



Department of Infrastructure, Energy *and* Resources

WORKPLACE STANDARDS TASMANIA

REVISED VERSION

**CODE OF PRACTICE
FOR THE
SAFE USE OF
REINFORCED PLASTICS**

June 2003

This Code originally received Ministerial approval on 3 July 02 and was the result of a joint initiative of Government and industry. This document is a revision of that code. It is appropriate to acknowledge the contribution of the management and employees of

- Fibretec, Devonport
- Thompson Fibreglass, Spreyton
- Penguin Fibreglass, Penguin.

In addition, the work of staff of the Department of Infrastructure, Energy and Resources, Workplace Standards Tasmania, allowed the Code to reach finalisation.

During the development of this document, several references were made and these have been included on page 45.

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PREFACE

In a code of practice, certain words are used that determine the level of choice available to the user.

To assist in clarifying this specific word usage, the following definitions and examples are provided:

MUST

Where a clause contains the word **must**, then the requirement is contained within State legislation such as the *Workplace Health and Safety Act 1995* (the Act) or the **Workplace Health and Safety Regulations 1998**. This means that you have no other option than to do what the clause requires.

Example:

A person **must** not use air fed respiratory protection unless that person has been instructed in the dangers and received training in the safe use of this equipment. (*Workplace Health and Safety Act 1995* s. 9(1)(a))

IS TO/ARE TO

If a clause says a person **is to**, or persons **are to**, do something, then you are being instructed to do it, but in these situations you have a choice. This situation is unique to codes of practice approved under s. 22 of the Act.

Codes provide flexibility in this instance to allow practical and innovative solutions to be developed in the workplace. When an alternative solution is developed to that contained in the code, you will need to conduct a risk assessment to determine if what you have done is *equal to or better than* the instruction.

Example:

*A person **is to** wear approved type protective equipment when mixing resins.*

SHOULD

When **should** is used in a clause, you are being advised to do something but it is up to you whether you do it or not. If you decide not to adopt the advice, then you need to have conducted a risk assessment to support your decision.

Example:

*Flexible and energy absorbent floor coverings **should** be provided at workstations where employees are required to work on concrete, steel or masonry floors for extended periods.*

Some clauses in a refer to other documents such as Australian Standards. If this referencing occurs, then the application of the Standard is determined by the words used in the particular clause.

- If the clause says you **must** comply with the Standard, then you interpret the content in relation to the use of **must, is to** and **should** in the same way as outlined above.
- If the clause requires that the Standard **is to** be complied with, then a reference in the Standard to **must** or **shall** is to be read as **is to** with the same limitations as detailed above for **is to**.
- If a particular clause says a Standard **should** be complied with or used as guidance, then you may treat every provision contained in the Standard as a **should** provision in the same way as **should** is used in the Code.

This has been developed to provide practical guidance on your health and safety obligations under the Act and regulations.

A code of practice does not have the same legal force as Regulations. Contravention of, or failure to comply with, Regulations made under the Act is an offence [Section 57 (4)]. Failure to observe a provision of an approved code of practice is not in itself a breach of the Act. However, an approved code of practice is admissible as evidence in legal proceedings in which it is alleged that a person with a duty of care has failed to comply with an approved code of practice. Under the Act, this constitutes proof of a breach, unless it can be shown that the actions taken were at least equivalent to, or better than, those described in the approved code of practice.

You should be aware that compliance with this Code may not necessarily satisfy the requirements of other legislation such as environmental, local government or Commonwealth.

WHAT IS A CODE OF PRACTICE

The term ‘code of practice’ has a particular meaning under the *Workplace Health and Safety Act 1995* (the Act), in particular [Section 22 (2)] states:

A code of practice may consist of any code, standard, rule, specification or provision relating to workplace health and safety formulated, prepared or adopted by the Director and may apply, incorporate or refer to any document formulated or published by any body or authority as in force at the time the code of practice is approved or as amended, formulated or published from time to time.

Other codes of practice do not come within the meaning of the term used in the Act unless the Minister has "approved" the code of practice. Such codes could include those developed by the National Occupational Health and Safety Commission or Standards Australia, voluntary codes agreed in an industry, or codes adopted by other states or countries. Section 22(1) of the Act provides for “approved” codes of practice,

“For the purpose of providing practical guidance to employees, employers and any other person on whom a duty of care is imposed under this Act, the Minister may approve a code of practice”

Provisions in a code provide practical guidance with the provisions of the Act or a regulation to which the code is giving practical guidance. The provisions in a code are not mandatory but those provisions would represent existing requirements of the Act (and regulations). That is, a person can choose to comply with the relevant provisions of the Act or regulations in some other way, provided that the alternative method used also fulfils the requirements of the Act or regulations.

A code of practice approved by the Minister comes into effect when notice of approval is published in the Government Gazette.

An Inspector can cite an approved code of practice as a means of remedying non-compliance when issuing an Improvement Notice or Prohibition Notice under the Act.

ABBREVIATIONS USED

WHS Act	<i>Workplace Health and Safety Act 1995</i>
WHS Regulations	<i>Workplace Health and Safety Regulations 1998</i>
DG Regulations	<i>Dangerous Goods (General) Regulations 1998</i>
s. 9	Section 9
r. 17	Regulation 17
rr. 18-20	Regulations 18 to 20
BCA	Building Code of Australia

1. TITLE

This code of practice is to be cited as the **Code of Practice for the Safe Use of Reinforced Plastics**.

2. AUTHORITY

This code of practice is approved pursuant to **Section 22** of the *Workplace Health and Safety Act 1995* (the Act).

3. PURPOSE

The purpose of this *Code of Practice for the Safe Use of Reinforced Plastics* (the Code) is to provide a safe and healthy workplace by outlining safe work practices and general responsibilities when handling reinforced plastics (RP) and also addresses systems and building design.

The Act establishes a duty on the employer to provide such information, instruction, training and supervision to employees as is necessary to enable the employees to perform their required duties in a manner that is safe and without risks to health. The Code provides practical guidance on how to fulfil that duty in relation to the reinforced plastics industry.

Compliance with the Code should eliminate or control the level of atmospheric contaminants generated as a result of working with reinforced plastics.

This document is based on the two main principles that:

- (a) there are general provisions which are applicable in all RP applications and these are set out in this code; and
- (b) detailed provisions relating to the use of specific materials in the workplace.

This code of practice is intended to apply to both new and existing premises in which RP material is to be used or is used.

4. SCOPE

This code of practice applies to the use of continuous glass filament used as a reinforcing agent in industries such as boat building, swimming pools and storage tanks.

5. DEFINITIONS

‘**Act**’ means the *Workplace Health and Safety Act 1995*.

‘**Catalyst**’ means a substance mixed with a resin(s) that effects a chemical change, i.e. curing.

‘**Code of Practice**’ means a code of practice prepared by an industry, or a group or body and is approved by the Minister under Section 22 of the *Workplace Health and Safety Act 1995*.

‘**Dust**’ means airborne particles larger than 20 microns which when inhaled are usually trapped in the nose and upper airways.

‘**Exposure standard**’ means an airborne concentration of a particular substance in the worker's breathing zone, exposure to which, according to current knowledge, should not cause adverse health effects nor cause undue discomfort to nearly all workers. See Tables 1 and 2 for examples.

‘**Fibre**’ – see ‘*Respirable fibre*’.

‘**Glassfibre**’ – means either a reinforcing filament, glasswool or superfine glassfibre.

‘**Glass filament**’ – see *Reinforcing filament*.

‘**Inspirable dust**’ means that fraction of dust which enters the respiratory tract as defined in AS3640, *Workplace atmospheres - Method for sampling and gravimetric determination of inspirable dust*.

‘**Material Safety Data Sheets**’ (MSDS) are documents that describe the properties and uses of a substance, that is, identity, chemical and physical properties, health hazard information, precautions for use and safe handling information.

‘**MEKP**’ – see *Methyl ethyl ketone peroxide*.

‘**Methyl Ethyl Ketone Peroxide**’ (MEKP) means a chemical used in the curing of unsaturated polyester and vinyl ester resins.

‘**mg/m³**’ means milligrams of substance per cubic metre of air at 25°C and one atmosphere pressure.

‘**Micrometre**’ (µm) means one thousandth of a millimetre. (A strand of human hair is approximately 50 µm in diameter).

‘**ppm**’ means parts of a substance per million parts of contaminated air by volume.

‘Reinforcing filament’ means an extruded filament, formed from a glass melt, usually having a diameter greater than 6 micrometres (µm) and a very narrow range of diameter distribution.

‘Reinforced plastic (RP)’ means a composite material in which resin is combined with a reinforcing agent, such as glassfibre, to improve one or more of properties of the plastic matrix.

‘Respirable fibre’ means a particle with a diameter less than 3 micrometres (µm) and a length greater than 5 micrometres (µm) and with a length to width ratio of greater than 3:1. These fibres can reach the deepest part of the lung.

‘Resins’ means organic polymeric liquids which, when converted by chemical reaction to their final state for use, become solid. Resins used in the reinforced plastics industry such as polyesters and vinyl esters may contain styrene.

‘Use’ includes manufacture.

6. RESPONSIBILITIES

6.1 DUTIES OF EMPLOYERS

An employer **must**, so far as is reasonably practicable, when designing a manufacturing process, minimise the amount of fibre that is being released to the workplace atmosphere. One way of achieving this is by utilising appropriate dust extraction systems. To ensure the effective operation of dust extraction systems, professional advice from a ventilation engineer or an occupational hygienist should be considered. (WHS Act s. 9)

An employer using RP materials **is to** store the materials in accordance with the relevant Australian Standards and legislative requirements.

An employer using RP materials **is to** select materials or product-forms that release the minimum amount of fumes, fibres or dust.

An employer using RP materials **is to** provide designated areas for the decanting, mixing and use of RP materials to minimise the exposure of employees to fumes, fibres and/or dust and mitigate the risk of explosion and fire.

An employer **must** instruct and train employees in the safe work procedures for handling RP materials including, where necessary, the selection, wearing and maintenance of personal protective clothing and equipment. The instruction and training **must** be appropriate to the duties of the individual employee within the organisation. It is necessary to ensure that the individual employee understands the procedural and safety requirements, and the reasons for these requirements. (WHS Act s. 9)

An employer must ensure that exposure to atmospheric contaminants is controlled, that exposure levels experienced by employees with each given task is controlled, that monitoring is performed when required to industry standards and records kept in accordance with the Workplace Health and Safety Regulations 1998.

An employer **must** provide employees with personal protective equipment (PPE) to manage a health or safety risk where required, and **must** provide appropriate training for employees in the correct use of the PPE. (WHS Act s. 9)

An employer **must** apply and review risk control strategies on a continuous basis. The aim of this process is to reduce the exposure level to RP materials to the lowest practicable levels. PPE is not to be used to control a risk unless other higher order control measures can be shown to be inadequate or not practical. (WHS Regulations r. 19)

An employer **is to** implement appropriate site maintenance, and procedures to minimise the creation and spread of fibres or dust. The disposal of RP waste **must** be carried out in accordance with the requirements of the relevant regulatory authority and the local waste management authority.

An employer **must** ensure that all persons (including visitors) on site are not exposed to risks to health or safety while at the workplace. (WHS Act s. 9)

An employer using RP materials in a building or structure **must** ensure that the building or structure complies with the relevant building legislation for that building or structure use.

Explanatory information:

A planning permit if required must be sought from the local council prior to undertaking any new building work or changing the use of an existing building.

Where necessary, approval from all other relevant authorities must also be sought.

Before any building work or plumbing work takes place (including excavation) a building permit and plumbing permit must also be sought from the local council in accordance with the *Local Government (Building and Miscellaneous Provisions) Act 1993*, the Building Regulations 1994 and the Plumbing Regulations 1994.

This is equally important when either renovating an existing building, changing the use of an existing building or constructing a new building.

All new building work must comply with all parts of the BCA including the structural, fire, access and egress, services and equipment, and health and amenity requirements.

The special provisions in the Tasmanian Appendix to the BCA in relation to *Workplaces, Premises for Manufacture or Processing of Glass Reinforced Plastics and Premises for the Storage of Dangerous Goods* if required must also be complied with where new building work is proposed.

6.2 DUTIES OF EMPLOYEES

An employee, while at work, **must** take care of the employee's own health and safety and the health and safety of any other person(s) who may be affected by the employee's acts or omissions at the workplace. (WHS Act s. 16)

An employee **is to** ensure that work is carried out as instructed and in a manner which **should** incorporate best work practices.

An employee **must** use the PPE provided for its designated function and **is to** maintain the issued PPE in accordance with the employer and manufacturer's instructions. (WHS Regulations r. 58(2))

An employee **must** not indulge in any workplace practices, such as horseplay, which may injure themselves or others. (WHS Act s. 20)

An employee **is not to** undertake work that may cause injury to themselves, other employees or the employer's property. If an employee reasonably believes that the work he or she has been asked to do presents a danger to the employee or others, then the employee **is to** raise these concerns with either the supervisor or the employer before starting the work.

An employee **is to** report to the employer and/or employees' safety representative any observed malfunctions in work practices or plant.

An employee **is to** participate in health and safety instruction or training provided by the employer.

7. RISK MANAGEMENT

The employer **must** implement risk management practices to identify hazards, assess and control the risks arising from those hazards within the workplace. This is to minimise the risk of employees, contractors and visitors being put at risk of injury or illness from unsafe work practices. (WHS Regulations rr. 17-19)

Employers, employees, employees' safety representatives and/or members of the safety committee **are to**, on a regular basis, inspect the workplace to identify hazards such as:

Glass fibre handling - Contact with glass fibres can irritate the skin.

Use of resins and hardeners - Various types of resins are used including:

- (a) *Epoxy resins* which can be combined with a number of different hardeners. The most commonly used hardeners are amine hardeners.

- (b) *Polyester resins* are usually combined with MEKP. Cobalt solution is also added.

Fire –

- (a) Resins, acetone, and MEKP are highly flammable.
- (b) Rags soaked in MEKP can self-ignite.
- (c) MEKP and promoter can explode if combined so they **are not to be** mixed together or stored together.
- (d) All RP factories **are to** be designated non-smoking work sites.
- (e) Spilt catalyst can cause fires so when a chopper or spray gun is not in use it should be suspended over a container of water to collect any drips and drainage. At the end of the working day the pressure in the resin and catalyst pressure vessels should be relieved.

Contact dermatitis (skin disease) - Skin contact with resins and hardeners can cause contact dermatitis.

Dermatitis caused by sensitisers –

- (a) Some chemicals used in resins and hardeners are sensitisers, that is they cause a change in the body's reaction to those chemicals.
- (b) Sensitisers may cause a more serious form of dermatitis through an allergic reaction in some people.
- (c) People who are allergic to these sensitisers may get dermatitis by working near these products, without any obvious skin contact with them.
- (d) Some people may become allergic to sensitisers after one short exposure while others become allergic only after many exposures.
- (e) Many of the chemicals used in hardeners for epoxy resins are potent sensitisers, especially the aliphatic amines such as DTA (diethylene triamine), TET (triethylenetetramine), and DEAPA (diethylaminopropylene).

Eye injuries – Immediately rinse the eyes thoroughly with water for 20 minutes minimum and get urgent medical attention if MEKP or other chemicals splash into the eyes as these can cause blindness.

Styrene hazards –

- (a) Most polyester resins contain up to 60 percent of styrene.
- (b) Styrene is a solvent and can enter the body through the lungs or through the skin.
- (c) Styrene fumes can irritate the eyes, nose and throat.
- (d) Breathing in styrene fumes can cause headaches, nausea, and drowsiness.
- (e) Long term damage can include memory loss and mood and personality changes (neurotoxic effects), and liver damage.
- (f) Studies have shown that people doing hand lay-up and spray lay-up are often exposed to excessive amounts of styrene, so proper control measures which reduce exposure **must** be implemented. (WHS Regulations r. 19).

Isocyanates - Isocyanates in some paints are sometimes used in RP work and exposure can cause bronchitis, asthma-like reactions and sensitisation.

Everyone at a workplace, after completing the hazard identification process, **must** assess the risk associated with each hazard in terms of their danger to life and long term effects on health (WHS Regulations rr.17-19)

An employer **must** keep a record of this risk assessment until the risk has been re-assessed and a new assessment has been completed. (WHS Regulations r. 18)

The risk assessment **should** include-

- (a) a visual inspection;
- (b) discussions with designers, manufacturers, suppliers, installers, importers, employers, employees or other relevant parties;
- (c) an analysis of injury and near-miss data;
- (d) technical or scientific evaluation;
- (e) auditing; and
- (f) testing.

NOTE:

Appendix 4 shows one format for documenting hazards, risks and risk control measures,

Appendix 5 shows an example of risk control, and

Appendix 6 shows risk classification.

The assessment method to be used in any particular situation **is to** be determined by the employer in consultation with employees, the health and safety representative, and/or health and safety committee.

From the risk assessment the employer, in consultation with employees, the health and safety representative, and/or health and safety committee, **must** consider all the control strategies detailed in the hierarchy of control measures. This is a list of prioritised measures that **must** be used to eliminate or minimise exposure to hazards. (WHS Regulations r. 19)

- (a) elimination;
- (b) isolation;
- (c) substitution;
- (d) engineering controls;
- (e) administrative controls; and
- (f) personal protective clothing and equipment.

An employer **must** be able to demonstrate that a higher control measure was not reasonably practicable before adopting a lower measure from the hierarchy. This measure has been advocated to encourage responsible stakeholders to seek a more permanent solution to controlling the risks in the workplace rather than adopting the easy option of providing employees with personal protective equipment. (WHS Regulations r. 19)

Before the introduction of any new processes, an employer **must** carry out a risk assessment to ensure that no new hazards are being introduced into the workplace. (WHS Regulations r. 18)

Measures to be considered are-

- (a) minimise the fumes of resins, hardeners and solvents from entering the breathing zone of workers;
- (b) prevent any risk of fire;
- (c) inform and train workers about the hazards and control measures;
- (d) minimise any skin contact with resins and hardeners; and
- (e) reduce skin contact with glass fibres.

8. WORK PRACTICES

8.1. OVERALL SAFETY STRATEGY

Action **must** be taken on a continuing basis to achieve the lowest workable exposure levels to RP materials and their derivatives. This can be achieved by ensuring that:

- (a) the application of safety requirements contained in MSDSs are implemented;
- (b) there is an emphasis on safe work practices;
- (c) PPE is worn when required;
- (d) extraction and ventilation systems are installed and maintained;
- (e) written standard operating procedures are developed and used; and
- (f) workplace housekeeping is given a high priority.

8.2 SAFETY COMMITTEES

If a safety committee is to be formed and operated in the workplace then the provisions of the Act **must** be complied with. (WHS Act ss. 26-29)

8.3 CONSULTATION

The employer **must** consult with all employees during the development and implementation of a workplace health and safety program to ensure the program's success. (WHS Regulations r. 15)

Discussion with members of a safety committee, where one exists, or an employees' safety representative, is an appropriate way for the employer to begin consultation.

Unions, employer associations and professional bodies can assist with advice on workplace health and safety program development and provide materials to help in the implementation of a workplace program.

A timeframe for implementation of a workplace health and safety program, outlining the major stages, should be agreed to between the employer and employees (or their representatives) for any workplace program.

8.4 EDUCATION AND TRAINING

Training at the workplace can be separated into induction and specific job training.

Induction Training

An employer **is to** include general information about hazards found at the workplace as an integral part of an induction-training program for all new employees.

An induction-training program **is to** include:

- (a) awareness of the duty of care responsibilities under the *Workplace Health and Safety Act 1995*;
- (b) instruction on the company's health and safety policies and procedures;
- (c) the requirement to identify hazards, assess the risks that arise from those hazards and implement methods for controlling those risks;
- (d) direction to the provision, use, storage and maintenance of equipment, and particularly the risks that can arise from incorrect use or maintenance of the equipment; and
- (e) details of emergency procedures which apply at the workplace in the case of special risks, such as chemical spills or fires.

Specific Job Training

The employer **must** ensure that training of new employees for their specific jobs covers the hazards and risks associated with the job. (WHS Act s. 9)

The training **must** include instruction in the correct use of the PPE required to perform the job. Such training should include:

- (a) the correct selection, use and wearing of personal protective equipment;
- (b) the comfort and fit requirements;
- (c) the limitations in use and effectiveness; and
- (d) the maintenance and replacement procedures.

Training **is to** be ongoing and provided by the employer to employees as work practices, plant, RP materials and equipment are changed.

RP industry specific training requirements

An employer **must** provide all supervisors and employees who work with RP with adequate information, instruction and training (WHS Act s. 9) and include:

- (a) any health information relating to RP handling and/or exposure obtained from suppliers, labels and MSDS;
- (b) the importance of controlling the creation of RP or fibrous dust in the workplace atmosphere at the lowest workable levels;
- (c) the probable airborne contaminants exposure levels associated with the type of job;
- (d) the effective use of safe work practices, control measures, respiratory protective equipment and protective clothing, to effectively control workplace hazards;
- (e) the role and significance of workplace air monitoring;
- (f) employer responsibilities; and
- (g) employee obligations.

8.5 SIGNAGE AND PLACARDING

An employer **must** ensure that appropriate signage is used to clearly identify the hazards inherent to the industry and that precautions are implemented to control the risk of injury from the hazard.

Signage and placarding **must** be clearly legible and reproduced in such languages so all employees and contractors can clearly comprehend their meaning. Any signage or placarding used in the workplace should be in accordance with *Australian Standard 1319 Safety Signs for the Occupational Environment*.

Placarding and licensing **must** be implemented as required by the dangerous goods legislation. (DG Regulations rr. 47-48)

An employer **must** ensure that placarding, if required, is in accordance with the *HAZCHEM Placarding Guidance Note*. (DG Regulations r. 48)

All dangerous goods storage facilities **must** be clearly marked to identify the nature of the dangerous goods, its class and type.

All employees, contractors and visitors to the workplace **must** be made aware of the health and safety requirements pertinent to the workplace including installed signage and the expectations of the employer with respect to the signage and placarding. (WHS Act s. 9(8))

9. HAZARDOUS SUBSTANCES

9.1 REGISTER OF HAZARDOUS SUBSTANCES

An employer **must** have a hazardous substances register at the workplace. (WHS Regulations r. 77)

This register **should** contain:

- (a) the product name of the hazardous substance;
- (b) its location at the workplace;
- (c) the quantity of the hazardous substance present at each location at the workplace;
- (d) the location of the MSDS for each substance.

An employer **is to** maintain the currency of the register.

An employer **must** ensure that any employee and emergency services have ready access to any MSDSs and the register. (WHS Regulations r. 75(b))

The register **should** be used by the employer and the employees as an information tool for consultation regarding the management of hazardous substances in the workplace.

9.2 STORAGE OF HAZARDOUS SUBSTANCES AND DANGEROUS GOODS

An employer **is to** ensure that the premises where hazardous substances are stored are adequately ventilated.

Some hazardous substances are dangerous goods and **must** be stored in accordance with the appropriate Australian Standard. (DG Regulations r. 55)

An employer **should** ensure that lighting levels in the storage areas are in accordance with *AS 1680.1 - Interior Lighting*. This will allow for easy reading of the product labels and routine inspection of the stored products.

Electrical and light fittings used in dangerous goods storage areas must meet the requirements of the relevant standards. The fittings need to be spark proof to prevent ignition or explosion of any vapours. (WHS Regulations r. 80)

An employer **is to** ensure that aisles, entrances and all exits are kept clear of obstructions at all times. (WHS Regulations r. 29)

An employer **should** read the MSDS for information concerning specific storage requirements for the particular hazardous substances used in the workplace.

An employer **must** ensure that any new building or building work complies with the Building Code of Australia clauses Tas H101.7 and Tas H101.8 and Tas Part H120 where the premises are to be used for the storage of dangerous goods.

9.3 MATERIAL SAFETY DATA SHEETS

What is adequate information?

An employer **must** keep employees informed about the hazardous substances in their workplaces. (WHS Act s. 9)

Employers and employees must be provided with detailed information about hazardous substances in the form of MSDS from manufacturers and suppliers. Such information can –

- (a) save lives;
- (b) improve working conditions;
- (c) increase productivity; and
- (d) reduce the likelihood of closures and down-time resulting from workplace accidents.

Employers who feel an MSDS is vague or inadequate **should** ask for more information from the manufacturer or supplier or opt for another manufacturer or supplier, or substitute an alternative material.

Why do we need a Material Safety Data Sheet?

There are tens of thousands of chemicals used in workplaces ranging from metal dusts to cleaning agents. Not all chemicals are alike; some are necessary to sustain life, eg. amino acids, while others can end life quickly, eg. hydrogen cyanide (both these chemicals are naturally occurring). To assess the risks to health, information on the hazardous nature of chemicals is needed. An MSDS is designed to provide this information. Without an MSDS, a user may remain ignorant of how a substance could affect their health or safety, or what to do in an emergency.

MSDS give advice on:

- (a) ingredients of a product;
- (b) health effects and first-aid instructions;
- (c) precautions for use;
- (d) safe handling and storage information; and
- (e) emergency procedures.

A Material Safety Data Sheet obtained from the supplier of the hazardous substance **should** contain the following:

Identification - An MSDS is to first identify the product. If the product is a mixture, the MSDS **is to** describe the proportions of chemicals. This information is essential for:

- (a) estimating exposure;
- (b) handling spills;
- (c) designing ventilation; and
- (d) aiding safety controls and procedures.

It **should** give details on vapour control, shock sensitivity, corrosiveness, oxidising properties, and reactivity with common substances (air or water etc.).

Health effects - Information **is to** cover exposure to skin, eyes, inhalation, swallowing, or any other way. The entries **are to** be clear and understandable to the layperson. Severest effects of the product are to be stated first and the more toxic ingredients clearly indicated.

First aid - Exposed individuals, first aid officers and ambulance officers **are to** be told about basic initial care and if medical attention is required.

Advice to doctor - Specific antidotes **are to** be indicated. Where no antidote is available, the doctor **is to** be advised to contact a poisons information centre.

Exposure limits - Relevant exposure limits are contained within the *Exposure standards for atmospheric contaminants [NOHSC:1003]*.

Ventilation - If special ventilation is necessary, the MSDS **is to** say so. Emphasis should be on engineering methods rather than the need for PPE.

Personal protection - If required, information on the necessity for, and type of protection required. Specific types of respirators **are to** be specified if required. Special requirements can exist for gloves, safety glasses or other equipment, and these **are to** be also specified.

Flammability - The MSDS **is to** include details of, where necessary, the need for ventilation, the need to avoid ignition sources, and any other special requirements.

Storage and transport - Information on storage location and conditions, fire separation distances, ventilation, protection from weather, sunlight, type of container, products near which material is not to be stored, type of flooring, security, first aid facilities, eg. showers, eye washes, **is to** be given.

Safe transport information should include dangerous goods class and subsidiary risk (if applicable), and any other special requirements, eg. shock sensitivity.

Spills and disposal - Steps to minimise and clean up spills and leaks, clean-up precautions and any neutralising or absorbent material required for a spill, should be detailed.

Where possible, the MSDS **is to** include specific recommendations on disposal, containers, closures and any special precautions for disposal into sewers or landfills.

Fire/explosion hazard - Fire and explosion risks should be detailed and any dangerous decomposition products listed. Recommendations **are to** be given for fighting fires, including types of extinguishers or fire-fighting agents, precautions to be observed, and protective clothing to be worn by fire-fighters. Any potentially dangerous interactions with other chemicals **are to** be detailed.

Other information - Any additional information, which the manufacturer could usefully provide, **is to** be included, such as biodegradability and persistence in soil and water.

Use of hazardous substances

The MSDS is an invaluable and indispensable source of information on the hazardous substances used in your workplaces. It helps you to formulate safe working practices and procedures and devise safe handling and emergency procedures.

MSDS **are to** be used as part of the training for employees in the use of hazardous substances.

9.4 PRECAUTIONS TO BE CONSIDERED BEFORE COMMENCING WORK

An employer **must** ensure that prior to commencing work with RP materials, employees, and their representatives, are consulted and agree on the following working arrangements:

- (a) the provision of MSDS in the approved format;
- (b) usage of the product as defined in the appropriate schedule;
- (c) confirmation of site arrangements, for example, training, storage, site processing, personal protective equipment and monitoring, in accordance with this code of practice and the appropriate schedule; and
- (d) consideration of protection of the health and safety of employees and the public not directly working in the RP process.

10. VENTILATION

10.1 VENTILATION - GENERAL

An employer **is to** ensure that all workshops and work areas are suitably ventilated such that neither the exposure standard nor the lower explosive limit for any vapours, gases, fumes or dust generated, are exceeded.

Mechanical or natural ventilation **should** be via low level, exit ducting in a wall and a fixed, open, floor level, fresh-air inlet ducting in the opposite wall to ensure a cross flow over the complete working area. Alternatively, portable extraction ventilation may be used but it **should** exhaust to the outside atmosphere.

There are three main factors, which alone, or in combination, largely determine the fibre levels present during specific applications of RP and determine the type of ventilation required. These are:

- (a) the degree of disturbance of the product;
- (b) the proportion of respirable fibres in the product or created during work; and
- (c) the extent of any binders, cladding or sealants used.

Ventilation requirements for new buildings or building work **must** be in accordance with the BCA requirements at Part F4 and clauses Tas H101.8, Tas H114.7 and Tas H120.7.

10.2 NATURAL VENTILATION

An employer **is to** ensure that where natural ventilation is used, the capacity **is to** be such that neither the exposure standard nor the lower explosive limit of any vapours, gases, fumes or dust generated is exceeded.

Natural ventilation requirements for new buildings or building work **is to** be in accordance with the BCA, Part F4 and Tas H101.8.

10.3 MECHANICAL VENTILATION

An employer **is to** ensure that where mechanical ventilation is used, the capacity of the ventilation system is sufficient so as neither the exposure standard nor the lower explosive limit is exceeded.

The ventilation exhaust **is to** be located to prevent recirculation of contaminated air.

An employer **should** ensure that where mechanical ventilation is used, it operates whenever any RP process or task is being undertaken, and for at least fifteen minutes after the cessation or completion of any process or task.

10.4 LOCAL VENTILATION OR EXHAUST

An employer **is to** ensure that where dedicated areas are assigned to any RP process or task, suitable local ventilation or extraction is provided. Neither the exposure standard nor the lower explosive limit of any vapours, gases, fumes or dust generated **is to** be exceeded (see Tables 1 and 2).

TABLE 1

Exposure Standards for Atmospheric Contaminants

SUBSTANCE	CAS	TWA		STEL	
		ppm	mg./m ³	ppm	mg/m ³
Acetone	67 64 1	500	1,185	1,000	2,375
Isocyanates			0.02		0.07
Methyl Ethyl Ketone Peroxide	1338 23 4	0.2	1.5		
Styrene	100 42 5	50	213	100	426

Notes:

STEL means “Short Term Exposure Limit” for a 15 minute TWA.

TWA means “Time Weighted Average” and is the average airborne concentration of a particular substance when calculated over a normal eight-hour working day for a five-day working week.

CAS means “Chemical Abstracts Service”.

Table 2

Exposure Standards for Atmospheric Dust

Substance	TWA
Respirable fibre	0.5 fibres/ml
Non respirable fibre	2.0 mg/m ³
Inspirable Dust of low toxicity	10 mg/m ³
Alumina Dust	10 mg/m ³
Graphite	3 mg/m ³

Reference: Exposure Standards for Atmospheric Contaminants in the Occupational Environment (NOHSC:1003).

10.5 EXPOSURE STANDARDS FOR DUST AND GLASS FIBRE

Where no specific exposure standard has been assigned to a substance and the substance is of inherently low toxicity and free from toxic impurities, an employer **is to** ensure that the recommended exposure standard for the dust should not exceed 10 mg/m³, measured as inspirable dust.

The exposure standard for glassfibre is 0.5 fibres per ml.

10.6 AIR MONITORING AND RECORDING

An employer **is to** ensure that monitoring for any airborne contaminants at the workplace is conducted routinely to check the exposure to hazardous substances in use at the workplace. The results of monitoring need to be compared with the relevant exposure standards as set out in Tables 1 and 2 and, where threshold levels are detected, a review of control measures **is to** be undertaken.

An employer **must** ensure that where the outcome of a workplace assessment indicates that monitoring is required, the monitoring is carried out, the results are recorded, and the employees are informed of the results. (WHS Regulations r. 21)

An employer **is to** ensure that standard operating procedures are developed to measure for known atmospheric contaminants. When work practices outlined in the standard operating procedures are not being met then air monitoring is required.

A competent person using an approved RP membrane filter test unit **is to** undertake the air monitoring.

An employer **must** ensure that each employee who works with RP is kept informed of the results of all monitoring and the assessment of exposure levels, and the measures being taken to minimise the risk of exposure in the workplace. [WHS Regulations r. 21(5)]

An employer **must** ensure that the records of air monitoring are securely stored and kept for the period as specified. (WHS Regulations r 21)

An employer **should** ensure that measurements of exposure levels are determined over a minimum sampling period of 4 hours, during which time one or more consecutive sample(s) **should** be collected to ensure a representative sample is obtained. From these results a time-weighted average (TWA) result can be calculated.

An employer **is to** ensure that exposure level measurements are conducted in a location which is determined to have the greatest concentration of airborne contaminants during a RP process.

11. NOISE

An employer **must** ensure that employees are not subject to noise exposure levels which may cause acute or long term injury or damage to their hearing. (WHS Regulations rr. 107-110)

An employer **is to** ensure that exposure to noise in a workplace is determined as a daily noise dose and derived from a measurement of noise levels and the actual duration of an employee's exposure.

The exposure standard for noise prescribed in the WHS Regulations 1998 is:

- (a) An eight-hour equivalent continuous A-weighted sound pressure level (LAeq,8h) of 85 dB(A) referenced to 20 micropascals; or
- (b) A linear (unweighted) peak sound pressure level (L peak) of 140 dB (lin) referenced to 20 micropascals.

If an assessment shows that the noise in any part of the workplace is likely to cause a person's exposure to the noise to exceed the exposure standard, the employer **must** then:

- (a) develop a written plan of action for control of the noise;
- (b) implement engineering noise controls, as far as reasonably practicable, to reduce the noise to which the person is exposed;
- (c) reduce the source of the noise by means of insulation or relocation; and
- (d) ensure all employees who may still be exposed to the noise exceeding the exposure standard are suitably protected from the source by correct use of approved type hearing protection while noise controls are being developed and implemented. (WHS Regulations r. 110).

Partial Noise Exposure

An employer **is to** ensure that where an employee works at different tasks in the course of a working day, each with a different noise level, the partial noise level and time at that exposure level from each task is added together to determine the total daily noise exposure.

Assessment for Noise Reduction

An employer **is to** ensure that where the results of an assessment indicate that noise levels exceed the exposure standard, further investigations **are to** be conducted to identify the source of the noise and implement a noise reduction program.

An employer **must** ensure that where such assessments are required they are carried out by a competent person in accordance with AS/NZS 1269, Occupational Noise Management. (WHS Regulations r. 109)

12. GENERAL PRACTICES

12.1 DESIGNATED WORK AREAS

An employer **should** ensure, where reasonably practicable, that work areas are designated for the various RP tasks.

12.2 MIXING RP INGREDIENTS

An employer **is to** ensure that employees who use (or are intending to use) an RP ingredient have read the MSDS for the ingredient and if any doubts arise concerning the ingredient then written clarification from the supplier or manufacturer **is to** be obtained.

12.3 LAYING UP RP

An employer **is to** ensure that air velocities above 0.5 metres per second are maintained in the laying up areas to keep the concentration of emitted gases below the lower explosive limit when catalysts and resins are mixed.

12.4 SAFE WORKING PROCEDURES

An employer **must** ensure that employees and contractors follow the safe working procedures described in this section. (WHS Act s. 9)

Handling Glass Fibre - Gloves **are to** be worn to avoid skin contact with glass fibres.

Using resins –

- (a) Check the MSDS for resins and hardeners used at your workplace.
- (b) Keep the work area clean.
- (c) Always follow standard operating procedures:
 - Disposable containers (other than those made of polystyrene) are used for mixing resin and hardener.
 - Long-handled stirring rods are used for mixing of RP ingredients.
 - Bench surfaces **should** be constructed of materials appropriate for the job.
 - Wash off any splashes of resin on the skin as soon as they occur.
 - Wash your hands thoroughly before eating.
 - Always work with the item or product between you and the ventilation system.
 - Never use your hands to smooth out air bubbles. Use squeegees and rollers.
 - Avoid skin contact with resins and hardeners on used equipment and wear protective clothing.
 - Put unused mixed resin in wet bins (bins partly filled with water) to avoid a fire (don't smoke in areas where resins or hardeners are used or stored or anywhere else in the work site).
 - For washing your hands use non-solvent hand cleaners and then apply barrier cream.

12.5 DISPOSAL OF RP PRODUCTS

An employer **is to** ensure that waste materials are disposed of in designated bins at a licensed landfill.

12.6 CUTTING AND GRINDING

An employer **is to** ensure that cutting and grinding is carried out in such a manner to minimise the creation of workplace hazards. Extraction system air velocities of above 3 metres per second are required to capture dust particles from cutting or grinding processes.

12.7 STORMWATER MANAGEMENT

An employer **is to** ensure that no RP wastes are washed or placed into stormwater drains.

12.8 GENERAL PRACTICES

An employer **should** ensure that the following engineering controls, general housekeeping and safe work practices, are implemented when handling RP materials:

- (a) Insist that suppliers of resins, hardeners, solvents and other RP materials provide an MSDS for each ingredient. Store the MSDS in a place accessible to everyone at the workplace. Make sure that users of these ingredients read and understand the MSDS.
- (b) Store resins, hardeners and promoters in separate flammable liquids stores. Ensure that incompatible ingredients are not stored together. Keep tins tightly closed when not in use or when empty. Ensure appropriate fire extinguishers and warning signs are installed.
- (c) Where possible, RP material **should** be ordered in a form and shape that minimises the amount of cutting and handling.
- (d) Correct tools **are to** be used for each task. Where possible, manual tools **should** be used to trim or cut RP materials. If power tools are used, these **are to** be fitted with a dust extraction system or local exhaust ventilation **is to** be used.
- (e) RP materials **are to** be stored in low traffic areas, and in in-tact containers. Damaged containers should not be used for storage.
- (f) RP materials to be sprayed or gunned (Chopper Gun) **are to** be used and handled in a wet, rather than dry, form where practicable. Operators should not work alone when handling spray/chopper gun units.
- (g) Work areas **are to** be cleaned regularly to remove any build up of glass fibres and/or dust. Waste materials **should** be removed promptly to avoid being trampled and spread about the work area.
- (h) Cleaning, referred to in (f), **is to** be performed using an approved industrial vacuum cleaner. Wet mopping and wiping is an acceptable alternative if vacuuming is not practicable.
- (i) Waste **is to** be placed in dedicated wet or dry containers that prevent mixing of wet and dry waste. The waste **is to** be disposed of in accordance with the requirements of the local waste disposal authority.

- (j) For all overhead RP work undertaken, where practicable, areas below **are to** be identified, using barriers and appropriate signs. Employees not engaged in the overhead RP work **are to** be prevented from entering the area below the RP work.

REINFORCED PLASTICS WORK AREA

FOLLOW SAFETY INSTRUCTIONS

13. CONFINED SPACES

13.1 DEFINITION OF A CONFINED SPACE

A “confined space” means an enclosed or partially enclosed space which –

- (a) is not intended to be used as a regular workplace; and
- (b) has restricted means of entry or exit; and
- (c) is at atmospheric pressure during occupancy; and
- (d) may –
 - (i) have atmospheric contaminants or an unsafe oxygen level, or both; or
 - (ii) cause entrapment or engulfment.

(WHS Regulations)

Confined spaces may include, but are not limited to, any vat, tank, pit, pipe, duct, flue, oven, chimney, silo, reaction vessel, container, receptacle, underground sewer, shaft, well, trench, tunnel or other similar enclosed or partially enclosed structure.

13.2 TRAINING

Where there is an identified need for training of employees or contractors in Safe Entry and Work in Confined Spaces, an employer **must** ensure that:

- (a) The training provider contracted to deliver the confined space training **is to** be accredited by the Vocational, Education and Training Accreditation Board (VETAB) and the National Framework for Recognition of Training (NFROT). The Workplace Standards Tasmania Helpline will be able to assist by providing the names of training providers for confined spaces. Telephone 1300 366 322 (inside Tasmania) or (03) 6233 7657 (outside Tasmania). Alternatively, you can go directly to the web address, <http://www.ntis.gov.au>

- (b) The training **is to** be designed to meet the needs of the OH&S legislation and *AS 2865 - Safe Working in a Confined Space*.
- (c) The training **is to**:
 - define and identify a confined space;
 - assess and control atmospheric and other hazards;
 - select and use safety equipment and PPE;
 - work safely in a confined space; and
 - respond effectively to emergencies in confined spaces.
- (d) The employer **must** provide training for all persons required to work in a confined space. (WHS Regulations r. 112)
- (e) An employer **should** ensure that the training is undertaken as close as reasonably practicable in time and prior to the commencement of work in the confined space. The specific task and procedure to be undertaken **is to** be considered during the training.
- (f) Training **must** be conducted by competent persons who are knowledgeable in all aspects of safe working in a confined space, the hazard identification and risk assessment process, the correct use of safety equipment and the execution of a rescue if a need arises. (WHS Regulations r. 9)
- (g) An employer **must** ensure that each employee has been trained to an acceptable standard of competence before the employee is permitted to perform work in a confined space. (WHS Act s. 9)
- (h) Details of training provided to employees **should** be recorded on an employee's personal file.

13.2 MANAGING HEALTH AND SAFETY IN CONFINED SPACES

An employer **must** ensure there is effective management of the risks present when employees work in confined spaces. To achieve this an employer **must**:

- (a) identify all hazards associated with work in the confined space;
- (b) assess the risks associated with identified hazards; and
- (c) control these risks. (WHS Regulations rr. 17-19)

Safety of the Atmosphere - An employer **must** ensure that no person enters a confined space without an entry permit. (WHS Regulations r. 112)

An employer **must** ensure, before a person enters a confined space, that:

- (a) the confined space contains a safe oxygen level, as it can become contaminated by styrene-based products, dust from sanding or grinding, carbon monoxide, or emissions from equipment taken into it.
- (b) the atmospheric contaminants in the confined space are reduced to below the relevant exposure standards;
- (c) the confined space is free from extremes of temperature; and
- (d) the concentration of any flammable airborne contaminant in the confined space is below 5 percent of its lower explosive limit (LEL).
(WHS Regulations r. 112)

An employer **must** ensure that atmospheric testing and monitoring is carried out consistent with the hazards identified and the risk assessment. (WHS Regulations r. 112)

The employer **must** ensure that where it is not reasonably practicable to provide a safe oxygen level, or atmospheric contaminants cannot be reduced to safe levels, no person enters the confined space unless they are equipped with suitable personal protective equipment including air supplied respiratory protective equipment.

Assessment of Confined Space Risks - Employers **are to** consider the following:

- (a) the nature of the confined space;
- (b) where the confined space is located;
- (c) the nearness of the space to other work areas or its isolation;
- (d) whether the space opens to the external environment or whether it is within another structure;
- (e) any nearby processes that might affect the level of risk associated with the confined space hazards;
- (f) whether partitioning makes it difficult to see whether someone is in trouble;
- (g) whether there is small air volume or low ventilation rate, which means airborne contaminants may build up quickly; and
- (h) whether lighting is sufficient or if there are visual conditions that could interfere with a person's ability to work safely.

Emergency Procedures required for Confined Spaces

An employer **is to** ensure that the type of emergency procedures needed are consistent with the nature of the confined space, its hazards and associated risks.

An employer **is to** consider the following:

- (a) procedures for first aid and cardio-pulmonary resuscitation;
- (b) first aid training for employees;
- (c) emergency treatment is available for those working in the confined space;
- (d) emergency equipment used for first aid, resuscitation and communication is kept in good working order;
- (e) personal protective equipment and protective clothing for emergencies is available and in good condition, and that employees are trained in its use;
- (f) implementing well-planned and well-rehearsed rescue procedures that must be followed at all times; and
- (g) openings for entry and exit to a confined space are of adequate size to permit the rescue of all persons entering the confined space.

14. EMERGENCY PROCEDURES

14.1 EYE WASH STATION

In all workplaces where hazardous substances are present, the employer **is to** provide automatic eye showers or eye-wash bottles at strategic locations.

If any activity is to be carried out on-site or out of doors, then first aid facilities **are to** be positioned near the work area.

Eye showers **are to** be capable of providing a continuous flow of clean water under low, even pressure. The most important single first aid measure for chemical burns to the eyes is on-the-spot decontamination by continuous irrigation.

The irrigation of the eye **should** continue for a minimum period of 15-20 minutes, for a strong alkali or phenol, or for 5-10 minutes, for an acid or a less injurious hazardous substance. Continuous irrigation not only dilutes the substance but also helps to flush out any foreign matter that is present in the eye.

Do not waste time trying to find a suitable neutraliser.

Eye showers **are to** be checked regularly to ensure correct operation.

Antiseptic or anaesthetic drops or ointments **must** not be administered without medical advice.

An employer **is to** ensure that employees in RP manufacturing plants, or in other workplaces where hazardous substances are used, are trained in on-the-spot decontamination of the eye by the use of eye showers or eyewash bottles.

It is very difficult to see RP particles embedded in the eye. If the situation is such that RP could be involved in the accident, medical attention **is to** be sought immediately.

14.2 EMERGENCY DELUGE SHOWER

An employer **is to** ensure that safety or deluge showers are provided at the workplace in areas where hazardous substances are mixed, if the risk assessment reveals that an employee could suffer an injury from a splash or spill.

An employer **is to** ensure that deluge showers are prominently marked, maintained in a hygienic condition and that the access to them is kept clear of obstructions.

An employer **is to** test any safety showers at the workplace regularly to ensure they are operating correctly.

14.3 SPILLS OF HAZARDOUS SUBSTANCES

An employer **must** provide instruction to staff on the effective control of spills and leaks of hazardous substances. (WHS Act s. 9)

Depending on the hazardous substances, the instructions **should** include:

- (a) Spilling or leaking hazardous substances **are to** be reported as soon as reasonably practicable to the employer or the supervisor. The employer or supervisor, depending on the severity of the incident, is to ensure the area is cordoned off and warning signs erected.
- (b) All hazardous substance leaks or spills **are to** be immediately contained, either by direct action or by contacting relevant authorities.
- (c) A requirement to check the label of an unbroken container and the MSDS, to identify any special safety precautions that need to be taken.

- (d) A requirement to use the cleaning and protective equipment recommended in the MSDS to clean up the spillage, taking care to avoid personal exposure to the hazardous substance.
- (e) A requirement that any absorbent material used in the clean up is disposed of properly. If in doubt as to the correct method of disposal, advice is to be obtained from the supplier.
- (f) A requirement that no person **is to** be allowed into the area of the leak or spill until all the hazardous substance is cleaned up and any odours have dissipated.

An employer **is to** ensure that, at each workplace where hazardous substances are used, provisions have been made to contain any leak or spill should it occur.

The containment equipment **should** comprise the following:

- (a) diatomaceous earth bags (kitty litter) or sand;
- (b) mop;
- (c) suitable disposal container;
- (d) shovel;
- (e) yard broom;
- (f) dustpan and brush;
- (g) lengths of rope approximately four metres long (for cordoning-off purposes);
- (h) signs reading '**Warning Spillage - Do Not Enter**' in red lettering on a white background;
- (i) yellow or orange cones with the appropriate sign attached to the top;
- (j) appropriate eye protection that meets Australian/New Zealand Standard AS/NZS 1337 Eye Protectors for Industrial Applications;
- (k) sufficient number of appropriate protective gloves;
- (l) appropriate respiratory protection meeting Australian Standard AS 1716 Respiratory Protective Devices; and
- (m) an easy-to-read emergency procedure, laminated for protection.

An employer **must** ensure that all employees are trained in the use of containment equipment and are aware of where it is stored. (WHS Act s. 9)

Employers **must** comply with the requirements of the DG Regulations if the material spilt meets dangerous goods definitions.

14.4 EMERGENCY MANAGEMENT PLAN

An employer, in consultation with the employees and emergency response services, **is to** develop an emergency management plan for the workplace to cater for emergencies involving all foreseeable situations. Such emergencies may include fire, leaks or spills of hazardous substances, explosions, or accidents and incidents.

An employer **is to** ensure that an emergency management plan addresses the following:

- (a) details of the site including building(s);
- (b) the sources of risk taken into account;
- (c) emergency organisations and mutual assistance resources involved in the preparation of the plan;
- (d) the command structure in place in an emergency;
- (e) details of communications links, including telephones, radios and standby methods;
- (f) special equipment, including self-contained breathing apparatus, fire fighting and hazardous substance containment materials, damage control and repair items, and their storage location;
- (g) the determination of on-site action limits before the request for outside assistance;
- (h) that technical information relating to every hazardous substance and plant is available and up to date;
- (i) the location of the hazardous substances, personnel, equipment and emergency control rooms at the workplace; and
- (j) evacuation arrangements.

An employer **is to** ensure that an emergency management plan is reviewed when:

- (a) any hazardous substance is introduced to the workplace in a quantity which causes alteration to the placarding requirements; or
- (b) a change is made in the way a hazardous substance is stored, handled or used; or
- (c) a change is made to a process or procedure which may result in a change of risk; or

- (d) new information becomes available concerning any property of a hazardous substance that may alter the risk level in use.

Emergency response agencies **should** be provided with information on the hazardous substances present at the workplace as well as any other relevant information such as the location of the hazardous substances register and the emergency response plan.

15. PERSONAL HYGIENE AND AMENITIES

15.1 AMENITIES

Amenities **should** be separated from the process area by:

- (a) a separation distance of 6 metres minimum; or
- (b) an approved air lock which is kept in service continuously during hours of employment.

An employer **is to** ensure that, as far as is reasonably practicable, amenity rooms are kept free of any RP fibres and/or dust.

An employer **must** ensure that prescribed amenities are provided, in accordance with BCA requirements, and maintained in a usable condition for employees and consist of:

- (a) dining room;
- (b) change room;
- (c) showers and hand washing facilities; and
- (d) sanitary accommodation.

(WHS Regulations r. 116)

A serviceable door should separate each facility, and the door should remain closed at all times except when being accessed.

15.2 DINING ROOMS

The employer **is to** ensure that the dining room is sufficient in size and sufficient seating **is to** be provided to accommodate the employees who would use the room at any one time.

The employer **is to** ensure that dining rooms are equipped with a sink with running hot and cold water, and cupboards for the storage of food and utensils.

Dining rooms **are to** have hygienic facilities to adequately heat food and boil water.

Sufficient covered vermin-proof refuse receptacles, that are emptied daily, are to be provided in all dining areas.

15.3 CHANGE ROOMS

An employer **is to** ensure that a change room for the protection of employees' apparel and personal belongings is provided.

The change room area **is to** be sufficient to accommodate all employees who have to change clothes at any one time and **should** have provision to separate 'clean' and 'dirty' apparel.

Each employee requiring to make a change of clothing **should** be provided with an appropriate locker suitable to house and safeguard personal belongings.

15.4 SHOWERS

An employer **is to** ensure that showers are provided for employees.

Sufficient number of showers with suitable privacy and an adequate supply of hot and cold running water **are to** be provided for employees.

Shower rooms **should** be immediately adjacent to the change room and toilet facilities.

15.5 WASHING FACILITIES

An employer **is to** ensure that hand washing facilities are provided for employees.

These facilities **are to** consist of hot and cold running water over wash basins and an adequate supply of soap and hand cleaner.

Washing facilities **are to** be located in change rooms or in washrooms accessible to change rooms and be located so they may be conveniently used by persons before eating meals and after using sanitary accommodation.

15.6 SANITARY ACCOMMODATION

An employer **is to** ensure that adequate sanitary accommodation is provided with suitable privacy for all employees.

Sanitary accommodation **is to** be separated from dining areas by at least one serviceable door which is kept shut at all times when not being accessed.

Adequate ventilation **is to** be provided for sanitation facilities.

Suitable sanitary disposal facilities **are to** be provided for female employees.

15.7 PROHIBITED EATING AREAS

An employer **is to** ensure that employees do not consume foodstuffs in RP production areas.

Employees **are not to** consume food while in the RP production areas.

Where employees are engaged in RP work in transient areas, foodstuffs **are not to** be consumed within 6 metres of the work area.

15.8 NEW BUILDINGS

An employer **is to** ensure that any new buildings or building work complies with the BCA and in particular, Tas Part H101 Workplaces.

16. FIRST AID

An employer **is to** ensure that first aid is provided to any employee who is injured or becomes ill while at work.

First aid boxes, appropriately stocked with suitable equipment and supplies, **are to** be readily accessible and clearly identified. A sign **is to** be displayed adjacent to the first aid boxes containing the following:

- (a) emergency telephone numbers; and
- (b) names of qualified first aiders.

Prescription drugs and medications **should not** be provided in first aid boxes.

17. PERSONAL PROTECTIVE EQUIPMENT

The employer **must** provide PPE, at nil cost to employees, where there is no other method of controlling the risk of a workplace hazard. (WHS Regulations r. 58)

An employer **must** provide and maintain the PPE in a functional condition so as it affords the appropriate level of protection to the user. (WHS Regulations r. 58(1))

An employee **must** use the PPE in the manner to which he or she has been instructed and trained. (WHS Regulations r. 58(2))

An employee **must** take care of the PPE provided as any neglect or abuse has the potential to put the employee's health and safety at risk. (WHS Regulations 1998 r 58(2))

The employee **must** report any damage to PPE, through accident or fair wear and tear, to the employer as soon as the damage is identified. (WHS Regulations 1998 r 58(3))

The employer **is to** replace the damaged or worn item as soon as practicable.

Intentional damage or theft of PPE by an employee may be considered by the employer as wilful misconduct and may result in termination of employment as well as criminal charges. Legal action may also be brought under s. 20 of the *Workplace Health and Safety Act 1995* if there is evidence of intentional misuse, damage or interference with PPE.

An employer **is to** develop and implement a Personal Protective Equipment Policy for the workplace, setting out the expected roles and responsibilities of the employer and employees in relation to PPE and its use. A sample policy is shown in Appendix 1.

An employer **is to** ensure that the following PPE is issued to employees who may be exposed to RP manufacturing hazards:

- (a) safety glasses, safety goggles or safety face shield;
- (b) safety footwear;
- (c) respiratory protection devices;
- (d) hearing protection;
- (e) overalls (disposable); and
- (f) hand protection.

Notes:

- Where exposure levels are such that PPE is required, it **is to** be readily available in the workplace. Protective equipment is not to be regarded as a substitute for control measures to reduce exposure levels.
- Respirators **are to** be correctly fitted, maintained in good condition, and kept in clean storage when not in use.
- Filters and cartridges **are to** be replaced regularly, and in accordance with manufacturers' guidelines.
- The protection offered by some types of respirators can be affected by personal characteristics such as beards and the wearing of glasses or goggles. Appropriate respirators to ensure protection in these cases **are to** be used. All respirators in use in the workplace **must** comply with the provision of Australian Standards AS 1715, Selection, use and maintenance of respiratory protective devices, and AS/NZS1716, Respiratory protective devices.
- Safety glasses/goggles or face shields **should** be worn to avoid eye irritation or injury. The type of eye protection used **should** be suitable for the tasks being undertaken and be correctly fitted.

(Note: Some substances used in the RP process can interact with the products used in the manufacture of safety glasses/goggles or face shields).

- Skin irritation may be minimised by the use of gloves and loose-fitting, long garments. This clothing should be washed regularly, and separately from other laundry, to avoid cross contamination. Contaminated laundry **should** be marked to prevent exposure of others to the hazards. To avoid undue heat stress and general discomfort to the wearer, consideration **should** be given to the type of material chosen for this clothing.

18. HEALTH SURVEILLANCE

18.1 PRINCIPLES

Employees **should** undergo health surveillance prior to being employed in the RP industry.

Such surveillance **should** present any medical problems that could predispose employees to ailments caused by exposure to the materials and products of RP work.

Health surveillance provides a means for general health promotion, reinforcing previous training, and reassurance to employees with any concerns about exposure.

The timing and form of any health surveillance varies with individual circumstances, depends upon the degree of exposure, the type of industry, the medical resources and size of the workforce.

As a guide, health surveillance **should** normally include chest X-ray, lung function, physical examination, audiogram, and blood and urine analysis if indicated.

Refer to Appendix 2 for *Health Effects of Styrene Exposure*.

Refer to Appendix 3 for a list of pre-employment and ongoing health surveillance tests and information.

An employer **must** ensure that health surveillance records are kept for 30 years from the date of the last entry on the record. (WHS Regulations 1998, r. 22)

18.2 DRUGS AND ALCOHOL

Section 19 of the *Workplace Health and Safety Act 1995* sets out requirements for people affected by alcohol or drugs whilst at work.

19. A person must ensure that he or she is not, by the consumption of alcohol or a drug, in such a state as to endanger his or her own safety at a workplace or the safety of any other person at a workplace.

Further, regulation 26 of the WHS Regulations, states:

26. (1) Except with the permission of the employer or for legitimate medical reasons, an employee must not consume drugs or alcohol in the workplace.

Penalty: Level 2

(2) An employee must notify his or her employer if the employee's taking of, or failure to take, medication is likely to affect the safety of the employee or any other person at the workplace.

Penalty: Level 2

(3) An accountable person who has reasonable grounds for believing that a person is incapable of safely performing his or her duties, or may constitute a risk to another employee, due to the effects of alcohol, drugs or illness, must arrange for that person's removal from the workplace.

Penalty: Level 1

(4) An accountable person may, by written notice displayed prominently in the relevant area, declare a part, or the whole, of a workplace to be a smoke free area.

(5) A person must not smoke in an area declared to be a smoke free area.

Penalty: Level 1

19. BUILDING REQUIREMENTS

19.1 SEPARATION FROM OTHER BUILDINGS

A building for manufacture or processing of RP **must** be:

- (a) Separated from other buildings or parts of an occupancy by means of impervious walls with fire resistance level (FRL) at least 120/120/120; or
- (b) Separated from all other buildings by a clear space of not less than 6 m.

19.2 RISE IN STOREYS

The building used, or proposed to be used, in the RP industry **must** be of single storey construction.

19.3 MAXIMUM FLOOR AREAS

The floor area of any building or fire-separated section **must not** exceed the relevant maximum floor area set out in the Table below.

TABLE MAXIMUM FLOOR AREA (M²) OF BUILDINGS FOR MANUFACTURE OR PROCESSING OF REINFORCED PLASTICS OR ISOCYANATES			
Type of construction of building			
	Type A	Type B	Type C
Not sprinklered	1500	1200	1000
Sprinklered	6000	5000	3000

19.4 REQUIRED EXITS

Each fire-separated section of a building which is a workplace **must** have at least two exits for escape purposes and the number and location of the exits should be such that any point on the floor is not further than 20 m. from one of the exits.

Only exits with vertically hinged swinging doors may be considered as exits for the purpose of this clause.

19.5 HAND LAMINATING AND SPRAY DEPOSITING

The walls and floors of areas where hand laminating and spray depositing are carried on **must** be constructed of non-combustible materials.

19.6 CHANGE OF USE

If there is a change to the use of a building, or part of a building, the alterations **must** comply with the provisions of the BCA.

19.7 NEW BUILDINGS OR BUILDING WORK

An employer **must** ensure that any new buildings or building work in connection with the RP industry complies with the requirements of the BCA. Particular attention is drawn to the special use building provisions of Tas Part H114 Premises for Manufacture or Processing of Glass Reinforced Plastics.

19.8 TEMPERATURE CONTROL IN RP WORK AREAS

Where atmospheric conditions are such that the temperature is below a level at which resins will set correctly, heating of the workplace may be required.

Any method of heating employed **must** be such as not to create an ignition source for any fumes or vapours that may be generated from the RP process. This requirement also applies to all controls associated with the heating mechanism.

If fuel fired equipment or non spark proof electric appliances are to be used for heating a work area, then RP work is not to be done until such time as the heating equipment is turned off and removed a safe distance from the work area to prevent the ignition of any fumes or vapours generated.

20. ELECTRICAL SAFETY

An employer **is to** ensure that all single and polyphase electrical equipment, other than fixed equipment, which is designed for connection by a flexible power supply cord and plug to a low voltage supply is inspected and tested by a competent person. The inspection and testing **should** be in accordance with AS/NZS 3760, In-service inspection and testing of electrical equipment (low voltage means exceeding 50 volts a.c. or 120 volts ripple free d.c. but not exceeding 1000 volts a.c. or 1500 volts d.c.).

An employer **is to** ensure that portable Residual Current Devices (RCDs) are supplied for use with all portable power tools being used outside the workshop environment.

Within the workshop environment, the employer **is to** incorporate RCDs into the switchboards such that employees operating electrical equipment are protected against electrical shocks.

An employer **is to** ensure that any RCD proposed to be used meets the approval and test criteria specified in AS 3190, Approval and test specification – Residual current devices (current-operated earth-leakage devices).

An employer **must** ensure that all electrical installations in the workplace are installed and maintained by a suitably licensed person in accordance with the requirements of AS/NZS 3000, Electrical installations (known as the Australian/New Zealand Wiring Rules). (WHS Regulations r. 80)

For more information contact:

Workplace Standards Tasmania

HOBART

30 Gordons Hill Rd (PO Box 56)
Rosny Park 7018 Tasmania
(Ausdoc DX 70415 Rosny)

LAUNCESTON

Henty House, 1 Civic Square
Launceston 7250 Tasmania

BURNIE

Reece House, 46 Mount Street (PO Box 287)
Burnie 7320 Tasmania

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APPENDICES

Appendix 1 PERSONAL PROTECTIVE EQUIPMENT POLICY

In meeting its obligations under the *Workplace Health and Safety Act 1995* [Name of Business] is committed to maintaining a safe work environment through the appropriate use of personal protective equipment, where no other methods of controlling hazards are available. In meeting its legal obligations and commitments, it needs to be recognised that **ALL** have an obligation to assist in creating a safe working environment. In doing so we have specific duties:

Employer Duty

A wide range of personal protective equipment, including safety glasses and goggles, safety footwear, overalls, respiratory protection devices, hearing protectors and any other specialist personal protective equipment issued by the [Name of Business] will be provided at nil cost for employees and replaced when no longer performing to the required standard.

Supervisor Duty

The supervisor will:

- (a) provide training in the correct use and care of the personal protective equipment;
- (b) ensure that employees comply with the requirements of the Act and Regulations;
- (c) survey all hazardous tasks (in consultation with employees) to determine the most appropriate personal protective equipment to be used in line with legal requirements; and
- (d) co-ordinate regular inspection and maintenance of personal protective equipment.

Employee Duty

Employees will use and wear the personal protective equipment and clothing provided by the employer in all cases when a risk assessment indicates that the protection is required. Employees will keep personal protective equipment and clothing issued in a clean and serviceable condition as far as is reasonably practicable taking into account the work being undertaken.

	Employer	Supervisor	Employee Representative
Signed
Position:
Date:

Appendix 2 HEALTH EFFECTS OF STYRENE EXPOSURE

2.1 Short Term Health Effects

- (a) Styrene vapour causes mild irritation of the nose and throat at concentrations around 100 ppm, definite irritation at 350-500 ppm and severe irritation at about 500 ppm.
- (b) Symptoms such as headache, dizziness and fatigue are reported at concentrations above 100-200 ppm.
- (c) Other symptoms such as slower reaction times, reduced manual dexterity, and impaired co-ordination and balance can be observed at concentrations above 200 ppm.
- (d) Styrene liquid defats the skin and can cause dermatitis.
- (e) Styrene liquid can cause mild to severe irritation of the eyes if splashing occurs.

2.2 Long Term Health Effects

- (a) A number of studies have reported on the effect to the central nervous system of repeated exposure to styrene vapours.
- (b) Slower reaction times have been measured in workers exposed to concentrations of about 55 ppm and even lower over extended periods.
- (c) This impairment appears temporary, and some of the studies are the subject of debate.
- (d) Increased damage to the genetic material in one type of blood cell (lymphocytes) has been reported at low concentrations in some studies.
- (e) There is inadequate evidence to show that styrene is carcinogenic in humans.

Appendix 3 LIST OF PRE-EMPLOYMENT MEDICAL AND ON-GOING MEDICAL SURVEILLANCE TESTS AND INFORMATION

- Personal Information
- Occupation History
- General Health
- Medical History
- Physical Assessment
- Tests and Investigations
 - Urinalysis
 - Blood Pressure
 - Pulse Rate
 - Colour Vision
 - Long Distance Vision
 - Near Vision
 - Lung Function Test
 - Blood Test
 - Lung X-Ray
 - Dexterity
 - Reaction Time
 - Co-ordination and Balance

Note:

Typical pre-employment medical and ongoing medical surveillance forms have been prepared for the Tasmanian mining, metallurgical, and chemical industries and are available from Foote and Playsted, Charles Street, Launceston.

Appendix 4 FORMAT FOR DOCUMENTING HAZARDS, RISKS AND RISK CONTROL MEASURES

Worksheet No:..... Plant Description: Organisation:.....
 Date of Assessment:
 Assessment Conducted by: Risk Assessment Method used:..... Address:

No:	Hazards identified <i>(Describe the situation or parts of plant which could possibly give rise to injury or illness)</i>	Is there any risk? <i>(Is there any likelihood of injury or illness occurring?)</i>		Where there is a risk, describe the proposed risk control measures	Are the risk control measures practicable?		Implementation date for the practicable risk control measures
		Yes	No <i>(Describe the risk control measures already implemented to address the hazard)</i>		Yes	No	

Appendix 5 EXAMPLE RISK ASSESSMENT

Worksheet No: 1 **Plant Description:** Forklift **Make:** ABC **Model:** XYZ **Organisation:** ABC Manufacturing
Serial No: 1234 **Address:** 101 Main Street Mulgrave

Date of Assessment: 14/11/01

Risk Assessment Method Used: Visual Inspection

Assessment Conducted by: John Smith & Sandra Green

No:	Hazards identified <i>(Describe the situation or parts of plant which could possibly give rise to injury or illness)</i>	Is there any risk? <i>(i.e. is there any likelihood injury or illness occurring?)</i>		Where there is a risk, describe the proposed risk control measures	Are the risk control measures practicable?		Implementation date for the practicable risk control measures
		Yes	No <i>(Describe the risk control measures already implemented to address the hazard)</i>		Yes	No	
1	People can be struck by the forklift.			Isolate the forklift operation from pedestrians. Fit warning devices on the forklift as per clause 11.6 of AS 2359.1 Instruct operators on speed limit and warning devices.			1/12/01 8/12/01
2	Forklift operator can be suffocated by exhaust fumes when working in confined spaces		This is an electric forklift.				
3	Operators can be crushed by falling loads.			Fit overhead guard on the forklift as per clause 12.2 of AS2359.6 and AS2359.9. Provide training to operators on load handling			15/12/01 15/1/02

Appendix 6 EXAMPLES OF RISK DEFINITION AND CLASSIFICATION

(Informative)

TABLE E1
QUALITATIVE MEASURES OF CONSEQUENCE OR IMPACT

Level	Descriptor	Example of Description
1	Insignificant	No injuries, low financial loss.
2	Minor	First aid treatment, on-sight release immediately contained, medium financial loss.
3	Moderate	Medical treatment required, on-site release contained with outside assistance, high financial loss.
4	Major	Extensive injuries, loss of production capability, off-site release with no detrimental effects, major financial loss.
5	Catastrophic	Death, toxic release off-site with detrimental effect, huge financial loss.

NOTE: Measures used should reflect the needs and nature of the organisation and activity under study.

TABLE E2
QUALITATIVE MEASURES OF LIKELIHOOD

Level	Descriptor	Description
A	Almost certain	The event is expected to occur in most circumstances.
B	Likely	The event will probably occur in most circumstances.
C	Moderate	The event should occur at some time.
D	Unlikely	The event could occur at some time.
E	Rare	The event can occur only in exceptional circumstances..

TABLE E3
QUALITATIVE RISK ANALYSIS MATRIX - LEVEL OF RISK

Likelihood	Consequences				
	Insignificant 1	Minor 2	Moderate 3	Major 4	Catastrophic 5
A (Almost certain)	H	H	E	E	E
B (Likely)	M	H	H	E	E
C (Moderate)	L	M	H	E	E
D (Unlikely)	L	L	M	H	E
E (Rare)	L	L	M	H	H

Note: The number of categories should reflect the needs of the study.

LEGEND:

E = Extreme risk; immediate attention required

H = High risk; senior management attention needed.

M = Moderate risk; management responsibility must be specified.

L = Low risk, manage by routine procedures.

REFERENCES

- Australian Building Codes Board, (1996), *Building Code Of Australia Class 2 to Class 9 Buildings*, Vol. 1
- Australian Standard AS 1269 Occupational noise management - overview
- Australian Standard AS 1319 Safety signs for the occupational environment
- Australian Standard AS 1337 Eye protectors for industrial applications
- Australian Standard AS 1715 Selection, use and maintenance of respiratory protective devices
- Australian Standard AS 1716 Respiratory protective devices
- Australian Standard AS 3000 Electrical installations (Known as the Australian /New Zealand wiring rules)
- Australian Standard AS 3190 Approval and test specification - Residual current devices (current-operated earth-leakage devices)
- Australian Standard AS 3640 Workplace Atmospheres - Method for sampling and gravimetric determination of inspirable dust
- Australian Standard AS 3760 In-service safety inspection and testing of electrical equipment
- National Occupational Health and Safety Commission, (1994), *Control of Workplace Hazardous Substances*, National Code of Practice [NOHSC:2007(1994)]
- National Occupational Health and Safety Commission, (1995), *Exposure Standards for Atmospheric Contaminants in the Occupational Environment* [NOHSC:1003(1995)]
- National Occupational Health and Safety Commission, (1994), *Guidance Note for the Control of Workplace Hazardous Substances in the Retail Sector* [NOHSC:3018(1994)]
- National Occupational Health and Safety Commission, (1990), *Synthetic Mineral Fibres*, National Standard and National Code of Practice
- Worksafe Western Australia Commission, (1996), *Code of Practice: Styrene*

LEGISLATION

- Building Regulations 1994 (Tas.)
- Dangerous Goods Act 1998* (Tas.)
- Dangerous Goods (General) Regulations 1998 (Tas.)
- Local Government (Building and Miscellaneous Provisions) Act 1993* (Tas.)
- Plumbing Regulations 1994 (Tas.)
- Workplace Health and Safety Act 1995* (Tas.)
- Workplace Health and Safety Regulations 1998 (Tas.)