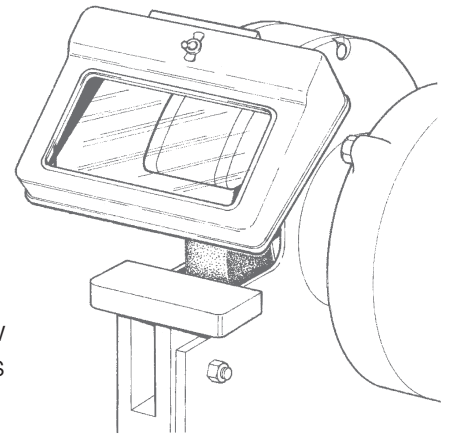




Abrasive wheels

An abrasive wheel is a wheel made of abrasive particles stuck together with various substances. Serious friction burns, crushed fingers and loss of eyesight are common injuries arising from accidents which happen when people are using abrasive wheels. The main dangers arise from pieces of the wheel or workpiece coming away, workers coming into contact with the wheel, and workers trapping their fingers between the wheel and the work rest.

The number of accidents and the circumstances in which they happen show that most can be avoided if workers know the risks and follow 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 checklist.



Step 1 Inspection

When you receive a wheel, you should carefully inspect it, clean it with a soft brush and examine it for damage. You should carry out a 'ring' test as part of the examination, which involves tapping the wheel with a non-metallic tool such as a screwdriver handle. If the wheel is safe to use a clear ring will be heard, but if the ring is 'dead' the wheel is cracked and you should not use it.

Step 2 Storage

You should store wheels in a cool, dry area. You should provide suitable racks or bins and take precautions to prevent the wheels rolling or falling over.

Step 3 Grinding machines

All machines must be stable (machines on benches should be bolted to the bench or securely fastened in some other way). A notice should be displayed on the machine showing the maximum speed of its spindle within each of its operating speeds. The operator should know how to start and stop the machine safely.

Step 4 Choosing wheels

The wheel must be suitable for the jobs in which it will be used. In general, soft wheels should be used on hard materials and hard wheels on soft materials. You should ask manufacturers for advice on which wheels to use. You should consider the following things when choosing the wheel.

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

Step 5 Mounting the wheel

The wheel must be mounted by someone who has been properly trained and appointed by their employer to do the work. The employer must keep a register of people who have been appointed to do this work. 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 is not more than the maximum speed marked on the wheel.



Step 6 **Guarding**

The wheel should be guarded so that only the area of the wheel needed for the work to be done is exposed. Guards should be fitted to contain the wheel parts if the wheel bursts and to prevent, as far as possible, the operator from coming into contact with the wheel.

Step 7 **Using abrasive wheels**

Operators must be properly trained and they should not wear loose clothing such as ties or jewellery which could become caught between the wheel and the workpiece. They should tie long hair back out of the way. Guards should always be in place. Eye protection should be worn for all dry grinding work, or transparent screens should be fitted to fixed machines to protect against sparks and particles. 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 be switched off when not in use. To prevent the workpiece jamming between the work rest and the wheel, the work rest should be positioned as close as possible to the face of the wheel and should be adjusted as the wheel wears. The operator should hold the workpiece firmly and move it across the face of the wheel so that the wheel wears evenly. Clamps or similar devices can be used for small jobs.

Case study

An apprentice mechanic lost the sight in his left eye when debris from a disintegrating wheel hit his eye. The wheel was poorly fitted and was operated at a speed greater than the maximum speed marked on the wheel.