

FOILS TAPE AND SHEET



STANDARD MATERIALS

- Iridium (Ir)
- Molybdenum (Mo)
- Molybdenum Rhenium (Mo-Re)
- Platinum (Pt)
- Rhenium (Re)
- Rhenium Tungsten (Re-W)
- Tantalum (Ta)
- Tungsten (W)

Goodburn Metals is the European agent for H Cross inc. Based in Newark, New Jersey, H Cross is the world leader in the manufacture of high precision rolled materials. They have a vast experience in the processing of refractory metals and can work to the highest of tolerances, for example foils can be produced with variations in thickness of less than $\pm 1.25\mu\text{m}$ or $\pm 0.00005"$. In addition H Cross have drawing, slitting, annealing, heat treating and electro-polishing facilities.

A sheet with a thickness of less than 0.125mm (0.005") is usually referred to as a foil. A strip of less than 6mm (0.25") width is known as a tape or ribbon.

Foils can be turned into tapes either by slitting or by rolling. Slit tapes or ribbons are produced from sheet or foil of the desired finished thickness. The end product has square edges and the length is limited by the starting size of the sheet or foil. Rolled tapes are produced from wire of a suitable diameter that is flattened to produce the desired thickness and width. The end product has rounded edges, is generally available in much longer lengths than with slitting and can be made to a higher tolerance.

Tape, foil and sheet are available in widths up to 50mm and thicknesses down to 0.0075mm in all of the materials listed here, and many more.

APPLICATIONS

IRIDIUM : Principally used as a hardening agent for platinum, iridium is also used to make crucibles and devices requiring high temperatures. It is also used for electrical contacts and is slowly finding it way into medical devices that are implanted into the body.

MOLYBDENUM : Elliptically shaped etched Molybdenum foil is used for hermetic sealing of quartz lamps. Etched Molybdenum foil is used as it's coefficient of expansion is the closest to quartz. The elliptical shape produces an air and gas tight lead into the lamp envelope, thus preventing filament degradation during lamp operation.

50/50 MOLY-RHENIUM : This alloy offers the strength of Molybdenum with the ductility and weldability of Rhenium. It offers significant advantages in thin foil applications for high temperature, delicate parts, especially those that must be welded. Note that, although this alloy is nominally 48% rhenium, it is customarily referred to 50/50 Moly/Rhenium.

PLATINUM : Used for wire, vessels and filaments for laboratory use, thermocouple elements, electrical contacts, corrosion-resistant apparatus, as a catalyst in fuel cells and catalytic converters for cars and in cathodic protection systems for large ships and marine equipment.

RHENIUM : Is an additive to Tungsten and Molybdenum based alloys to increase ductility at higher temperatures. Used in pure form for filaments for mass spectrometers and ion gauges. As an electrical contact material, it has good wear resistance and withstands arc corrosion. Thermocouples made of Re-W are used for measuring temperatures up to 2200°C.

RHENIUM TUNGSTEN : Rhenium is alloyed with Tungsten at 3%, 5% and 25% rhenium content to greatly improve tungsten's ductility after exposure to elevated temperatures. These materials are available in wire, ribbon and strip forms and are used extensively for winding filaments for vacuum tubes.

TANTALUM : has gained wide acceptance for use in electronic components, chemical equipment, missile technology, and nuclear reactors. It is also used as a component of ion implanters in the manufacture of semiconductors. It is also used for radiation shielding; for fabrication of corrosion resistant process equipment including reaction vessels, columns, bayonet heaters, shell and tube heat exchangers, diaphragms and orifices; in vacuum tubes to absorb products of out-gassing and in vacuum furnaces where very high temperatures must be attained.

TUNGSTEN : Is used in applications such as heated cathodes or heater coils in CRTs, X-ray tubes, electron tubes, klystrons, and Magnetrons for microwave ovens; Electrodes for inert gas welding, as well as High Intensity Discharge (HID) lamps; Disks for the substrates of high power semiconductor rectifying devices; Electrical contacts; High temperature furnace parts such as tungsten heating coils, reflectors and structural material; Tungsten-copper heat sinks.