



Non-Ferrous Molten Metal Handling Applications

The exceptional heat and corrosion resistance properties of **Syalon 101** and **Syalon 050** have been utilized in a range of products for non-ferrous molten metal handling. These include **thermocouple protection sheaths, heater and 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, low thermal expansion and high thermal conductivity. It is extremely resistant to corrosion by most non-ferrous molten metal, 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 competitive materials such as chill cast iron and other ceramics materials such as silicon carbide and aluminium titanate.

Thermocouple Protection Sheaths

Syalon 101 thermocouple protection sheaths allow constant temperature monitoring of the melt resulting in improved quality of the finished casting. They are available in a range of standard sizes as shown in the table below. These are often 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 tubes available is diverse, as shown in the table below.

OD/mm	ID/mm	Maximum Length/mm
60	50	1500
80	60	1500
100	80	1500
120	100	1200
150	130	1200
170	150	1500
190	170	1350



Ladles & Crucibles

International Syalons manufacture a variety of ladles and crucibles for non-ferrous molten metal handling. Made from Syalon these devices possess minimal wetting so adherence of the melt is kept to a minimum, although this behaviour depends on the melt temperature and alloy composition. For those situations which require it the devices can be coated with a non-wetting boron nitride coating.



Hooks

Syalon 101 hooks are used hot dip aluminizing – 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 applications offer the following benefits over competitive materials such as chill cast iron, silicon carbide and 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

Technical Support

The successful integration of ceramics into industrial and engineering systems requires close collaboration between you, the end-user and us, the material supplier. Please contact us to discuss your non-ferrous molten metal application.