CHAPTER 9 Material properties and heat treatment processes

Test your knowledge 9.2

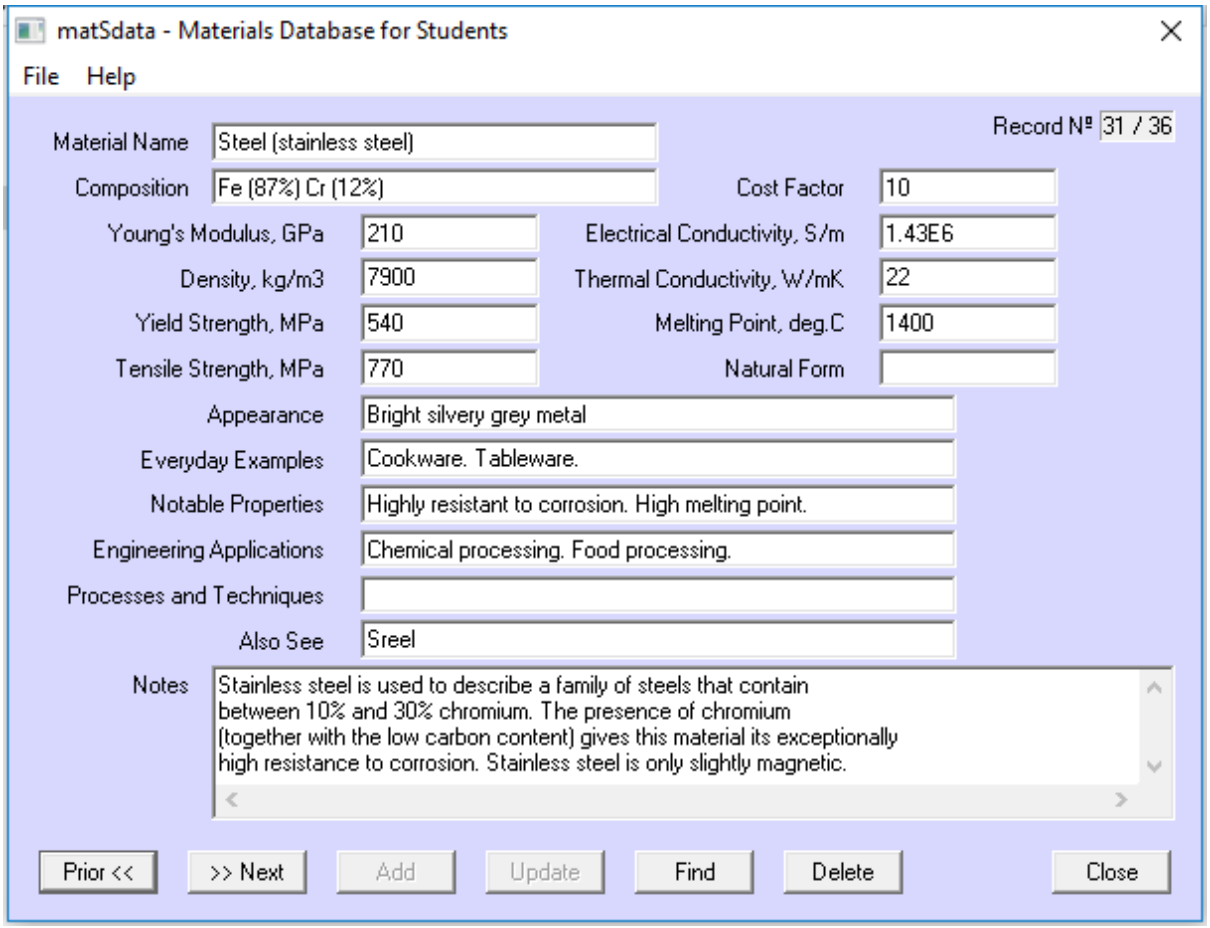
Length; cross-sectional area; resistivity (or specific resistance); temperature.

Test your knowledge 9.3

Soft magnetic materials (such as soft iron) can be magnetised by placing them in a magnetic field. They remain magnetised as long as the field is present. Hard magnetic materials (such as high carbon steel) can also be magnetised by an external magnetic field but they retain their magnetism when the field is removed. Such materials are often referred to as *permanent magnets*.

Activity 9.3

The most appropriate material is stainless steel (other steel alloys may also be suitable provided that they have appropriate tensile strength and melting point). The matSdata entry for stainless steel is shown below:



Test your knowledge 9.7

Copper: electrical conductors, cables, bus bars, etc.
Brass: bolts, nuts, screws, small gear wheels
Aluminium: aircraft fuselages and panels, small enclosures.

Test your knowledge 9.9

The cold chisel should be quench hardened by first polishing and then tempering by reheating it to a purple surface oxide colour (280°C) followed by immediate quenching in oil or water (see Table 9.2 on page 243).