Technology: Risk Assessment Title: **Plastics** SEPTEMBER2015

**This is a generic Risk Assessment that must be modified to suit your place of work**. The Risk Assessment modifications should take into consideration the activity, age/stage/pupil ability, department/working environment and the experience of the teacher in charge. If Control Measures Required as described are implemented the risk is reduced to an acceptable level for mainstream students.

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| **Identify the Hazards** | **Who is at Risk?** | **What is the Harm?** | **Activity Taking Place** | **Control Measures Required** | **Additional Information** |
| Employees and learners should be made aware of the following hazards.  1. Skin Contact from  Brittle Materials  2. Inhalation of Dust  3. Dust Created from Machining Plastics  4. Inhaling Solvent Vapours  5. Lack of Ventilation  6. Storage Environment Conditions  **Acrylic and other thermoplastics**  1. Inhalation of Dust  2. Skin Burns  3. Skin Contact  from Shattering  **Expanded polystyrene**  1. Inhalation of Fumes  2. Inhalation of Dust  **Rigid polyurethane foam**  1. Inhalation of Fumes  2. Inhalation of Dust  **Glass reinforced polyester (GRP) resin**  1. Inhalation of Fumes  2. Skin Contact  3. Skin Contact  from Explosion | Technology teachers, technicians and students  Technology teachers, technicians and students  Technology teachers, technicians and students  Technology teachers, technicians and students  Technology teachers, technicians and students  Technology teachers, technicians and students  Technology teachers, technicians and students  Technology teachers, technicians and students  Technology teachers, technicians and students  Technology teachers, technicians and students  Technology teachers, technicians and students  Technology teachers, technicians and students  Technology teachers, technicians and students  Technology teachers, technicians and students  Technology teachers, technicians and students  Technology teachers, technicians and students | **Brittle plastics are at risk of snapping or shattering if excessive load is placed upon them.**  **Inhalation of dust can cause or trigger current respiratory problems.**  **Machining plastics can lead to increased dust creation and present machine hazards.**  **Solvent vapours can affect respiratory problems in a craft room.**  **Lack of appropriate ventilation creates an unsafe working environment.**  **Aged or unused stocks of plastic should be limited.**  **Eye, nose and throat irritation. Respiratory hazards.**  **Hot plastics can cause burns and stick to skin.**  **Shattering can cause cuts.**  **Fumes can affect respiratory and irritate eyes, nose and throat.**  **Upper respiratory tract can be irritated.**  **Fumes can affect respiratory and irritate eyes, nose and throat.**  **Irritation can occur.**  **Fumes are flammable and present fire risk. Eyes and respiratory system can be irritated.**  **Skin degreased and dermatitis. Resins are very irritant to eyes, throat and upper respiratory system. Prolonged eye contact can cause permanent damage.**  **Explosions can cause facial damage and eye damage.** | Using plastics  Using plastics  Machining plastics  Applying solvent to plastics  Using plastics  Using plastics  Using acrylic or other thermoplastics  Using acrylic or other thermoplastics  Using acrylic or other thermoplastics  Using expanded polystyrene  Using expanded polystyrene  Using rigid polyurethane foam  Using rigid polyurethane foam  Using glass reinforced polyester resin    Using glass reinforced polyester resin  Using glass reinforced polyester resin | The COSHH Regulations 2002 (as amended) require a suitable risk assessment to be carried out before plastics materials are used.  Care should be taken if working on brittle plastics sheet material. Taping and safe handling techniques should be used to avoid shattering.  Brittle plastic can be masking taped over, this not only protects surfaces from scratching but also provides a better degree of protection in the event of the work piece shattering. Safe handling techniques should also be used to avoid shattering.  Materials should be firmly clamped, but not over tightened.  Safe handling and the avoidance of sharp points which in themselves are a hazard.  Many plastics materials produce dust and other fine particles when machined or abraded. Persons suffering from asthmatic conditions are at an increased risk from the health hazards arising from abrading of plastics materials.  Sanding/abrading edges and surfaces of plastics are better carried out by hand and if possible the use of water as a lubricant should be used at all times.  Hand methods of abrading should be preferred over machining, and water should be used as a lubricant where practicable.  Sufficient ventilation should be provided. Concentrations of vapours from solvents and cement should be kept to a minimum. LEV should be provided if required.  Good work shop ventillation should clear small amounts of vapours when present. Concentration of vapour(s) in the workshop air should be kept to a minimum.  Solvents should have their lids or tops securely replaced whenever not in use in the craft room.  Ventilation should be provided at a rate of six to eight air changes per hour.  Open windows and/or doors are expected to provide general ventilation and LEV systems provide increased on-demand ventilation.  Plastics should be stored in cool, dry conditions. Stocks of plastics materials should not exceed the quantities required for three months.  Hand or machine cutting, shaping or drilling acrylics leads to fine dust particles being created. Use LEV if excessive and/or water as a lubricant.  Suitable eye protection and PPE should be worn during machining. Gloves should be used if work pieces are heat softened.  Work pieces must be clamped securely during machining.  A safer substitute should be used if available in the work shop. LEV should be activated.  Hot wire cutters should be used at the lowest temperature practicable and a risk assessment made to determine the level of ventilation required.  Hazardous fumes are created when heating rigid polyurethane.  **HOT WIRE CUTTERS, LASER CUTTERS AND ENGRAVERS SHOULD NOT BE USED TO CUT RIGID POLYURETHANE FOAM.**  Suitable eye PPE should be used during abrading or cutting rigid polyurethane foam.  Polyester resin and GRP resin can produce fumes until fully cured.  Very high concentrations of vapour can build up in confined spaces. This should be avoided.  Resins should be of the pre-accelerated type. Catalysts and accelerators should not be mixed together directly. Calibrated dispensers should be used. Only a competant Technology teacher or technician should dispense these materials.  Catalysts and accelerators can react violently or explode if mixed. Suitable eye protection and protective gloves PPE should be worn. | Reference BS 4163:2014  Manufacturers’ instructions and warnings associated with plastics, materials and items of equipment should be complied with. Unidentified plastic materials should not be used.  Working on and drilling brittle plastics should be adequately covered in induction lessons and demonstrations.  Sufficient general ventilation should be available and LEV should be provided if required. Where an effective LEV system is not in place, a dust mask conforming to BS EN 149:2001+A1:2009 class FFP3 should be used.  Plastics should not be used on Belt Sanders unless specifically designed to do so. Hand tools and files are to be encouraged for use.  Plastics should not be use with Belt Sanders/Band Facers unless they are specifically designed to do so.  Sufficient general ventilation should be available and LEV provided if required. Where an effective LEV system is not in place, a dust mask conforming to BS EN 149:2001+A1:2009 class FFP3 should be used.  In many cases there can be a delayed reaction to inhalation of toxic vapours in the work area.  Labelling of plastics allows quick and correct identification of material types. Making tape labelling is adequate.  LEV should be used to provide sufficient ventilation. Where effective LEV system is not in place, a dust mask conforming to BS EN 149:2001 + A1:2009 class FFP3 should be used.  LEV should be used to provide sufficient ventilation. Where effective LEV system is not in place, a dust mask conforming to BS EN 149:2001 + A1:2009 class FFP3 should be used.  LEV should be used to provide sufficient ventilation. Where effective LEV system is not in place, a dust mask conforming to BS EN 149:2001 + A1:2009 class FFP3 should be used.  No more than 1m2 of laid up material should be in the work area at any time. Laying up should not be carried out at floor level. |
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