

# Abrasive Wheels

Severe friction burns, crushed fingers and loss of eyesight are common injuries arising from accidents which occur when using abrasive wheels. The main hazards arise from the ejection of pieces of the wheel or work piece, contact with the wheel and trapping of fingers between the wheel and work rest.

The number of accidents and the circumstances in which they occur show that most can be avoided by a knowledge of the risks and by adopting safety measures. The simple safety steps given below will help to prevent most accidents at grinding machines. You may find them useful as a safety check list.

**STEP 1 Machines:** All machines must be stable (bench mounted machines should be bolted or otherwise secured to the bench). A notice should be displayed on the machine stating the maximum speed of it's spindle within each of it's operating speeds. Efficient means of starting and stopping the machine should be readily accessible to the operator.

**STEP 2 Guarding:** The wheel should be guarded to such an extent that only the minimum area of the wheel necessary for the work to be done is exposed. Fixed transparent guards should be fitted for protection against ejection.

**STEP 3 Wheel Selection:** The wheel selected must be suitable for the jobs in which it will be used; in general, soft wheels are used on hard materials and hard wheels on soft materials - manufacturers should be asked for advice on selection. The following factors should be considered when selecting the wheel:-

- the type of machine on which it will be fitted
- the speed of the machine or spindle - this must **never** exceed the maximum speed of the wheel
- the material to be used on the machine
- the finish required
- the area of contact between the workpiece and the wheel

**STEP 4 Inspection:** On receipt of a wheel it should be carefully inspected, cleaned with a soft brush and examined for damage. A "ring" test should be carried out as part of the examination; this involves striking the wheel with a non-metallic tool such as a screwdriver handle, if the wheel is sound a clear ring will be heard, if the ring is dead the wheel is cracked and should not be used.

**STEP 5 Storage:** Wheels should be stored in a cool, dry area. Suitable racks or bins should be provided and precautions should be taken to prevent the wheels rolling or falling over.

**STEP 6 Wheel Mounting:** This must be done by a competent person who has been properly trained and then appointed by their employer. A register of appointed persons must be kept. Abrasive wheels should only be mounted on the type of machine for which they were designed and it is essential that the speed of the spindle does not exceed the maximum speed marked on the wheel - for wheels less than 55mm in diameter their safe maximum speed should be displayed next to the machine.

**STEP 7 Operation:** Operators must be properly trained and they should not wear loose clothing such as ties or jewellery which could become entangled. Guards should always be in place and suitable face protection should be worn if fixed transparent guards are not provided. The floor space around the machine should be kept free of obstructions and slippery substances. The machine should only be used by one person at a time and should not be kept running when not in use. In order to prevent the workpiece jamming between the workrest and the wheel, the workrest should be positioned as close as possible to the face of the wheel and should be adjusted as the wheel wears. The workpiece should be held firmly and should be moved across the face of the wheel so that the wheel wears evenly, for small jobs clamps or similar devices can be used.

■ **For Further Information:**

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## Case Study

*An apprentice mechanic lost the sight of his left eye when it was struck by the debris from a disintegrating wheel. The wheel was poorly fitted and was operated at a greater speed than its design speed.*