

Soldering on

Practical Electronics is proving to be a popular course in a number of schools. Here we summarise our advice on safe soldering.

Type of solder to use

Solder contains a flux to make it flow. If the solder you use has rosin (also called colophony) as flux, you must install local exhaust ventilation (LEV). Small units that look like desktop fans with filters are not suitable. In the majority of cases, it makes much more sense to buy rosin-free solder. Even if you use rosin-free solder, at the very least, the classroom or prep room should be kept well ventilated throughout the time that soldering is done. If soldering is an occasional timetabled activity, then natural ventilation is likely to be a sufficient control. If a technician spends large parts of their working time soldering, LEV should be considered. It is not necessary to use lead-free solder, but please see the section on protection against ingestion.

Electrical safety

As well as using heat-resisting insulation on the flexible cord, SSERC recommends using low-voltage irons for pupil use. The preferred voltage is around 24 V; the preferred wattage is around 50-60 W for ease of work. The electricity supply should have accessible manual controls for isolation and cut-off (Bulletin 209) in addition to automatic controls (fuse or MCB, and RCD).

Protecting against burns

A bench stand for each iron is essential: it helps reduce the risk of skin burns.

There is a small, but foreseeable risk of injury to eyes from being touched by the hot tip of an iron. Safety glasses should be worn, preventing harm. The level of lighting at the bench should be sufficiently good to let users work safely.



Protection against ingestion

There is a risk of ingestion of heavy metals and other toxic substances from debris littering worktops. This debris can be picked up on clothing, contaminating food at a later time at another place. The risk is reduced by cleaning worktop surfaces at the end of each lesson by sweeping debris into a dustpan, and wiping surfaces clean with a damp disposable towel. Pupils should be instructed to wash their hands and brush their clothes at the end of a lesson. Teaching and support staff could wear lab coats.

Instruction and supervision

Finally, the teacher should carefully instruct pupils on how to solder and work with circuit boards by demonstration and practice exercises. Soldering operations should always be continuously supervised. ◀