Technology: Risk Assessment Title: **Vacuum Former** OCTOBER2015

**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. Inhalation of Fumes  2. Skin Burns or Fire Risk  3. Pressure Tank Failure  4. Electric Shock  5. Unauthorised Use  6. Machine Movement  7. Finger or Hand Trapping  8. Vacuum Clogging | Technology teacher, technician and student  Technology teacher, technician and student  Technology teacher, technician and student  Technology teacher, technician and student  User  Technology teacher, technician and student  Technology teacher, technician and student  Technology teacher, technician and student | **Fumes can be inhaled and cause respiratory sensitization.**  **Overheated plastics can cause burns to fingers or hands or a fire risk.**  **The pressure tank can fail and cause injury.**  **Electric shock from mains supplies or faulty plugs can lead to death.**  **Unauthorised use.**  **Vacuum Former can cause burns or crush injury if movement occurs during use.**  **Fingers or hands can be trapped under the pull motion of the heater box.**  **The vacuum system can become clogged with powders applied to the wooden mould.** | Vacuum forming plastics  Vacuum forming plastics  Vacuum forming plastics  Vacuum forming plastics  Vacuum forming plastics  Vacuum forming plastics  Vacuum forming plastics  Vacuum forming plastics | LEV should be provided where harmful fumes are produced.  If fumes are produced by heated material, the machine should be switched off, and the room evacuated if required, and ventilated. A timer with audible warning device should be provided to prevent overheating.  Any scraps or off-cuts must be removed from the machine to reduce unwanted fume risks.  The heater system should be shielded or guarded against accidental skin contact. The moving heater system should be mechanically attached to the machine.  Operator(s) must always wear eye protection PPE when using this machine. Gloves can be worn when removing the material from the mould.  It should be possible to regulate the output from the heater system.  If ceramic heaters are used, a mechanical interlock with the platen mechanism should be provided to prevent accidental elevation of a mould into the heaters.  Fixed vacuum forming machines should be provided with a means of isolation (preferably a fused isolating switch on or adjacent to the equipment).  Portable vacuum forming machines should be powered by a mains socket outlet protected by residual current device. The operating effectiveness of the unit should be verified and recorded on a frequent basis, by pressing the test button in accordance with the manufacturer’s instructions. Plugs should be removed from the mains socket when the equipment is not in use.  Electrical installations should be safe initially and maintained to this standard.  Plugs and cables should be kept away from any hot plastics, elements or surfaces.  The Vacuum Former should only be used under supervision.  The Vacuum Former should be used on a flat stable surface to reduce any movement risk during use. If a trolley is being used for mobility, brakes must be applied (if available).  The operators hands must be placed on the heater box handles to remove the risk of trapping.  The use of talcum powder (and similar) as a releasing powder on the wooden mould can lead to blockages in the vacuum system as the air is extracted. The use of releasing powders should only be in accordance with the machines instructions. | Reference BS 4163:2014  Manufacturer’s instruction guide should be followed and kept within the department for future reference.  Most common materials are unlikely to produce significant fumes during vacuum forming and normal room ventilation is usually sufficient.  Appropriate materials should be researched and displayed close to the machine for information.  The inside of the machine and heating tray should be regularly cleaned to remove dirt, dust etc.  Overheated plastics can cause burns and/or a fire. Caution and supervision must be used at all times.  Suitable eye protection conforming to BS EN 166:2002 should be used.  On larger vacuum forming machines the heating element might be zoned.  A spatula or wooden spoon can be kept close by to help remove heated pastic instead of using fingers.  Parts of the Vacuum Former can reach around 300°C and HOT SURFACE sticker should be clearly visible on the machine.  Educational equipment do not usually have a vacuum reservoir (tank) – hence danger of imploding is not applicable.  Plugs should conform to BS  1363-1(1995) +A4 (2012) and should have the correct fuse (in accordance with manufacturer’s instructions).  The machine should be included in a planned maintenance programme that should include any appropriate electrical safety tests.  The heater and pump should be switched off when not in use to prevent any failure risk and prolong the user life of the machine.  Any damaged or faulty plugs or cables should be reported for repair immediately and the machine withdrawn from use.  The risk of electric shock is reduced by good maintenance and the use of double insulated machines.  When not in use the plug should be removed from the mains. |
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