INTERNATIONAL Syalons

ADVANCED SILICON NITRIDE & SIALON CERAMICS

Extrusion of Copper, Brass and Nimonic Alloys

Extrusion and Drawing dies and plugs (fully floating and captive) manufactured in **Syalon 101** have been successfully used to overcome many of the problems traditionally associated metal dies in extrusion and drawing applications, such as poor surface finish and short die life. Syalon 101 dies and plugs perform extremely well in the extrusion of copper, brass and nimonic alloys, with unsurpassed resistance to wear and thermal shock, creating extended die lives. Also, since Syalon materials do not contain a metallic phase, die pick-up can be eliminated, which results in improved continuity of the extrusion process, enhanced surface finish of the product, reduced scrap rates and increased productivity.

Syalon 101

Syalon 101 possesses a number of properties which make it an ideal candidate for extrusion dies. These include high hot hardness, strength and toughness, excellent thermal properties particularly thermal shock resistance, chemical resistance and good frictional properties.

Case Histories

A highly reputable German extruder of brass wire and bar, has for many years used Syalon dies for extrusions in the range 2mm to 10mm diameter. After exhaustive production trials, the German engineers optimised designs and operating procedures so that maximum benefits were obtained.

One Syalon extrusion die will extrude up to 1200 billets of highly toleranced product with minimum wear and maximum surface quality and has the ability to easily extrude highly toleranced thin wires. An important property of Syalon is its very low wetting behaviour.

In another example, single shot impact extrusion of nimonic components using Syalon 101 dies produced 30,000 components before excessive die wear was noticed. Tool steel dies had to be replaced after 750 components.

A major extruder of brass and copper in the UK has found that using Syalon 101 dies 250 tons of brass could be extruded compared to 100 tons through conventional dies. For copper Syalon 101 extruded 75 tons compared to 40 tons for a conventional die.

An added benefit of the new die design is reduced manufacturing costs for the die, which together with increased life makes Syalon an extremely cost effective alternative to conventional tool materials.

Summary of Benefits

The replacement of traditional drawing die and plug materials with Syalon 101 can result in the following benefits being gained:

- **Elimination of pick-up.**
- **Reduction of scrap tube production.**
- **Improved quality of surface finish.**
- **Reduced post-drawing processing.**
- **Increased consistency and reliability.**
- **Increased productivity.**

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 extrusion and drawing applications please contact us.

For more information on our advanced ceramic materials and products, please contact one of our Technical Specialists to discuss your needs.

Certificate No. 930359

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