



## Non-Ferrous Molten Metal Handling Applications

The exceptional heat and corrosion resistant properties of **Syalon 101** and **Syalon 050** have been utilised in a range of products for **non-ferrous molten metal handling**. These include **thermocouple protection sheaths, heater tubes, riser tubes, ladles** and other foundry products.

### Syalon 101 / Syalon 050

**Syalon 101** has **excellent thermal shock resistance** as a result of its **high strength, toughness and thermal conductivity**. It is extremely **resistant to corrosion by most non-ferrous molten metals, particularly aluminium**. There is therefore no contamination of the melt. In addition, **Syalon 101 is non-wetting for most non-ferrous metals**, making it very resistant to build up of dross and therefore very low maintenance.

**Syalon 050** possesses similar outstanding physical properties to Syalon 101, although its thermal shock resistance is lower. However, **Syalon 050** is the preferred choice for applications where the temperature exceeds 1200°C or there is a greater chance of erosion. **Syalon 050** can be used for **applications up to 1400°C**.

These unique properties give **Syalon 101** and **Syalon 050** a significantly better service life over conventional materials such as chill cast iron and other ceramic materials such as silicon carbide and aluminium titanate.



### Thermocouple Protection Sheaths

**Syalon 101** thermocouple protection sheaths allow constant temperature monitoring of the melt, resulting quality of the finished casting. They are available in a range of standard sizes as shown in the table right. These are usually available ex-stock. Tubes outside these standard sizes are also available but with a slightly longer lead-time.

OD/mm	ID/mm	Maximum Length/mm
28	16	2000
22	12	2000
16	9	2000
12.5	6.5	1150
9	4	600

### Heater & Riser Tubes

**Syalon** heater and riser tubes offer **long life, improved process reliability** and are **cost effective**. The range of heater and riser tubes available is diverse, although we are limited to a maximum outside diameter of 200mm and a maximum length of 1500mm. A selection of the tubes we currently manufacture are shown in the table below.

OD/mm	ID/mm	Max Length/mm	Integral Flange	Steel Flange
60	50	1500	Max length 1000mm	√
80	60	1500	Max length 1000mm	√
100	80	1500	Max length 1000mm	√
120	100	1500	Max length 1000mm	√
140	120	1100	Max length 1000mm	√
160	140	1100	x	√
170	150	1100	x	√
190	165	1350	x	√





## Non-Ferrous Molten Metal Handling Applications continued...

### Ladles & Crucibles

**International Syalons** manufacture a variety of ladles and crucibles for non-ferrous molten metal handling. These devices are very easy to use as they require **no pre-heating**. Also, Syalon generally possesses **minimal wetting**, so adherence of the melt is kept to a minimum, although this behaviour depends on the melt temperature and the alloy composition. For those situations which require it, the devices can be coated with a non-wetting boron nitride coating.



### Level Sensors

**International Syalons** manufacture a range of level sensors for the non-ferrous molten metal industry. These are used to monitor the level of the molten metal during die casting, for example. Made from **Syalon 501**, they are uniquely characterised by **high electrical conductivity** combined with **excellent thermal shock resistance, corrosion resistance** and **non-wetting behaviour** characterised by our other grades of Syalon. These components can be used at temperatures up to 800°C and offer excellent services life and value for money.



### Hooks

**Syalon 101** hooks are used for hot dip aluminising - a method of modifying the surface properties of steel to improve the corrosion and wear resistant properties of piston rings, for example. Of particular benefit in this application are the excellent thermal shock resistance of Syalon and its non-wetting behaviour which helps prevent build up of aluminium on the hook.



### Summary of Benefits

**Syalon** components for non-ferrous molten metal handling offer the following benefits over conventional materials such as chill cast iron, silicon carbide or aluminium titanate:

- **Outstanding thermal shock resistance.**
- **Excellent corrosion resistance to non-ferrous metals such as aluminium and zinc.**
- **Non-wetting behaviour results in resistance to build up of dross.**
- **Cost effective.**
- **Many components ex-stock.**

### Technical Support

The successful integration of ceramics into industrial and engineering systems requires close collaboration between you, the end-user, and us, the material suppliers. Our Technical Specialists are available to discuss your requirements in detail and assist in exploiting the significant advantages which **Syalon 101** has to offer. Should you feel Syalon may be of benefit to your molten metal handling applications please contact us.

