended.

## 5.8 Precautions with Certain Ancillary Products

Other ancillary products may contain harmful ingredients such as acids or chlorinated solvents. Safe storage should be provided for these, and their containers should always be kept securely closed when not in use.

Any special precautions given on the product label or in the data sheet should be strictly observed.

## 5.9 Safety Data Sheets

A Safety Data Sheet (SDS), previously called a Material Safety Data Sheet (MSDS), is a document that provides information on the properties of hazardous chemicals and how they affect health and safety in the workplace. For example an SDS includes information on:

- the identity of the chemical,
- health and physicochemical hazards,
- safe handling and storage procedures,
- emergency procedures, and
- disposal considerations.

The SDS should always be referred to when assessing risks in the workplace.

### Duties under the WHS Regulations

The Work Health and Safety Regulations (WHS Regulations) require the manufacturer or importer of a hazardous chemical to prepare an SDS for the chemical. Additionally, a supplier must provide the manufacturer or supplier's current SDS for the hazardous chemical on first supply to a workplace and upon request.

### Code of Practice for Preparation of SDS

Safe Work Australia's *Code of Practice for the Preparation of Safety Data Sheets for Hazardous Chemicals* provides detailed guidance on how to prepare an SDS for workplace chemicals. This code or practice should be used where the chemical has been classified according to the GHS.

Manufacturers and importers of chemicals are able to continue to use the existing MSDS arrangements for workplace hazardous substances and dangerous goods up until 31 December 2016. This applies for chemicals which have been classified according to the Approved Criteria for Classifying Hazardous Substances and the ADG Code.

## Responsibility of Spray Shop Operator

For all hazardous substances and or dangerous goods supplied to, used, stored and handled in the workplace the spray shop operator has a legal responsibility to:

- obtain a copy of the current manufacturer's or importer's SDS;
- ensure the SDS is accessible to all relevant employees;

- ensure the information in a manufacturer's or importers SDS available to employees is not altered.

Most paints and solvents use in spray shops are hazardous substances.

Spray shop operators may choose to use a commercially available computerised database system to assist them in managing their SDSs and ensure employee accessibility to those safety data sheets. This type of database is particularly helpful where an organisation uses many different hazardous substances and/or has multiple work sites.

Spray shop operators must be careful when choosing an SDS database system and ensure the system they purchase contains the original SDS and not an altered 'look-alike' SDS.

### **What You Will Find in a SDS**

The 16-Section SDS format consists of the following sections:

Section 1	Identification
Section 2	Hazard(s) Identification
Section 3	Composition and Information on Ingredients
Section 4	First Aid Measures
Section 5	Fire Fighting Measures
Section 6	Accidental Release Measures
Section 7	Handling and Storage
Section 8	Exposure Controls/Personal Protection
Section 9	Physical and Chemical Properties
Section 10	Stability and Reactivity
Section 11	Toxicological Information
Section 12	Ecological Information
Section 13	Disposal Considerations
Section 14	Transport Information
Section 15	Regulatory Information
Section 16	Other Information

## 6 FIRE: PRECAUTIONS AND FIGHTING

Premises where vehicle refinishing products are stored present a significant fire hazard. This can be minimised by:

- recognising and controlling the risks
- eliminating or controlling possible ignition sources
- proper venting
- planning for emergencies
- installing and maintaining fire protection measures.

### Risks

Explosion, fire or both can arise from:

- ignition of flammable liquids
- ignition of a flammable vapour/air mix
- ignition of dried combustible residues, e.g. overspray and sanding residues
- spontaneous combustion of a mixture of cellulose and oil based paint residues
- spontaneous combustion of contaminated rags, wipers and other absorbent materials
- ignition of a dust cloud
- spontaneous combustion of incompatible mixtures, e.g. some catalysts and flammable materials, some cellulose and oil based paint residues
- self-accelerating decomposition of organic peroxides at elevated temperatures.

Attention is drawn to the importance of good housekeeping, adequate ventilation, exclusion of sources of ignition and proper waste disposal to minimise fire and explosion risks.

### Source of Ignition

All foreseeable sources of ignition should be identified and appropriate precautions taken. They include:

- *Hot work* such as welding and brazing and other activities likely to cause sparks, e.g. grinding must be effectively controlled. Suitable methods include the separation of these activities from flammable materials by adequate distance or by scheduling the work so that these activities are not undertaken when flammable vapours are likely to be present.
- Smoking must be prohibited in all areas where vehicle refinishing products are stored, handled or used.
- Electrical equipment in areas where flammable concentrations of vapour may reasonably be expected to be present should be constructed, installed and maintained to *AS/NZS 3000:2007 Electrical Installations*. In some cases, it may be possible to use unprotected electrical equipment by siting it in a safe place outside the workroom. In cases of doubt the advice of the local Dangerous Goods inspector should be sought. All electrical equipment should be installed and maintained by a competent electrician.
- Space heating for areas where highly flammable liquids are used should preferably be hot water or low pressure steam systems or indirect heating.
- Vehicle engines should not be switched on or allowed to run where a flammable concentration of vapours may reasonably be expected.
- Precautions should be taken to prevent the accumulation of dangerous charges of static electricity.

## Ventilation

Ignition of flammable liquids and vapour is unlikely if vapour concentrations in all areas are maintained below the lower explosive limit.

Mechanical exhaust ventilation should be provided to ensure that:

- dangerous concentrations of vapour do not accumulate;
- makeup air is drawn from an uncontaminated source, and
- exhausted air is conducted to a safe place where there is no risk of re-entry into buildings.

## Emergency Planning

A written emergency plan should be prepared and implemented. This is a legal requirement in some States. Such a plan should include:

- raising the alarm
- provision of adequate, clearly identified escape routes, kept free of obstruction at all times
- dealing with spills
- training in fire precautions, use of fire protection equipment and escape procedures
- regular fire drills.

## Fire Protection

Adequate fire prevention and fire fighting equipment should be provided and maintained in all areas where vehicle refinishing products are used, handled and stored. Fixed extinguishing systems may be appropriate to provide fire protection for large installations.

Portable extinguishers must be suitable for flammable liquid fires, e.g. dry powder, foam or halon.

For flammable liquid storage, guidelines for fire protection facilities are included in AS 1940-2004 The storage and handling of flammable and combustible liquids.

Fire protection systems should be designed in consultation with the local Fire Protection Authority and insurance underwriters. Dangerous Goods regulations in some States demand that recommendations of the Fire Protection Authority be obtained and implemented.

# APPENDIX I

## RECOMMENDED HEALTH AND HYGIENE GUIDELINES FOR HANDLING ISOCYANATE CONTAINING PRODUCTS

### 1 Introduction

These guidelines refer to those two-pack paint systems of which one part is a base colour free of isocyanates, and the other is an isocyanate hardener or “adduct”.

In general, the base colours used in such paints are no more toxic or irritant than other commonly used paints containing organic solvents. However, both the hardener and the mixture of hardener and base will contain free monomeric isocyanates.

The active constituent of the hardener is a relatively involatile polymeric isocyanate material containing a trace (usually less than 1.5%) of volatile free monomeric isocyanate such as TDI (toluene di-isocyanate) or HMDI (hexamethylene di-isocyanate). Details of the isocyanate contained in a particular product will be given on the label of the hardener.

All labels must be read in detail before opening or any attempt is made to use these materials.

### 2 Toxicity Summary

#### 2.1 Isocyanates are sensitising chemicals

Susceptible workers may become sensitised by exposure to isocyanates and subsequently exhibit symptoms of distress when exposed to atmospheric concentrations well below the normal industrial hygiene standard. This means that exposure causes the body to react more profoundly to even lower concentrations than the initial exposure.

While this hypersensitivity to isocyanates is generally reversible if the exposure is terminated at an early stage, continued exposure may lead to permanent respiratory disability.

#### 2.2 Organic isocyanates are mild skin irritants and occasionally, although rarely, skin sensitisers.

They are, however, severe eye irritants and can cause chemical conjunctivitis. The symptoms are generally reversible by avoiding exposure.

#### 2.3 As respiratory irritants they will, if inhaled, at sufficiently high concentrations, produce symptoms of dry throat and cough. In more severe cases, asthmatic breathing and chest tightening may occur, but there is usually a rapid recovery when exposure ceases. There may be a delay period of several hours after contact before the symptoms appear.

#### 2.4 It is important to realise that air-borne droplets of liquid paint produced during spraying operations can be as much a source of inhaled isocyanates as the vapour of a volatile isocyanate itself.

### 3 Personnel

Persons with a history of asthma or other respiratory problems or known to be sensitised to isocyanates should not be engaged in any work involving the handling of isocyanate containing paints.

This applies in particular to spray painters. Any person showing symptoms of possible reaction to isocyanates should obtain immediate medical advice and avoid further contact with such materials.

Some jurisdictions in Australia require Health Surveillance of employees funded by the employer when exposure to isocyanates is established.



## 4 Protective Clothing and Equipment

- 4.1 When opening, stirring, pouring or mixing, or when applying isocyanate containing paints by brush or roller, operators should wear impervious gloves such as those made of nitrile rubber; also goggles and full length clothing such as boiler suit overalls or long sleeved shirts and long trousers.
- 4.2 When any risk of facial splashes is present, chemical goggles complying with *AS/NZS1337:1992 Eye Protectors for Industrial Applications* are recommended.
- 4.3 When applying by spray, operators must wear a positive pressure air supplied full face respirator and appropriate protective clothing complying with *AS/NZS 1715:2009 Selection, Use and Maintenance of Respiratory Protective Equipment* and *AS ISO 16900.11:2015 Respiratory Protective Devices – Methods of Test and Test Equipment – Determination of Field of Vision*.
- 4.4 Dust respirators MUST NOT be relied on at any time to give protection from isocyanate paint spray mist. Chemical absorption type canisters are not recommended due to their limited effective life and sealing efficiency.

## 5 Storage, Mixing and Handling

- 5.1 Both base and hardener must be stored and handled in compliance with the current regulations applying to flammable or highly flammable liquids.  
Hardeners and some bases must also comply with poisons regulations.  
All mixing and handling of hardener and paint containing hardener must be carried out under working conditions that prevent skin contact and inhalation of vapours, including the use of protective clothing and equipment.
- 5.2 Containers must be kept tightly closed when not in use and not allowed to come into contact with water. Isocyanates react with water, which destroys their effectiveness. Gas is evolved when the isocyanate reacts with water. Even contact with atmospheric moisture may lead to deterioration, hence the need to minimise frequency and duration of lid removal.
- 5.3 If a closed container shows signs of internal pressure, cover it completely with a cloth and remove the lid slowly to prevent splashing or violent expulsion of the lid.
- 5.4 If using only a portion of the hardener in a can, reseal and use the balance of the contents within 36 hours, as it will deteriorate on exposure to air.
- 5.5 Do not allow material of this type to enter drains.
- 5.6 Store in a cool, dry place.
- 5.7 Empty hardener cans and lids should be kept open under water for 24 hours before disposal.

## 6 Application

- 6.1 The general requirements for the application of isocyanate paint products are the same as those for any other paint containing volatile solvents.  
Whether applied by spray, brush or roller they should only be used where the ventilation is such that the vapour generated does not adversely affect the environment, the user or anyone in the vicinity. Ventilation should be designed to maintain free monomeric isocyanate below the recommended Threshold Level Value (TLV) of 0.005 ppm.  
Users should be made aware of all precautions and when spraying is involved should comply with the provisions of State spray painting regulations.

- 6.2 When isocyanate paint products are SPRAYED, it is necessary to take particular care to protect the user and any other persons in the vicinity from inhaling the spray mist. Spraying must be carried out in a spray booth fitted with an effective exhaust system and the operator must wear a positive pressure air supplied full face respirator. The exhaust ventilation should be sufficient to capture spray mists completely and conduct them away to a safe discharge point.
- 6.3 Where large objects are being sprayed, and it is impracticable to use a spray booth, a positive pressure air supplied respirator must still be worn, preferably in conjunction with full protective clothing to prevent skin contact with mists.
- 6.4 Work areas should be isolated from other people while spraying is in progress and until all spray mist has been effectively dissipated. Where the air flow velocity in the work area is below about 1 metre per second, at least 30 minutes should be allowed after spraying ceases.
- 6.5 To clean up brushes, rollers and spraying equipment use only solvents and other agents or equipment specified on the label.
- Particular care must be taken to prevent skin contact and vapour inhalation during this process. Protective clothing and equipment as used during application should be used.
- 6.6 Sanding of isocyanate films should be carried out under the same conditions as apply to spraying, as the dust may irritate operators susceptible to isocyanate contact.
- Wet sanding is the preferred method.

## 7 First Aid

### Skin

- Wash contaminated skin with plenty of soap and water.
- If swelling, redness, blistering or irritation occurs, seek medical advice.

### Eyes

- Wash immediately with copious quantities of water for at least 15 minutes.
- Eyelids to be held open.
- Seek immediate medical assistance.

### Ingestion

- Give water to drink.
- **DO NOT** induce vomiting.
- Seek immediate medical assistance.
- Have label information available. Poisons information centres in each State capital city can provide additional advice.

### Inhalation

- Anyone affected by inhalation of vapour or spray mist, remove from source of exposure and into fresh air.
- Remove contaminated clothing and loosen remaining clothing.
- Allow patient to assume most comfortable position and keep warm. Keep at rest until fully recovered.
- Seek medical advice if effects persist and have label information available.

## 8 Contaminated Clothing

Immerse contaminated clothing in water for 24 hours and do not re-use until it has been laundered.  
Never burn rags soiled with isocyanate containing paint.

## 9 Spills

- 9.1 Accidental spillages should be absorbed into dry sand or earth, removed from the work area and covered with water for 24 hours.
- 9.2 Dispose of treated waste as directed by the relevant waste disposal authorities.
- 9.3 The following mixtures have been documented as being effective for sanitation purposes:

Powder:

- 25% sawdust
- 37% diatomite
- 20% methylated spirits
- 4% triethanolamine
- 4% ammonia
- 10% water

Liquid:

- 50% methylated spirits
- 5% ammonia
- 45% water

## 10 Labelling

Aside from legislative requirements for labelling under the workplace hazardous substances legislation a product label and their respective SDS contains essential information concerning the products hazards, safe use, storage and disposal. Workers must read each product label carefully and follow all the manufacturer's advices and instructions.

## APPENDIX II

### AUSTRALIAN STANDARDS REFERRED TO IN THIS CODE OF PRACTICE

- AS/NZS 1337:2010** - Eye Protectors for Industrial Applications
- AS/NZS 1715:2009** - Selection, Use and Maintenance of Respiratory Protective Equipment
- AS NZS 1716:2012** - Respiratory Protective Devices – Methods of Test and Test Equipment – Determination of Field of vision
- AS 1940 – 2004  
(as amended by 2:2006)** - The storage and handling of flammable and combustible liquids
- AS/NZS 3000:2007  
(as amended by 2:2012)** - Electrical installations (known as the Australian/New Zealand Wiring Rules)