



RSMA BEST PRACTICE GUIDE

PART 2 **Specific Operations** **Plant and Equipment**

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Section 1. Introduction

1.1 The purpose of this chapter is to give guidance and advice on specific operations, giving examples of the safe use and operation of the varied equipment available in the road marking sector.

The chapter will focus on pieces of equipment and operating procedures most common to the sector and aims to cover most of the scenarios faced by road markers today.

1.2 Chapter 1 of this document listed in table form (Table 1.1 Page 4) the acts and regulations applicable to not only the road safety markings sector, but to industry at large. This Chapter will look at the practical considerations and application of regulations such as:

- Construction (Design and Management) Regulations 2015
- Control of Substances Hazardous to Health Regulations 2002
- Lifting Operation and Lifting Equipment Regulations 1998
- Manual Handling Operations Regulations 1992 as amended 2002
- The Control of Noise at Work Regulations 2005
- The Control of Vibration at Work Regulations 2005
- Personal Protective Equipment at Work Regulations 1992 as amended
- Provision and Use of Work Equipment Regulations 1998

This is not an exhaustive list however, in practice many of the regulations listed in table 1.1 of Part 1 will be relevant to work carried out in this field. This section will make reference where necessary to any of the current regulations that apply.

1.3 Equipment, Articles and substances

The term equipment, articles and substances, will be used when describing any item of machinery, tools, materials and substances. This publication aims to be a generic guide and will only cover in detail the more commonly found equipment, articles and substances giving a general understanding of accepted methods across the sector. Member organisations are urged to use the best practice guide as a benchmark of 'minimum requirements' and to produce more specific methods according to the situations pertinent to their current position within the market.



Section 2. The Selection, Use and Maintenance of Personal Protective Equipment (PPE)

2.1 The Personal Protective Equipment (PPE) at Work Regulations 1992 place responsibilities on employers to implement certain health and safety requirements regarding the provision and use of PPE. This section is written as a guide for the selection, use and maintenance of PPE within the road markings sector. Recommendations within this section can be used to demonstrate to clients and principal contractors the level of PPE to be worn by road markers under 'normal' circumstances.

2.1.1 PPE is defined as all equipment (including clothing provided for the protection against the weather) which is intended to be worn or held by a person at work and which protects against risks to their health and safety. E.g. safety helmets, gloves, eye protection, high-visibility clothing, safety footwear and respiratory protective equipment.

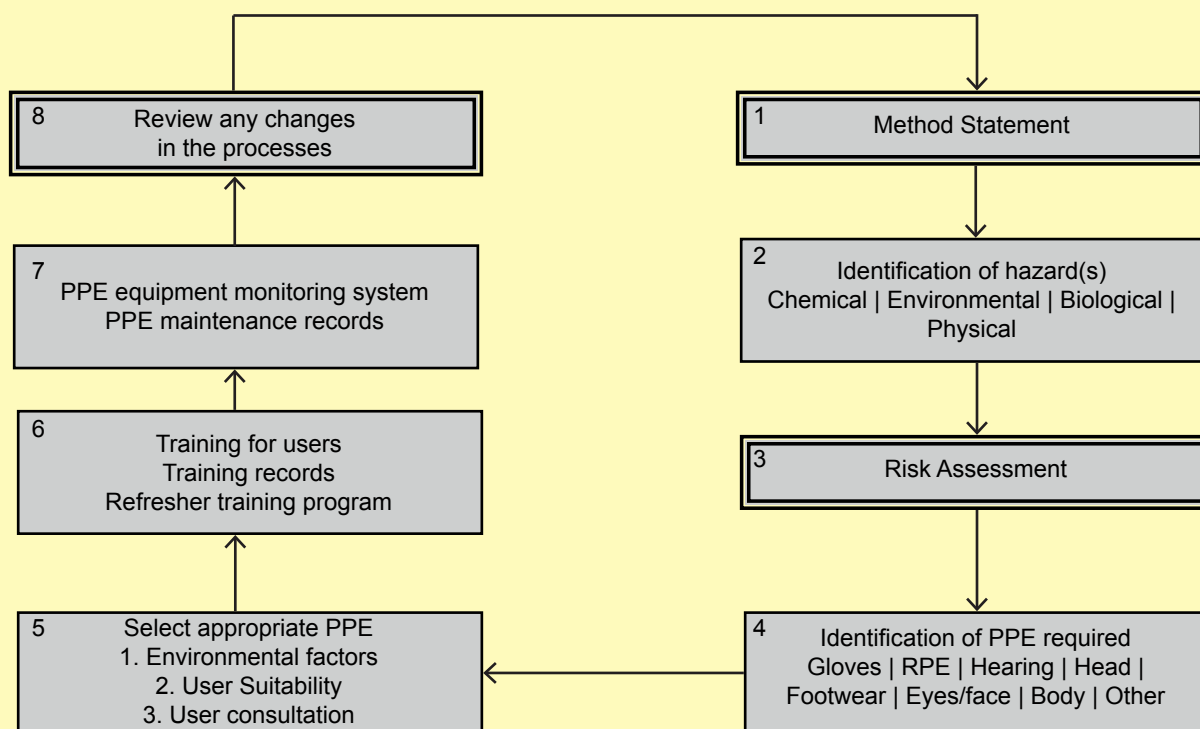
2.1.2 Ordinary working clothes and uniforms that do not specifically protect against risks to health and safety are not covered by the regulations (e.g. corporate clothing carrying the company logo).

2.1.3 Under the management regulations, employers are required to carry out workplace risk assessments, these processes are covered in Part 1 of this publication and enable employers to select the most appropriate means of reducing any identified risks to an acceptable level. Risks should be eliminated or minimised as close to the source using the hierarchy of risk control. The issue and use of PPE is relatively low on the hierarchy of control and should be considered as a 'Last Resort' option for protection after all other forms of protection have been considered. This is because of the 'human factor' in that the PPE only protects the wearer if it is being worn or being used correctly. PPE can easily be compromised and can fail if not protected and maintained in good order.

2.2 Selection of suitable PPE

The diagram below shows a flow chart used to help in the identification and selection of appropriate PPE where alternative controls have been considered, and it has been found that residual risks can be controlled by PPE.

Diagram 2.1



2.2.1 British and European standards (BS EN)

All newly issued PPE must comply with current British and European standards. Generally, protective clothing must comply with BS EN 340:2003 General requirements for protective clothing. Additional standards may be required for each individual item as shown in fig 2.1. Additional requirements:

- All PPE must carry relevant 'CE' markings to certify minimum European standards
- Selected PPE must be compatible with any other PPE that may be worn at the same time
- All PPE must be repaired or replaced when damaged or past its recommended useful life
- Where required, suitable storage and carrying aids such as holdalls should be provided

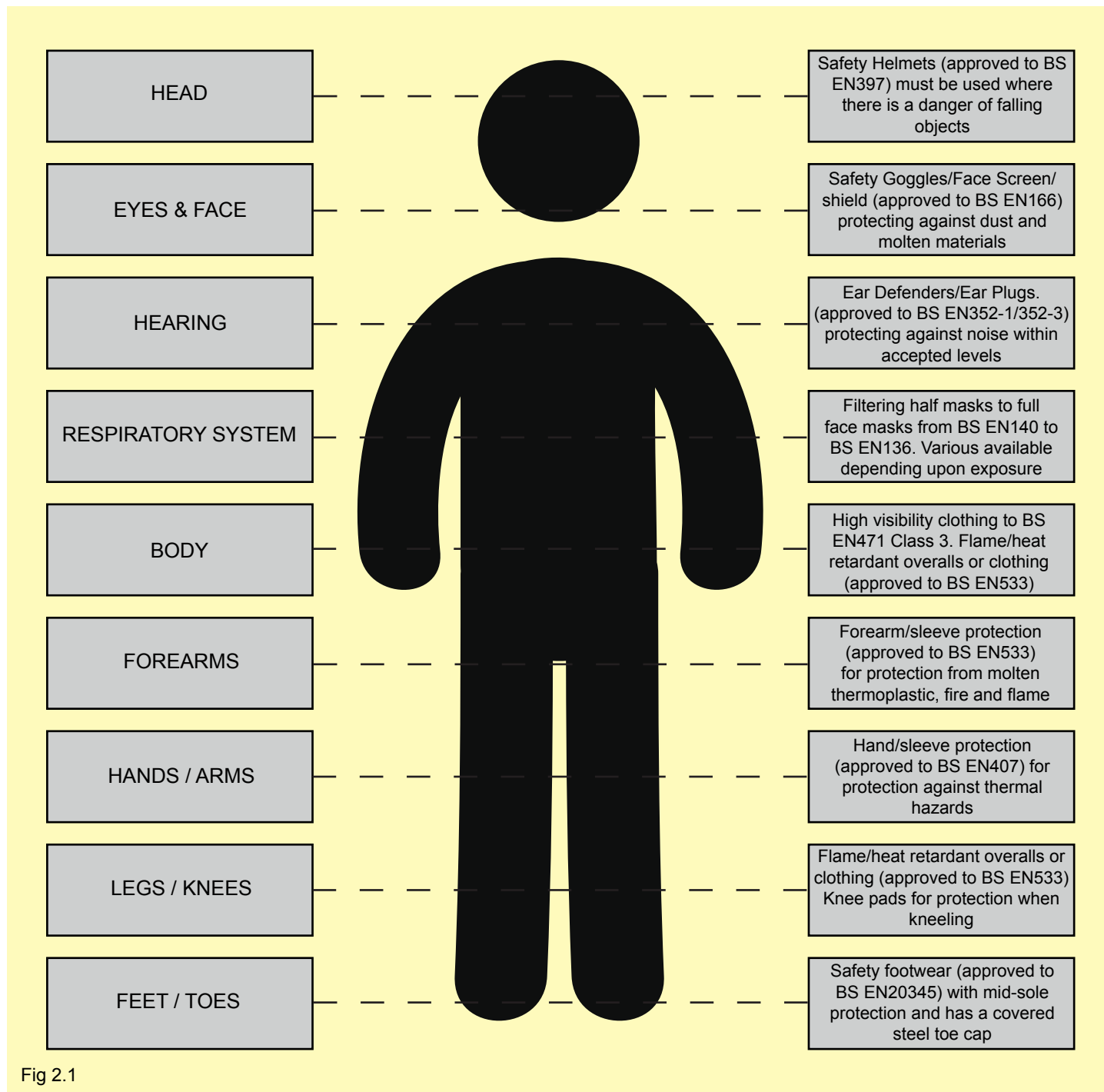


Fig 2.1

BS EN numbers and types of PPE shown in fig 2.1 are considered as examples only and should be used as guidance in the selection of appropriate PPE. Members are reminded of the requirements under the Personal Protective Equipment (PPE) at Work Regulations 1992, and should risk assess all activities prior to purchase and issue of all types of PPE.

2.2.2 Ergonomic selection

The comfort of the wearer should be considered when selecting PPE. The demands of the work activities and environment must also be carefully considered. This will require:

- Assessment of the physical effort required to complete the work
- The method of work
- How long the PPE needs to be worn
- Assessment of the need for training and consultation

It may be necessary to consider different types and sizes of PPE as there may be considerable differences in the physical dimensions of the users.

It is important that the PPE is comfortable and 'fit for purpose' and that the users have been consulted and involved in the selection process. Without this involvement the end users may not accept the PPE and may result in an ineffective safe system of work.

2.3 Use of PPE

PPE should be considered as 'Last Resort' options after all other forms of protection have been considered. It is extremely important that the user be fully aware of the reasons why they are being asked to wear PPE.

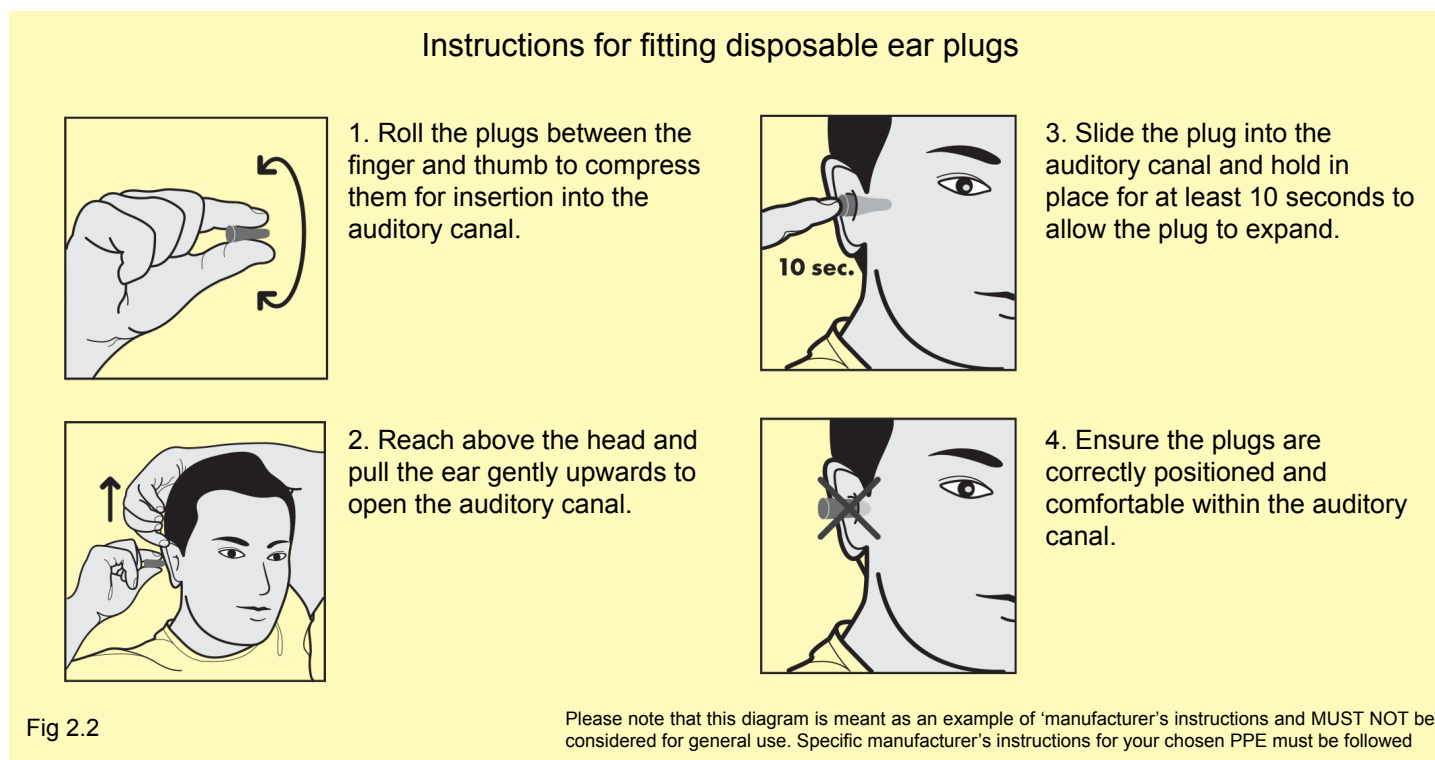
In addition to understanding why, users must be trained in its correct use.

2.3.1 Information, instruction and training

All users of PPE must receive relevant information:

- instruction and training in the correct use of the PPE issued to them
- instructions on its limitations
- the health and safety risks that the PPE is provided to guard against
- care and maintenance
- when it is due for replacement

The degree of training will depend on the complexity and performance requirements of the PPE. Complex equipment requires more formal instruction, training and testing. Fig 2.2 shows an example of PPE training. Information, instruction and training is extremely important, it can be simple and take very little time to do.



2.3.2 User training

Additional information and training must be considered by employers who issue PPE. Recommendations for additional areas to be covered in training sessions such as 'toolbox talks' are listed below:

- The effects of unprotected exposure
- Where to obtain the PPE
- How to correctly fit the PPE
- When and where the protection should be used
- Where necessary, how to clean and maintain the equipment
- What to do with faulty and damaged equipment

Management and supervisory staff need the following additional knowledge:

- What responsibilities are expected of supervisors and managers within the SSW regarding the effective use of PPE
- How the organisation's system operates for the selection, issue, cleaning and maintenance of PPE
- How setting a good example with PPE is likely to achieve a high level of compliance within the workforce

Training records for any and all training sessions must be kept in order to prove competence. Employees should sign to acknowledge attendance and understanding of the training session. More complex equipment may require specific training. Many manufacturers run or facilitate training sessions on their own equipment.

For further information on training for PPE contact: info@rsma.co.uk

2.4 Supervision and monitoring of PPE

It is recommended that one member of staff is given the overall responsibility for the purchase, issue and control of PPE within the organisation. This would form a focal point, predominantly as a co-ordinating role to monitor and control such issues as:

- Are employees effectively using issued PPE?
- Is the PPE adequately cleaned, maintained and replaced as required?
- Is training being carried out consistently?
- Is documentation being kept up to date?

Examples of issue registers, training records and other monitoring sheets are attached at annex 2A to this section.

It is further recommended that the issue and control of PPE be written in to the HR policy in addition to the H&S policy, as this will add strength to the message that PPE is an important part of doing the job.

2.5 Maintenance, testing and replacement

All PPE must be:

- Checked for defects on a regular basis, e.g. holes in gloves, cracked visors etc;
- Cleaned after use and maintained in a hygienic state (consult manufacturer's instructions)
- Stored in an appropriate manner, e.g. safety goggles kept in a case, high visibility clothing stored away correctly and face visors stored to prevent damage to the screen. Some organisations may consider the use of 'hold-alls' to store PPE in road marking vehicles.
- Replaced if lost or damaged, e.g. if visor screens are scratched.

Should any operating conditions change such as the introduction of new or replacement equipment, or changes to MS and/or working practices, be required; a new or amended risk assessment should be conducted and PPE changed if necessary.

- An example of a risk survey for the use of PPE is shown at annex 2B to this section.



2.6 RSMA Recommended minimum PPE

The RSMA recommend the minimum levels of PPE required to conduct road marking activities and associated tasks. Table 2.1 shows examples of the minimum requirements.

PPE Item	Details/Explanation Table 2.1
	Safety Helmets: Safety helmets are recommended where there is a risk from being struck by falling hazards. Generally road markers who work in areas with no overhead hazards will not be required to wear safety helmets. It is however noted that safety helmets may be issued as a dual function item where peripheral PPE is added. Helmets may carry chin straps, ear defenders and face shields. This may in effective use of an 'all in one' result alternative to many separate items. Where extra items are being added to the helmet, care MUST be taken in selecting compatible helmets and peripherals. Prior to the issue of safety helmets, suitability for purpose must be checked. Helmets can often create a hazard when no overhead hazards are apparent. The selection process in diagram 2.1 page 4 should be followed prior to confirmation and issue of safety helmets.
	Eyes & Face protection: Eye and face protection is recommended for many road marking activities. Visors are best used to provide eye and face protection against molten thermoplastics, especially when loading and decanting from boilers. Goggles and safety glasses are often a site requirement and offer protection from dust, dirt particles and projected objects, such as debris thrown up from vehicles using the carriageway adjacent to the work area. Operators who may be bent down marking out or lining may be at higher risk from projected carriageway debris. In addition to the standard requirement for eye protection (see fig 2.1 page 4) debris impact ratings must be considered prior to selection and purchase of eye protection. Low, medium and high energy impact lenses are available and must be selected according to the potential hazards on site.
	Hearing protection: Unwanted sound (noise) is generated from many sources in the workplace. Ambient sound and noise generated from passing vehicles is often overlooked as a source of workplace noise. Noise generated from machinery directly related to the work MUST be measured and controlled at source. This should be done on a regular basis and reviewed and monitored. Elements of preventative maintenance can assist in the management of unwanted sound, as can the initial design and selection of equipment. In all cases management of noise at work starts with methods to reduce or prevent the noise at source. Should unacceptable levels of noise still exist after application of methods of elimination, ear defence should be considered as a last resort. Ear defence should only be selected after careful measurement of noise levels, and must be within the standards set out in fig 2.1 page 4. Issued hearing protection must be maintained and hygienically cleaned. Disposable ear defenders must only be used as many times as stated in the manufacturers' instructions

PPE Item	Details/Explanation Table 2.1 cont.
	Respiratory Protective Equipment (RPE): A variety of activities within road marking works will generate gases, vapours, fumes, dusts and aerosols. Substances hazardous to health affecting in particular the respiratory system MUST be eliminated or controlled. The selection and issue of the correct RPE is essential. RPE MUST be selected carefully to ensure it gives adequate protection. Air quality surveys and research should be conducted in order to ascertain the toxicity of any agents, and the particle sizes involved in the substances being guarded against. Physical considerations such as individuals face shape, facial hair and glasses must be considered. Activities involving the thermal lance, boiler work and operations creating dust such as operating a 'scabber' will require surveys to determine 'Workplace Exposure Levels' (WEL) prior to the selection of appropriate RPE
	High Visibility Clothing: BS EN 471: 2003 Specification EN471 deals with 'High Visibility Warning Clothing for professional use' Class -3 reflective garments in fluorescent yellow or fluorescent orange-red are suitable for works on all roads, including high speed roads (over 50mph). Common variations in high visibility garments can be seen across the sector. Ultimately class-3 garments are considered the most commonly used. This is due in part to the need under the Traffic Signals Manual (Chapter 8) for class-3 garments to be worn on motorways and other high-speed roads. Although the colour is not specified in Chapter 8, it is important that the understanding across the sector is that a uniform colour and class would be financially beneficial to members. Uniformity would also remove the need for many extra items of PPE and decrease the margin of error when selecting appropriate PPE for use on site. It is recommended by the RSMA that all high visibility garments are Class-3. The colours recommended are shown in fig 2.3 on page 28. Member companies who do not currently comply with these recommendations are advised to plan a program of change to recommended garments on an old for new process when old garments are naturally replaced over time.
	Kevlar Hand/forearm protection: Kevlar, heat resistant gloves and forearm protection is recommended for use by operatives involved with the handling of molten material, activities involving high temperature applications such as, thermal lance line removal, compressed air and gas drying activities and operating and handling bitumen boilers for road stud application. Forearm protection offers the lower arms a level of protection against splashes. When added to the layer of protection offered by class three long sleeve clothing as shown above. Injuries to the lower arms caused by burns from molten materials can be reduced. BS EN 407 is the standard with respect to 'Thermal Hazards' it is recommended that gloves are rated to: a) Burning behaviour, b) Contact heat c) Convective heat d) Radiant heat e) Small splashes of molten material Guidance can be gained from the PPE supplier or the RSMA.

PPE Item	Details/Explanation Table 2.1 cont.
	Heat Resistant Gloves: Heat resistant gloves are to be issued for the same reasons stated on the previous page. Gloves are rated in the same way as the Kevlar forearm protection for heat and flame resistant qualities. Heat resistant gloves will offer further protection to the skin from molten thermoplastic. Activities involving 'Hot Works' shall always be individually risk assessed and the subsequent method statements will often require the use of thermally resistant hand protection. General Hand Protection: Gloves for general work do not need to be thermally resistant. Protective gloves such as rigger gloves offer protection to the hands and skin. The RSMA recommend hand protection for general use to reduce injuries such as cuts and grazes. Gloves that offer chemical protection should be issued where the symbols below are carried on materials. The risk assessment process and the selection process in diagram 2.1 page 4 should be followed prior to confirmation and issue of safety gloves. In addition to heat, chemical and physical hazards gloves are often required when equipment used exposes the operator to excessive vibration that cannot be effectively controlled at the source by planned preventative maintenance.  
	Flame/Heat Retardant Trousers: Trousers as an item of PPE are required to provide some element of protection from hazards. If the garment is not used to protect in this manner then it is not necessarily PPE and would not fall under the PPE regulation. It is however considered that protective trousers offer protection in a number of ways. Hi visibility is one of the most obvious protective measures employed by trousers. Others may be flame, fire and heat retardant properties. Water and rain proof trousers offer protection from the elements, whilst trousers with knee pads provide added comfort when kneeling to mark out lines or prepare equipment for use. Whilst a many and varied selection of protective trousers are available for purchase and issue, selecting the correct type is critical to the nature of the hazards. Where possible and as a recommendation from the RSMA, trousers should be dual function. Heat and fire proof trousers can be made from hi visibility materials that comply with BS EN471 whilst waterproof garments can be provided in hi visibility materials also. This publication aims to recommend hi visibility trousers that satisfy as many requirements as possible. This will remove the cost element and reduce the misunderstandings around what equipment should be worn when and why. Further guidance on the accepted types, materials and suppliers of this equipment can be obtained from the RSMA.

PPE Item	Details/Explanation	Table 2.1 cont.
	Safety Footwear: In practical terms, safety footwear will be required for all activities undertaken by operational road markers. Safety footwear is essential and must be issued and worn as required. Like many other items of PPE, selection and purchase of the correct and appropriate types of footwear is critical. Para. 2.7.2 p.30 illustrates types and styles of safety footwear that are considered inappropriate for use in the road marking sector. High leg boots rather than shoes are recommended as the higher leg provides ankle support. Shoes and boots should be 'lace ups' in order to allow for effective removal by medical professionals should the case arise. 'Lace ups' also provide a tighter seal to the top of the boot. This will help prevent molten material or hot liquid from falling into the boot. Where the risk assessment allows, lower style safety shoes, safety trainers or non lace-up boots may be selected. Safety trainers are often considered more fashionable and may result in a higher likelihood that the footwear is worn. All safety footwear must be replaced as soon as defects are suspected to reduce the protective qualities of the item.	

Miscellaneous Items:

Various miscellaneous items may be selected that don't necessarily fall into the PPE category. Items of corporate clothing as mentioned in paragraph 2.1.2 are not strictly PPE; however, organisations may opt for dual role garments, such as sweat shirts that are to class 3 hi visibility.

Other variations not covered in this section may include:

- High visibility 'bomber style jackets' these can be more appropriate due to the high waist band offering freedom of movement to operatives when lifting and handling or bending to conduct work. Whilst still remaining within the requirements of BS EN471 class 3.
- Overalls; Fire retardant overalls are a requirement for personnel attending training courses with the RSMA. This is due to the significant risks associated with potentially inexperienced individuals working in larger groups. Organisations may wish to issue fire retardant overalls should specific risk assessments show that this type of PPE is needed.
- Standard Overalls; Where personnel are not exposed to 'hot works' organisations shall assess the risks and issue overalls as required. This may be pertinent to engineering, stores and support personnel.
- Protection from heat and cold; little consideration is often given to protecting the workforce from exposure to weather conditions other than rain. Consideration shall be given to exposure to UV radiation from the sun and potential health issues associated with high summer temperatures. In addition, low temperatures need to be considered in the same manner. Risk assessments and SSW need to be 'seasonally aware' in order to account for changes in weather conditions.

Managers and managing supervisors who are not strictly operational and are not issued with operational PPE shall ensure that if the need arise full PPE must be worn as required under the risk assessments and method statements for those activities undertaken.



2.6.1 RSMA Recommended minimum PPE

Fig 2.3 below shows a picture of how to expect an operative working for an RSMA Member company to look when attending site to conduct road marking and associated activities:

Fig 2.3  Class three high visibility vest in fluorescent yellow/green Fluorescent orange/red heat/ flame resistant trousers with two retro reflective stripes Safety footwear as required High visibility clothing summer variation	 Visor/face shield variation for handling hot materials Heat resistant hand & arm protection worn correctly with the high visibility clothing Thermal protection may override retro reflectivity for a short period of time during a task Safety footwear as required High visibility clothing summer variation with added PPE
 Class three high visibility vest in fluorescent yellow/green. Shorter 'bomber jacket' style jackets may also be used Fluorescent orange/red heat/ flame resistant trousers with two retro reflective stripes Safety footwear as required High visibility clothing winter variation	 Safety helmet as required. This example fitted with a visor mount and ear defenders High visibility clothing winter variation with added PPE

2.7 PPE not recommended by the RSMA

The following section will deal with items of PPE that are not considered suitable for use when conducting general road marking activities.

It must however be added that should significant risks be highlighted during 'specific risk assessments' of the road marking tasks and subsequent findings and evidence prove that this type of PPE **MUST** be worn, then organisations must follow those findings.

This section is designed to guide organisations away from using generic 'blanket policies' and to encourage cooperation and understanding across all disciplines within the highways sector. It is advised that due to the specialised nature of road markings, blanket policies enforced upon road marking organisations are often inappropriate and do not fulfil the requirements under the Health and Safety at Work Act 1974; In as much as they can be considered as NOT 'suitable and specific' to specialised road marking organisations.

2.7.1 Safety helmets and head protection

The wearing of safety helmets when applying road markings may create additional hazards. An example of this would be the distraction caused by safety helmets slipping or moving on the wearers head or falling off. In cases where the work area is close to live traffic lanes, safety helmets that fall into the line of traffic may be considered a significant hazard. Of course the use of 'chin straps' that are available as an addition to safety helmets can be issued for use. This will require added training and supervision to manage the situation.

The application of the hierarchy of control will help in considering the use of safety helmets. The RSMA draws the attention of all concerned, especially those with significant obligations under the CDM Regulations, to the Construction (Head Protection) Regulations 1989.

In particular guidance document 'L102 Guidance on regulation' published by HSE Books. Regulation 4, Paragraph 23, sub paragraphs (a) and (d) & Regulation 4, Paragraph 24, sub paragraphs (a) are quoted below:

Examples of where suitable head protection may not have to be worn;

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The circumstances when there is no foreseeable risk of head injury from falling or swinging objects or striking the head against something will be very limited in most construction work. Examples where wearing suitable head protection may not have to be worn include:

- On sites which consist of, or where work has reached the stage of, completed structures where there is no risk of objects or materials falling from one working level to another and which have sufficient headroom. Maintenance or decorative work is most likely to be involved;
- When all work is at ground level, for example road works such as kerb laying or resurfacing work.

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Those who have duties to ensure suitable head protection is to be worn will need to:

- Identify when and where head protection should be worn. In many cases it may be easier to specify areas or work stages where there is no foreseeable risk of injury, and then require that head protection is worn in all other circumstances. Where there is no foreseeable risk at certain stages of work these should be identified by those involved, preferably at the planning stage. Head protection will be needed when people move from location to location on site, during which they may be exposed to foreseeable risk of head injury.

Regulation 5 goes on to state that: 'where the CDM Regulations apply, any rules on head protection wear could be included in the construction phase health and safety plan' Rules should be in writing and brought to the notice of those affected. The person in control needs to consult employees and, where appointed, trade union safety representatives; other interested parties might need to be consulted.

Taken from: L102 Guidance on regulation, published by HSE Books.



2.7.2 Safety boots and footwear

A number of studies have shown that certain styles of safety boots are considered unsuitable for work in the road marking sector. Organisations are strongly advised to fully assess the associated risks when selecting or indeed rejecting styles of safety footwear. The RSMA recommend close co-operation with clients and principle contractors who stipulate safety footwear requirements.

Examples of safety footwear considered unsuitable in this sector, and the reasons why these conclusions have been made are shown below:

Examples of unsuitable safety footwear:

'Rigger Boots'

Rigger boots are considered unsuitable as the design of them give little support to the ankle. The open nature of the top of the boot may allow the ingress of molten material or other hazardous fluids or materials.



'Metatarsal protective footwear'

In certain cases and with regards to protection from specific hazards, metatarsal protection is accepted as a form of control measure. It is however to be noted that activities undertaken by road markers may result in discomfort or injury caused by metatarsal protection. During work trials involving operatives conducting hand applied road markings over distances and inclines walked with

the pedestrian applicator 'pram', reports of injury and discomfort including blistering and hospitalisation were noted. The conclusion was that the rigidity of the metatarsal upper restricted the movement of the feet during this activity that resulted in injuries and discomfort. Alternative designs of metatarsal protection are available. The RSMA recommend close cooperation with clients and principal contractors who stipulate metatarsal protection must be worn. Reported injuries attributed to these policies may be viewed as negligence should suitable and specific risk assessments not be applied to this sector.



NB: The illustrations above are considered as a representation of the type of footwear in question. These illustrations are to guide the decision making process and are not intended to single out any model, supplier, designer or manufacturer of these types of boots. Furthermore, it is not the intention of this publication to call into question the quality of such products, merely their suitability in regards to the activities in question.

2.8 PPE suppliers

PPE suppliers are a good source of advice and guidance when considering selection and purchase of PPE items. In addition, RSMA Members can take advantage of health and safety advice offered to all members as part of membership.

For further information regarding PPE and any other health and safety matter please contact the RSMA on info@rsma.co.uk

Section 3. Substances hazardous to health

3.1 This section deals with the handling, storage and use of articles and substances common to the road marking sector. This section will specifically focus on the substances used in everyday road marking activities, such as petrol, lubricants, diesel oil, thermoplastic, bitumen, line paint, solvents, thinners and numerous other chemicals and substances handled by and exposed to road marking personnel. Road marking organisations of all sizes are required to understand what they need to do in order to comply with the 'Control of Substances Hazardous to Health (COSHH) Regulations 2002'. COSHH applies to the way you work with chemicals and substances.



Every year, thousands of workers are made ill by hazardous substances. Lung diseases such as asthma, bronchitis and lung cancer are common place, along with other conditions such as skin diseases like dermatitis, cost the overall economy millions of pounds each year in costs to:

- The sector, to replace the trained road markers
- Society, in disability allowances and medicines
- The individuals, who may lose their jobs or standards of life

3.2 Harmful substances

When harmful substances are discussed it is easy to think of thermoplastic, bitumen and paint solvents and other common substances and materials, however there are many other substances to be considered such as:

- Dust or fume-laden air from burning off or scabbling activities
- Fluids that can grow bacteria and fungi
- Materials that can cause dermatitis
- Substances such as water and cleaning chemicals that also cause dermatitis
- Products containing benzene which can cause leukaemia

Many other products or substances used in the road marking sector may be harmful. Ill health caused by these substances is preventable. Many substances can harm health but, used properly and under control, they almost never do.

3.2.1 How can you be exposed to a harmful substance?

There are many ways in which substances (poisons) can enter the body. By understanding how this occurs, controls can be put in place to prevent the exposure. Later in this section, information and examples of 'Safety Data Sheets' (SDS) will be discussed, this will provide guidance with regards to the safety information supplied with the substance, including how to protect against exposure routes into the body. Exposure routes are explained below:

Exposure by breathing in:



Substances that are dangerous to health if inhaled can attack the nose, throat or lungs. Others get into the body through the lungs and harm other organs such as the liver.

Exposure by skin contact:



Some substances damage skin, while others pass through it and damage other parts of the body. Skin gets contaminated:

- By direct contact with the substance, e.g. if it is touched or the hands are dipped in it.
- By splashing directly onto the skin or through clothing
- By airborne dust or aerosol vapours in the air settling on the skin
- By indirect contact with contaminated surfaces such as containers or even contaminated protective clothing

Exposure by swallowing:



Now wash
your hands

Without adequate hand washing chemicals can be transferred indirectly from hand to mouth by eating; drinking or smoking etc.



Exposure to the eyes:



Eye protection
must be worn

Vapours, gases and dusts are irritating to the eyes. Caustic fluid splashes can damage the eyesight permanently.

Exposure by skin puncture:



Wear gloves

Substances can enter the body from puncture wounds caused by sharp objects such as blades or needlestick injuries. Infections are very harmful however they are considered rare.

3.2.2 Safety data sheets (SDS)

Some products used in the road marking sector may be classed as 'dangerous for supply'. If so, they will have a label that has one or more hazard symbols shown in fig 2.4.

Fig 2.4



Toxic



Environment



Harmful



Irritant



Flammable



Oxidising



Explosive



Compressed Gas



Serious Health
Hazard



Corrosive

When a product is 'dangerous for supply', by law the supplier MUST provide the safety data sheet (SDS). Road marking contractors should ask their suppliers for all relevant SDS and information on how the product can be used and stored safely.

Safety Data Sheets can be difficult to understand, with little information on measures for control. However, should further information be required, organisations can either contact the supplier directly or via the RSMA. SDS should list the most relevant information in the following sections:



- Part 15 of the sheet, this informs of what the dangers are
- Parts 4 to 8 informs of procedures and action on, emergencies, storage and handling

An example of a SDS is at Annex 2D of this section.

3.2.3 Assessing risk

Assessing the risks to ill health from exposure to harmful substances is essentially conducted in the same way as a general risk assessment. The COSHH Regulations require employers to assess the specific risk to their employees, and to prevent or adequately control those risks.

Accurate judgement of the amount of exposure to substances is an easy starting point. The decision can then be made as to what controls should be put in place. The level of risk is always dependant on the following factors:

- What quantities are involved?
- Is there a chance of the substance leaking or escaping?
- Would cleaning up and disposal increase the risk?
- How is the substance harmful to the human body?
- How is the substance harmful to the environment?

Hazard Checklist:

- ☐ Does any product used have a danger label?
- ☐ Does the process produce gas, fumes, dust or vapours?
- ☐ Is the substance harmful if breathed in?
- ☐ Is the substance harmful to the skin?
- ☐ Could harm be caused by the way the substance is used or produced?
- ☐ What is the best control measure to use?
 - Use an alternative safer substance
 - Use it in a safer way (ventilated area)
 - Control the use to stop harm

Use the hazard check list as a minimum starting point when assessing the substances you use or intend to use during work activities.

The product should be supplied with the SDS that will carry information on safe storage, handling and use. The SDS will also show instructions on how to deal with situations such as leaks, spills and medical emergencies.

SDS should be kept up to date and be readily available to everyone.

3.2.3 Exposure control measures

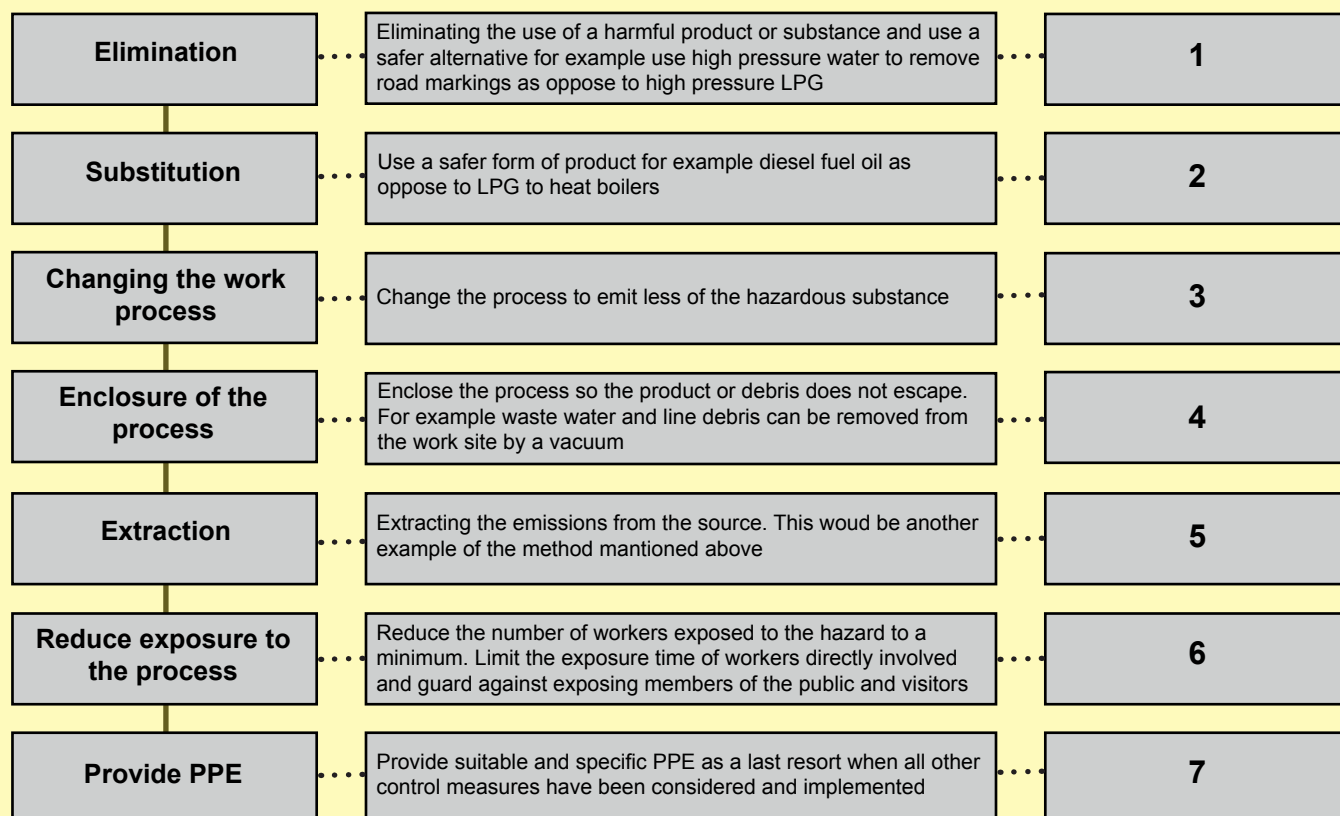
Control measures will always use a mixture of equipment and working methods. It is important to consider substances when producing MS and SSW in order to reduce exposure. The best combination is critical. No control measures, however practical, can work effectively unless they are used properly.



Any 'Standard Operating Procedure' (SOP) should combine the right equipment with the right working method. For this to succeed, information, instruction and training systems must be in place and working. Adequate management and supervision is important for work activities to be conducted safely.

Choosing control measures is done in the same way as using the hierarchy of risk control. Control measures are listed in order of priority in diagram 2.2 below:

Diagram 2.2



3.2.5 Control equipment

Control equipment like PPE or extraction equipment such as Local Exhaust Ventilation (LEV) systems in use in workshops and garage areas, must be supplied complete with 'user manuals'. Where equipment is self designed and manufactured rather than being bought in, professional help may be needed to write user manuals for the equipment. User manuals are important as they contain information that sets out schedules for checks, time scales for planned preventative maintenance and parts replacements. Examples of what should be included are listed below:

- A description of the system and the equipment
- The daily checks that need to be carried out to ensure the equipment is functioning correctly
- Long term checks such as weekly and monthly inspections on wear and tear
- Details of any thorough examinations or tests such as servicing and annual maintenance
- How to spot signs of wear and tear and how to control failure
- A list of replacement parts
- A comprehensive operator's guide, explaining how to use the system effectively and efficiently

3.2.6 Staying in control

Once the control measures are in place and working, employers have a responsibility to make sure the control measures continue to work properly. A nominated person should be put in charge of checking and maintaining the control measures. Organisations that do not have the capacity to nominate a competent person can gain help and assistance from the RSMA.



Audits and inspections of all systems and procedures put in place with regards to the COSHH regulations should be conducted on a regular basis. As with all other policies and procedures effective monitoring and review activities will ensure that the systems remain current, safe and up to date with legislation and industry standards.

3.2.7 Information, instruction & training

Involve the workers in the development of control measures to make sure they are suitable and specific for the way the work is carried out. Encourage them to suggest improvements and to report anything they think might be going wrong.

Training, information and instructions must be suitable,

- Explain to the workforce and anyone else who needs to know, what the dangers are. It is poor practice just to hand out paperwork and written information
- Show the workforce how to use the control measures properly, and how to check that the control measures are working
- Carry out practices, drill and training sessions on how to deal with situations including emergency procedures
- Conduct specific training on the use of equipment and PPE including face fitting with regards to RPE
- Specific PPE must be demonstrated in order to ensure correct use, for example how overalls should be worn outside the safety boots, high visibility jackets must be fastened and why sleeves must be rolled down

3.2.8 Health checks and monitoring exposure

Organisations shall conduct a level of monitoring with regards to specific exposure and emission levels. This monitoring must be done to provide accurate and up to date emission levels for every operation where there is exposure to hazardous substances. Health checks and occupational health screening may be written in to the organisations health and safety policy and may include 'Lung function tests' and other sampling. This is often conducted along with hearing and tests for hand arm vibration syndrome (HAVS). Monitoring shall make reference to 'workplace exposure limits' (WEL) EH40/2005 published by the HSE. These limits shall not be exceeded.

For more information regarding workplace health visit www.hse.gov.uk/workplacehealth

3.2.9 Getting help

This is not an inclusive list, but some useful sources of information and help are:

British Occupational Hygiene society (BOHS) 5/6 Melbourne Business Court, Millennium Way, Pride Park, Derby, DE24 8LZ T: 01332 298101 W: www.bohs.org	United Kingdom Accreditation Service (UKAS) 2 Pine Trees, Chertsey Lane, Staines-Upon-Thames, TW18 3HR T: 01784 429000 W: www.ukas.com
Health & Safety Laboratory (HSL) Business Development Group, Health & Safety Laboratory, Harpur Hill, Buxton, Derbyshire SK17 9JN T: 0203 0283705 W: www.hsl.gov.uk	Occupational Health Professionals (doctors or nurses) H&S Consultants, Yell.com, Health authorities and services www.nhs.uk/service-search
Institution of Occupational Safety and Health (IOSH) The Grange, Highfield Drive, Wigston, Leicestershire LE18 1NN T: 0116 2573100 W: www.iosh.co.uk	Safety Group UK (SGUK) Edgbaston Park, 353 Bristol Road, Edgbaston, Birmingham, B5 7ST T: 0121 2482011 W: www.safetygroupsuk.org.uk
The Health and Safety Executive Local Offices found on HSE website. W: www.hse.gov.uk	The Road Safety Markings Association (RSMA) Unit 35 Corringham Road Industrial Estate Gainsborough, Lincolnshire DN21 1QB T: 01427 610101 W: www.rsma.co.uk



Section 4. Plant & equipment

4.1 This section deals with the varied pieces of plant equipment in use in the road marking sector. This section will not specifically focus on all equipment in use today, but will give advice and guidance as to the interpretation of legislation such as 'Provision and Use of Work Equipment Regulations 1998, (PUWER) or the 'Lifting Operation and Lifting Equipment Regulations 1998, (LOLER) where organisations engage the use of lifting equipment. Its aim is to increase the safety, efficiency and environmental impacts of using plant and equipment during road marking activities.

4.2 How PUWER relates to other health and safety legislation

All legislation or regulations dealing with plant and equipment cannot be considered in isolation from each other. In particular, it needs to be considered with the requirements of the HSW Act 1974.

Section 2. Is detailed below:

The Health and Safety at Work etc Act 1974

Section 2.

1. It shall be the duty of every employer to ensure, so far as is reasonably practicable, the health, safety and welfare at work of all his employees.
2. Without prejudice to the generality of an employer's duty under the proceeding subsection, the matters to which that duty extends include in particular:
 - (A) the provision and maintenance of plant and systems of work that are, so far as is reasonably practicable, safe and without risk to health;
 - (B) arrangements for ensuring, so far as is reasonably practicable, safety and absence of risk to health in connection with the use, handling, storage and transport of articles and substances;
 - (C) the provision of such information, instruction, training and supervision as is necessary to ensure, so far as is reasonably practicable, the health and safety at work of his employees;
 - (D) so far as is reasonably practicable as regards any place of work under the employer's control, the maintenance of it in a condition that is safe and without risk to health and the provision and maintenance of means of access and egress from it that are safe and without risks;
 - (E) the provision and maintenance of a working environment for his employees that is, so far as is reasonably practicable, safe, without risk to health, and adequate as regards facilities and arrangements for their welfare at work.

Organisations are advised to closely consider all legislation regarding the use of work equipment as certain types of work equipment may be subject to the requirements of other legislation.

4.3 Risk assessment, safe systems of work

Risk assessments associated with work equipment shall be produced in the manner illustrated in section 3, Part 1 to this publication.

Risk assessments shall take in to account matters such as:

- The type of work equipment
- Substances associated directly or indirectly with the work equipment
- Electrical hazards
- Mechanical hazards

Actions to consider when producing risk assessments specifically for plant and equipment shall be produced to eliminate or control risks associated with work, transportation and maintenance activities including:

- The power supply to the work equipment
- The support of parts of the work equipment which could fall
- Securing mobile work equipment so that it cannot move
- Removing or isolation of flammable or hazardous substances
- The depressurising of pressurised equipment



Other matters to be considered during the assessment process include environmental conditions such as:

- Lighting
- Problems caused by weather conditions
- Other work being carried out which may affect the operation
- The activities of people who are not at work

SSW shall follow the suggested preparation methods discussed in section 3.2 of part 1 of this publication. Manufacturers and suppliers must supply information detailing the safe operating parameters of the work equipment supplied. This should include suggested maintenance, service schedules and spare parts provision.

Organisations who build or modify work equipment should conduct suitable and specific work trials to include risk assessment activities and the development of SSW related to new or modified plant.

4.4 What is work equipment?

The scope of 'work equipment' is extremely wide and covers almost any equipment used at work. This includes examples of specific road marking equipment shown in table 2.2. General categories of 'work equipment' include:

- 'tool box tools' such as hammers, knives, and other tools that may be used by road markers
- Single machines such as drilling machines, circular saws, dump trucks, loading shovels and road marking vehicles themselves
- Other apparatus including testing and monitoring equipment
- Lifting equipment such as hoists, lift trucks, and lifting slings used in connection with road marking activities
- Ladders, steps, pressurised water plant and other stand alone plant like generators or compressors
- Machines used in series with each other such as large mobile line removal plant

Items not classed as 'work equipment' include

- Substances (e.g. acids, alkalis, slurry, cement, water)
- Structural items (e.g. walls, stairs, roof, fences)
- Private vehicles (not being classified for business use)

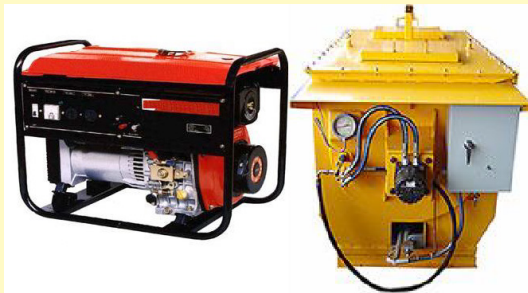
4.4.1 Are motor vehicles work equipment?

Motor vehicles which are not privately owned fall within the scope of PUWER. However, should the vehicle be subject to more specific road traffic legislation, that legislation will take precedence when the vehicle is used on the public highways and road traffic laws apply.

Vehicles defined under relevant legislation as 'road construction vehicles' are subject to exemptions and may not require standard MOT certification. However, consideration MUST be given with regards to PUWER regulations and the HSW Act. In all cases planned preventative maintenance, plant inspections and reporting procedures shall be suitable and specific in order to ensure any and all vehicles used for road marking activities, that have such exceptions are adequately maintained and inspected by competent persons. This will ensure that they are operated without risk to health and safety. All organisations are required to fully understand the extent to which exemptions apply and the alternative SSW that MUST be in place to ensure statutory duties are maintained.

4.5 Specific work equipment

Table 2.2 lists 'an example' of equipment covered under POWER regulations. This is a selection of common plant and equipment. Many other types and variations exist in the road marking sector. Organisations should use the table as a guide and must substitute where necessary listed equipment for more specific plant and equipment used in their particular organisation.

Plant & Equipment	Details/Explanation		Table 2.2
Hand tools: Hand tools fall in to two main categories, • General Hand tools: • Sector specific hand tools General hand tools are those found in toolboxes, such as spanners, hammers and chisels. Although 'generic' tools, each tool should be maintained correctly and more importantly used for the purpose for which it has been designed. Accidents using hand tools often occur due to incorrect tools being used on jobs. Sector specific hand tools are those used for lining and marking activities. These tools are seldom found in general industrial settings. It is important therefore to ensure employees are fully trained and instructed in the use and handling of sector specific tools and equipment.			
Plant Equipment:			
Items of plant equipment as shown in the examples above range from small hand held and portable equipment to lorries and ride on application plant. Plant equipment shall be maintained in good working order, operated by 'competent operatives' and maintained under a formal 'planned preventative maintenance' policy. Operatives shall be required to conduct pre-use checks to all plant and equipment. Fault checks and reports shall be completed and defects recorded. Operatives shall be required to remove items of faulty or dangerous plant from operational use. Repair and maintenance activities will always be carried out by suitably competent maintenance personnel. An example of a pre-use check sheet can be found in Annex 2E. Specific maintenance activities can be found in the operation and maintenance manuals supplied with the equipment. Any and all equipment produced for re-sale must have the relevant documentation supplied along with the piece of equipment.			

4.5.1 Powered plant and machinery

Items of plant and equipment that fall in to this category cover a wide range. Pieces of plant equipment are often powered by 'Donkey Engines' or are fed from a petrol/diesel oil fuelled power pack. In all cases donkey engines must be subject to specific and detailed planned preventative maintenance activities.

Simple daily checks such as 'oil and lubricant' levels shall be conducted to ensure plant equipment is maintained in safe working order. Greasing and lubrication of bearings and other such metal to metal bearing surfaces, on a regular planned servicing period will ensure the equipment runs efficiently and will have a longer operational life span. Regular maintenance will also ensure the equipment is operating within its design parameters. An example would be the noise output of machinery can be better maintained with effective servicing regimes.

Check oil level regularly	Top-up oil levels as required	Use greases and oils effectively	Maintain during normal operations
Oil and lubricant levels must be checked prior to starting the equipment. This will prevent damage and assist in efficient running.	Fluid levels must be maintained to manufacturer's recommendations. This will ensure efficient running.	Select oils and greases that are recommended by the manufacturers or designers of the plant equipment.	Maintain the plant and equipment during normal operation. Operatives shall be trained in basic maintenance or observation activities

Other equipment checks must include the road marking vehicle itself. PUWER regulations must be considered as more important than normal MOT testing where vehicles are exempt. Daily checks must include:

- All fluid levels on the vehicle, (oil, brake fluid, coolant, and any other fluids and lubricants)
- Tyre pressures and tyre condition, including the spare where fitted (visual checks).
- Operational checks on running lights, including directional indicators and head lights
- Operational checks on safety lights and beacons
- Checks on horns and acoustic indicators
- Brake checks and tests, including low air warning systems (where air-assisted brakes are fitted)
- Steering and running gear tests, drive belts and chains
- Any and all other checks that are required under the PUWER regulations

Check all fluid levels regularly	Tyre pressure and tyre condition checks	Checking drive belts and chains	Visual checks and inspections
			
Vehicle oil and fluid levels are as important as those on other plant equipment. Checking the levels should be done prior to leaving the depot	Correctly inflated tyres are important to road safety. Under inflated tyres can become damaged, fuel efficiency is also effected by under inflated tyres. Wheel nuts must also be checked for tightness.	Drive belts and chains must be checked for the correct tension. Worn or damaged belts must be replaced immediately.	Visual checks and inspections conducted by a suitably competent person should be completed at regular intervals

4.5.2 Other plant and equipment

Before operating any and all other types of plant equipment pre-use checks MUST be completed and recorded as per the organisations arrangements. Detailed below are examples of the checks that are required and possible faults that are to be rectified prior to operating the equipment.

4.5.3 Thermoplastic / bitumen boilers and pre-heaters:

Thermoplastic / bitumen boilers and pre-heaters must be visually checked for the following conditions:

- No water or moisture is present inside the boiler prior to ignition of the burners
- Gates, lids and doors are correctly closed and sealed to prevent leakage (clasps and hinges are serviceable)
- Thermometers, thermostats and temperature regulating apparatus is fitted and working correctly
- Agitator paddles are disengaged prior to cold starting

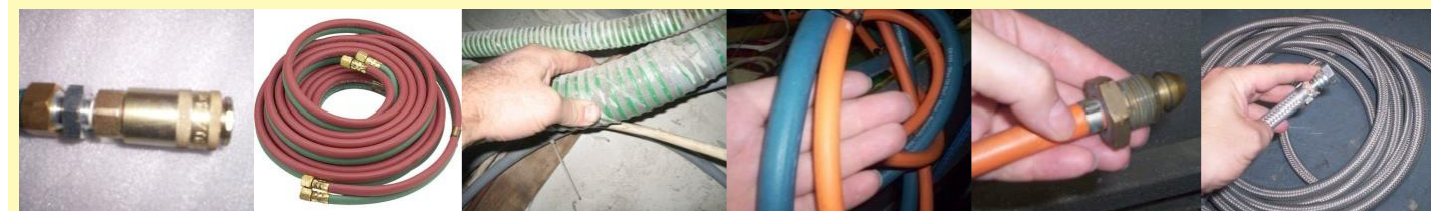
Specific checks on boilers must be completed, these include:

- Leak testing the fuel supply pipe work (LPG / fuel oil)
- Testing of the anti blowback devices

Visual inspection of boilers and burners	Checking and testing instrumentation	Testing for leaks in LPG Lines and connections	Testing of anti blowback and safety devises
			
Along with a visual inspection of the boilers and pre- heaters, operatives must be encouraged to inspect the 'Pots' for moisture, rainwater and any other debris that may cause an unsafe condition to exist during normal operation	Instrumentation such as pressure gauges, regulators and thermometers must be checked and tested on a regular basis. This again should be conducted by a suitably competent person and records maintained as required under PUWER.	Checking for leaks in connections can be done with high tech leak detectors or low tech detergent mixtures. Either spray the mixture onto the location of the suspected leak or use a small paint brush to brush the fluid on. Care must be taken when dealing with suspected fuel leaks. Ventilation and ignition sources must always be considered.	Visual checks and inspections shall be conducted by a suitably competent person. Any and all safety devises including guards, trip devises and gas flow switches MUST NOT be tampered with or bypassed in any way. This is an act that directly breaks the law and is an extremely unsafe practice.

4.5.4 Pressure hoses and hydraulic couplers:

Safety is critical when working with high pressure air, gas and fluids such as hydraulic oil. Many items of plant equipment are powered by high pressure compressed elements such as these. Hazardous energy sources must be controlled, lines and connectors shall be maintained in the same manner as stated above. Air hoses, gas lines and quick release connectors must be regularly maintained and inspected for serviceability.



Section 5. General operations

General operations and examples of safe operating procedures are discussed in this section. Sub sections give broad examples only and are used to highlight the manner in which safety considerations shall be addressed.

5.1 Operation of boilers and pre-heaters

5.1.1 Ventilation:

Boilers and pre-heaters shall be operated in ventilated areas. Care must be taken when maintenance work is carried out in garages / workshops and other confined spaces. Marking operations that are conducted in warehouses, enclosed parking structures or road tunnels must be fully risk assessed to prevent the build up of gases from the heating process.

5.1.2 Ignition of burners:

The safe ignition of pilot burners and main burner ignition is critical to safety. Fail to safety systems must be maintained in good working order and NEVER bypassed. Electronic ignition systems are preferred as this is a safer option in many cases. Where electronic systems are not fitted, gas torches or long tapers should be used in order to keep the operator at the safest possible distance away from the fuel source. This will help to avoid possible burns from 'blow backs'. Operatives shall wear all PPE as required for this task. Safety devices, covers and lids must be closed and secured once ignition is achieved.

5.1.3 Loading boilers and pre-heaters:

When loading boilers with raw materials, operators shall be encouraged to use appropriate manual handling techniques. Where available mechanical loaders shall be used or work routines rotated to reduce exposure to repetitive heavy lifting. All operatives shall have adequate manual handling training as required under Manual Handling Operations Regulations 1992. Materials must be loaded in such a way to prevent splashes. Operatives responsible for loading boilers and pre-heaters will wear the correct PPE as required for this task.

Boilers and pre-heaters MUST only be filled to the manufacturers recommended levels. Materials may expand during heating and result in spillage and overflowing. Adequate space must be allowed for expansion during normal operation. Agitator paddles, augers or homogenisers MUST be switched off whilst loading raw materials. Drive gears, belts and pulleys MUST be sufficiently guarded at all times when operating the boilers or pre-heaters.

Boiler and pre-heater operatives shall be trained in the correct operation, safety and housekeeping required whilst operating the equipment. This training shall include a detailed understanding of specified temperatures including the issues regarding overheating. Manufacturer's data must be made available to all operatives.

5.1.4 Operating boilers and pre-heaters:

Various types of equipment are available and operating procedures may differ. All equipment MUST be supplied complete with full operating instructions. These instructions will provide guidance on safe operation. Whilst moving around site boiler and pre-heater lids must be secured to prevent spillage. It is recommended that in general circumstances boilers are not ignited or lit whilst travelling long distances to and from the work site. Should the need to travel short distances with burners lit be required, a suitable and specific risk assessment must be conducted to highlight any associated hazards. The following considerations must be addressed during the risk assessment:

- Is the fuel supply pipe work made of rigid steel or copper with no more than 500mm of flexible hose?
- Is the system fitted with a flame failure or blow back arrestor device and has it been regularly inspected and serviced?
- Does the equipment safely control the product temperature when unattended? Are measuring and control devices calibrated and functioning correctly?
- Is the equipment secured to the vehicle and does the lid fasten and fit securely to prevent leakage?
- Is the equipment adequately ventilated to prevent the build up of pressure or vacuum?

It is recommended that heat sources are extinguished or suitably controlled when molten material is discharged from the equipment. Adequate ventilation and guarding should be used when discharging molten material, and operatives MUST wear the appropriate PPE for this activity.

5.1.5 Actions on the completion of work:

On completion of the task or at the end of the shift, heating appliances shall be turned off and fuel supplies isolated to render them safe for travel or storage. Care must be taken to ensure boilers and pre-heaters are 'run out' towards the end of the task leaving them as empty as possible. Where material remains in the equipment, cool down procedures must be implemented in order to ensure that materials do not separate. Agitator paddles and augers should be operated for a sufficient length of time to allow the material to cool without separation. Raw materials should only be heated to the prescribed temperatures and only the amount of times recommended by the manufacturer's specifications. As a guide thermoplastic should not be heated and re-heated more than six times. It is important to create accepted standard operating procedures (SOP) and effective housekeeping policies to reduce waste, save time and money by improving efficiency.

5.2 Line removal operations

There are a number of methods that can be used to remove old and degraded or incorrectly positioned road markings. Each removal system will have inherent advantages and disadvantages when applied in certain situations. Organisations must work closely with clients, local authorities and principal contractors to ensure suitable risk assessments are conducted and safe working practices are agreed.

Table 2.3 illustrates a variety of removal methods and gives examples of the advantages and disadvantages of each.

Plant & Equipment	Advantages	Disadvantages	Table 2.3
Hot compressed gas (Thermal Lance): 	• Quick and easy to use • Effective removal • Low cost • Low maintenance equipment • Good for short term applications 	• Extremely noisy • Produces smoke and pollution • Projects debris over a large area • Runs at extremely high temperatures • Due to PPE operator is often unaware of surroundings • Public exposure is an issue • Hot work permits may be required • Requires exceptional training and safe systems of work • Workplace exposure levels must be monitored	
Scabbling equipment:   	• Quick and easy to use • Effective removal • Low cost • Good for short term applications	• High levels of noise • Produces vibration • Projects dust and debris • Due to PPE operator is often unaware of surroundings • Requires exceptional training and safe systems of work • Requires a detailed planned preventative maintenance schedule • Workplace exposure levels must be monitored	

Plant & Equipment	Advantages	Disadvantages	Table 2.3 cont.
High pressure water: 	• Fast and effective • Effective removal • A safer solution • More environmentally friendly • Minimal surface damage • Excellent for long projects	• Requires specific plant and equipment • May be expensive on shorter projects • Often requires large and bulky plant and vehicles	
High pressure material blasting: 	• Fast and effective • Effective removal • A safer solution • Reasonably environmentally friendly • Minimal surface damage	• Requires specific plant and equipment • May be expensive on raw materials • Often requires large and bulky plant and vehicles • Can create waste, where extraction is not included • Noise and vibration can be an issue • Removal media and debris can be left behind • Removal speed is often slower than alternative methods	

5.2.1 Line masking and blanking out

Road markings may not require permanent removal. In cases where traffic management requires road users to be re-directed for a temporary period of time, the use of masking or blanking out techniques can be adopted. This can be done using temporary tapes both to mask the current line and to create temporary markings to re-direct the traffic flow as required. Any plant equipment used in this process must be dealt with in the same manner as any other. Chemical adhesives, thinners and solvents must be used in accordance with the MSDS and COSHH regulations and be conducted by competent persons.

5.3 Good Housekeeping

Tidiness, cleanliness and correct storage is referred to in general terms as 'Housekeeping'. Good housekeeping is important for a number of reasons. Safety is always the first consideration as poor housekeeping will increase the risks of accidents and incidents such as slips, trips and falls. Vehicle crews shall be made directly responsible for the housekeeping on their particular vehicles. Those who are responsible for warehousing and storage shall also be responsible for good housekeeping.

In addition to safety, good housekeeping will directly affect the efficiency of the work being carried out. Task times are significantly increased when plant, equipment and tools are not effectively stored, maintained and cleaned after each job. To increase efficiency, a culture of 'everything has a place, everything in its place' should be encouraged.

Storage and handling of substances and articles shall be conducted in line with the regulations covered in COSHH. Section 3 to this chapter details many of the considerations required for general operations.

5.4 Welfare and personal hygiene

The health and hygiene of our workforce is subject to regulations under the HSWA 1974. In particular the regulation in question is the Workplace (Health, Safety and Welfare) Regulations 1992 as amended 2002. In brief these regulations set out minimum requirements for the provision on 'welfare facilities' within the work place. Due to the transient nature of road marking activities, the application of these regulations require a certain level of practical thinking.

5.4.1 Toilet facilities

Toilet facilities are often an issue and should be a factor that is considered at the design stage of any project. Clients and principal contractors managing large projects will be required to provide adequate toilet facilities, this will include the need to keep the facilities cleaned and maintained in a reasonable state. Road marking organisations involved in smaller projects must also consider the need for toilet facilities. Effective planning can be done to locate public conveniences. Food outlets often have toilet facilities and could be considered in the planning stage. The only other alternative would be to design and fit adequate facilities to the road marking vehicles, this may be considered as restrictive and not reasonably practicable in some cases.

5.4.2 Hand Washing and skin care

Employees must be encouraged in good hygiene practices. It is important that prior to breaks, eating and after using toilet facilities employees wash or adequately sanitize their hands.

Vehicles may be fitted with hand wash basins and an adequate supply of hot and cold water.

Vehicles without such facilities must carry an adequate supply of chemical hand sanitizers, wipes and barrier creams to allow for hand cleaning before eating at the end of the work period or when hand cleaning is required.

The use of barrier creams and other skin care products should be encouraged as outdoor working and adverse weather conditions can damage skin. Exposure to certain chemicals and compounds can accelerate the onset of conditions such as dermatitis. Assessments must be conducted to ascertain the level of skin care required in each case.

5.4.3 Rest break provision

The marking, or alternative work vehicle, must have adequate seating and space for employees to take rest breaks. In most cases the vehicle used will have sufficient seating for this, however should the work continue through an operatives break period as part of a rotating break policy, an alternative arrangement may need to be considered. Further details regarding the 'Working Time Directive' can be found in an additional supplement to this publication.

5.4.4 First aid provisions

Essentially the provision of first aid is covered in the Health and Safety (First Aid) Regulations 1981 and are covered in more detail by additional publications. In terms of emergency first aid; a standard first aid kit with additional specific burns equipment must be supplied. It is important to provide clean cold water for the treatment of molten material burns should they occur. The water MUST be replaced on a regular basis to reduce the risk of infection.



Personal Protective Equipment (PPE) Issue Register		
Supervisor Name: A Another	Page 1 of 1	
Supervisor Sign: A Another	Revision No. 3	Version No. 3

By signing this document you are confirming the following: I conform that I have been issued with the PPE appropriate for my job and that I am aware of when to use it. I understand that it is my legal duty under health and safety law to make full and proper use of the issued PPE according to training and instructions given. I further understand that failure to use appropriate PPE when required to do so may be considered as a breach of the company health and safety policy and may result in disciplinary action.

Employees Name: A N Operative	Issue Date: 22 July 2018	Dept/Shift: Vehicle #3 night shift
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Item of PPE Issued:	Date PPE Training Conducted:	Refresher training due:	Employees signature:
Hard hat	24 July 2018 (company induction)	By December 2019	A N Operative
Eye protection (goggles/visor)	24 July 2018 (company induction)	By December 2019	A N Operative
Rigger gloves/Kevlar inners/heat resistant gauntlets	24 July 2018 (company induction)	By December 2019	A N Operative
High visibility vest and t-shirt	24 July 2018 (company induction)	By December 2019	A N Operative
Safety boots	24 July 2018 (company induction)	By December 2019	A N Operative
Hearing protection (disposable)	24 July 2018 (company induction)	By December 2019	A N Operative
Heat resistant, high visibility trousers	25 July 2018 (Toolbox talk)	By December 2019	A N Operative
Assitiona site/job specific items: (Record additional items by hand below)			
Dust mask	16 February 2018 (site induction AG3)	N/A site § contract specific	A N Operative
High visibility jacket (class 3 new issue)	11 November 2018 (site induction M25)	N/A site § contract specific	A N Operative
Peltor safety glasses	11 November 2018 (site induction M25)	N/A site § contract specific	A N Operative

Use additional pages as required



Personal Protective Equipment (PPE) Risk Survey Table	HCA Lance line removal
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Using the table below tick the parts of the body that could be affected by the hazards associated with the activity/task

	Skull	Ears	Eyes	Lungs	Face	Hair	Hands	Arms	Feet	Legs	Skin	Trunk	Whole body
Falls from height	X	X	X	X	X	X	X	X	X	X	X	X	X
Falling objects	X	X	X	X	X	X	X	X	X	X	X	X	X
Striking against an object	✓	X	X	X	X	X	✓	✓	X	✓	X	✓	✓
Cuts, stabs, grazes	✓	X	X	X	X	X	✓	✓	✓	✓	X	✓	✓
Vibration effects	X	✓	X	X	X	X	✓	✓	X	X	✓	✓	X
Slipping	✓	X	X	X	✓	X	✓	✓	✓	✓	✓	✓	✓
Heat/scalds	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Cold	X	✓	X	X	✓	X	✓	X	✓	X	X	X	✓
Electrical	X	X	X	X	X	X	✓	✓	✓	✓	✓	✓	✓
Non-ionising radiation	X	✓	✓	X	✓	X	✓	✓	✓	✓	✓	✓	✓
Ionising radiation	X	X	X	X	X	X	X	X	X	X	X	X	X
Noise	✓	✓	X	X	X	X	✓	✓	X	X	X	X	X
Dust exposure	X	X	X	✓	X	X	X	X	X	X	X	X	X
Fumes	X	✓	✓	✓	✓	X	X	X	X	X	✓	X	✓
Gas/vapour	X	✓	✓	✓	✓	X	X	X	X	X	✓	X	✓
Chemical contact	X	X	X	X	X	X	X	X	X	X	X	X	X
Biological agent	X	X	X	X	X	X	X	X	X	X	X	X	X
Other													

Use a task analysis when conducting a simple PPE assessment. Consider what hazards are likely to affect what part of a persons body. Hazards and affects may differ for task to task and equipment to equipment.

X Where hazards will not affect the person	✓ Where hazards will affect the person
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Personal Protective Equipment (PPE) Risk Survey Table		HCA Lance line removal	
Hazards Identified: (List)		Parts of the body at risk: (List)	
Noise from the lance Fumes from the lance Debris blown up from the lance Contact with extremely hot surfaces Dropping plant equipment		Ears Lungs Eyes Arms, feet, legs, skin & hands Feet & toes	
		Types of PPE required:	
		Ear defenders (muffs) Respirator Eye protection Flame retardant garments Safety Boots	
Control measures currently in place:			
A safe system of work in place (SSW 008)			
PPE Selected:	BSEN NO:	Model/type NO:	Preferred supplier:
Ear defenders (muffs)	352	LA 3015	ENHA (Arco)
Visor	0346	16638	ENHA (Arco)
Respirator half mask	140	P86	3M
Flame/heat retardant trousers	533	Snickers	Arco
Flame/heat retardant gloves	407/533	Tiger Gloves	XYZ Clothing Ltd
Safety boots	20345	Chukka	ABC Safety Ltd
Have users been consulted of PPE selection?	YES/NO	Have users been trained and instructed in the correct use of PPE?	YES/NO
Have users been informed of any limitations on use?	YES/NO	Have users been trained and instructed in how to maintain/clean issued PPE?	YES/NO
Note storage arrangements for all PPE:			
Issued PPE will be stored by operatives in personal holdalls issued with PPE. Other items of shared PPE will be located in the storage bin on the back of the truck.			
Assessor Name:	A N Other	Assessor Sign:	A N Other
Date:	11/11/2017		



TRAINING & DEVELOPMENT MATRIX

Division	
Region/department	
Date	

	Candidates Nominated							
	Name Here	Name Here	Name Here	Name Here	Name Here	Name Here	Name Here	Name Here
Company Safety Induction	Complete	Complete	Complete	Complete	Complete	Complete	Complete	Complete
Type the course title here	X	X	X	X	X	X	X	X
Type the course title here	X	X	X	X	X	X	X	X
Toolbox Talk PPE	REQ	REQ	REQ	REQ	REQ	REQ	REQ	REQ
Toolbox Talk Plant Checks	Complete	REQ	REQ	REQ	REQ	DONE	DONE	REQ
Type the course title here	Complete	Complete	Complete	REQ	REQ	REQ	REQ	REQ
Type the course title here	Complete	X	X	X	X	X	X	X
Type the course title here	Complete	REQ	Overdue	Overdue	Overdue	Overdue	Overdue	Overdue
Type the course title here	REQ	REQ	REQ	REQ	REQ	Overdue	Overdue	Overdue
Type the course title here	REQ	REQ	REQ	REQ	REQ	REQ	REQ	REQ
Type the course title here	X	X	X	X	X	X	X	X
Type the course title here	REQ	REQ	REQ	REQ	REQ	REQ	REQ	REQ
Type the course title here	X	X	X	X	X	X	X	X
Type the course title here	Overdue	Overdue	Overdue	Overdue	REQ	REQ	REQ	Overdue
Type the course title here	Overdue	Complete	Overdue	Complete	REQ	REQ	Complete	REQ
Type the course title here	Overdue	Complete	Complete	Complete	Complete	Complete	Complete	REQ
Type the course title here	X	X	X	X	X	X	X	X
Type the course title here	X	X	X	X	X	X	X	X
Type the course title here	Overdue	Overdue	Overdue	Overdue	Overdue	REQ	Complete	REQ
Type the course title here	X	X	X	X	X	REQ	REQ	REQ
Type the course title here	X	X	X	X	X	X	X	X

Signature (Manager):	Signature (Trainer/Assessor)
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1. IDENTIFICATION OF THE SUBSTANCE / PREPARATION AND OF THE COMPANY / UNDERTAKING

Product name: THERMOPLASTIC ROADMARKING

Synonyms: CRYSTALEX, RAINLINE
LIFELINE, SPRAYPLASTIC
GUIDEMASTER, VIBRALINE

Company name: Prismo Road Markings Ltd
5 Drumhead Road
Chorley North Industrial Park
Chorley
PR6 7BX
Tel: +44 (0)1257 225100
Fax: +44 (0)1257 224606
Email: info@prismogroup.com

2. HAZARDS IDENTIFICATION

Main hazards: Harmful by inhalation.

Workplace exposure limit: This substance does not have a workplace exposure limit.

PBT: This substance is not identified as a PBT substance.

Directive 1999/45/EC: This preparation meets the criteria for classification as dangerous in accordance with Directive 1999/45/EC.

3. COMPOSITION / INFORMATION ON INGREDIENTS

- Hazardous ingredients:** TP RESIN (*WEL) 10-30%
- OIL (*WEL) 1-10%
 - TITANIUM DIOXIDE PIGMENT (*WEL) 1-10%
EINECS: 236-675-5 CAS: 13463-67-7
 - FILLER M (*WEL) 10-30%
EINECS: 2404402 CAS: 16389-88-1
 - POLYMER ST <1%
CAS: 39-02-5201
[Xn] R20; [Xi] R36/37
 - CALCIUM MAGNESIUM CARBONATE (*WEL) 10-30%
CAS: 16389-88-1

4. FIRST AID MEASURES

Skin contact: Wash immediately with plenty of soap and water.

Eye contact: Bathe the eye with running water for 15 minutes.

Ingestion: Wash out mouth with water.

Inhalation: Consult a doctor.

[cont...]

5. FIRE-FIGHTING MEASURES

Extinguishing media: Suitable extinguishing media for the surrounding fire should be used.

Exposure hazards: In combustion emits toxic fumes.

Protection of fire-fighters: Wear self-contained breathing apparatus. Wear protective clothing to prevent contact with skin and eyes.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions: Refer to section 8 of SDS for personal protection details.

Environmental precautions: Do not discharge into drains or rivers.

Clean-up procedures: Wash the spillage site with large amounts of water.

7. HANDLING AND STORAGE

Handling requirements: Avoid the formation or spread of dust in the air.

Storage conditions: Store in cool, well ventilated area.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Hazardous ingredients: TP RESIN

UK - 8 hour TWA: 5mg/m³

- OIL

UK - 8 hour TWA: 5mg/m³

UK - 15 min. STEL: 10mg/m³

- TITANIUM DIOXIDE PIGMENT

UK - 8 hour TWA: 4mg/m³ (Respirable dust)

- FILLER M

UK - 8 hour TWA: 4mg/m³ (Respirable dust)

- POLYMER ST

UK - 8 hour TWA: 10mg/m³

- CALCIUM MAGNESIUM CARBONATE

UK - 8 hour TWA: 4mg/m³ (Respirable dust)

Engineering measures: Ensure there is sufficient ventilation of the area.

Respiratory protection: Respiratory protective device with particle filter.

Hand protection: Protective gloves.

Eye protection: Ensure eye bath is to hand.

Skin protection: Protective clothing.

9. PHYSICAL AND CHEMICAL PROPERTIES

State: Powder

Colour: White

Odour: Odourless

[cont...]



10. STABILITY AND REACTIVITY

Stability: Stable under normal conditions.

Materials to avoid: Strong oxidising agents. Strong acids.

Haz. decomp. products: In combustion emits toxic fumes.

11. TOXICOLOGICAL INFORMATION

Acute effects: Harmful by inhalation.

11. TOXICOLOGICAL INFORMATION (SYMPTOMS)

Skin contact: There may be mild irritation at the site of contact.

Eye contact: There may be irritation and redness.

Ingestion: There may be irritation of the throat.

Inhalation: There may be irritation of the throat with a feeling of tightness in the chest.

12. ECOLOGICAL INFORMATION

Persistence and degradability: Biodegradable.

Bioaccumulative potential: No bioaccumulation potential.

Other adverse effects: Negligible ecotoxicity.

PBT identification: This substance is not identified as a PBT substance.

13. DISPOSAL CONSIDERATIONS

Disposal operations: Transfer to a suitable container and arrange for collection by specialised disposal company.

NB: The user's attention is drawn to the possible existence of regional or national regulations regarding disposal.

14. TRANSPORT INFORMATION**ADR / RID**

UN no: Not Classified.

IMDG / IMO

UN no: Not Classified.

IATA / ICAO

UN no: Not Classified.

15. REGULATORY INFORMATION

Hazard symbols: No significant hazard.

Risk phrases: R20: Harmful by inhalation.

Safety phrases: S22: Do not breathe dust.

S36/39: Wear suitable protective clothing and eye / face protection.

S38: In case of insufficient ventilation, wear suitable respiratory equipment.

[cont...]



Note: The regulatory information given above only indicates the principal regulations specifically applicable to the product described in the safety data sheet. The user's attention is drawn to the possible existence of additional provisions which complete these regulations. Refer to all applicable national, international and local regulations or provisions.

16. OTHER INFORMATION

Other information: This safety data sheet is prepared in accordance with Regulation (EC) No 1907/2006.

* indicates text in the SDS which has changed since the last revision.

Risk phrases used in s.3: R20: Harmful by inhalation.

R36/37: Irritating to eyes and respiratory system.

Legal disclaimer: The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. This company shall not be held liable for any damage resulting from handling or from contact with the above product.

[final page]





Vehicle/Plant Check Sheet	
Serial/Registration No: HN52JWO (Mary Sue)	Operator Name: A N Other
Vehicle/Plant Make/Model: Iveco EUROTTECH MH190 E24	Operator Sign: A N Other
Supervisor/Manager: Karen Shaw	Date: 17 September 2017

This form MUST be filled in according to the company plant/vehicle planned preventative maintenance policy. All items below must be checked, any defects reported and any unsafe vehicles or equipment removed from service.

Description of check:	✓	✗	Fault:	Action taken:
General condition	✗		Very poor housekeeping on flatbed and in cab	Cleaned and prepared the vehicle during AM checks & loading
Brakes & steering	✓		N/A	Conducted brake test in yard
Tyres & wheels (including any spares)	✗		One loose wheel nut on nearside front	Tightened wheel nut, checked all other wheels
Windscreen, wipers, washers and other glass (windows/mirrors)	✓			All checked okay
Horn/siren/reverse bleeper/reverse CCTV	✓			All checked okay
Lights and directional indicators (not conspicuity beacons)	✗		Nearside indicator lens cracked	Reported to fitter, new one on order
Oil/water/fluids/coolant	✗		Oil level low on main engine	Topped up during AM checks & loading
Conspicuity lighting (beacons and/or strobes)	✓		N/A	All checked okay
Conspicuity markings and vehicle mounted warning signs	✗		Rear markings obscured by thermo debris	Reported to supervisor
Any other defects noted:			N/A	N/A

Supervisor/Manager Sign: Karen T Shaw	Date: 18 September 2017	Action: Vehicle authorised for full service 21/09/17
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Use additional pages as required

