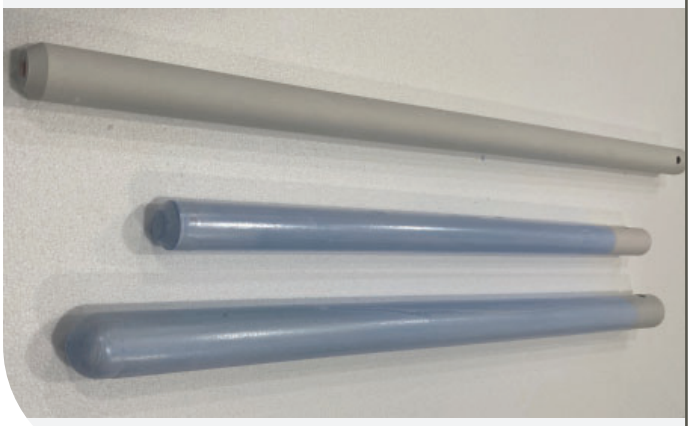
PYROTEK SUPREME CONTROL PINS

FOR SLAB (ROLLING INGOT) VERTICAL DIRECT CHILL CASTING

Pyrotek's Supreme Control Pin is a critical component in aluminium casting for VDC slab and T-ingot production as one of the last points of contact with the molten aluminium before solidification. Manufactured from K66-03, it combines high strength with low thermal conductivity, minimizing freeze-ups during casting. Its erosion resistance and excellent surface finish reduce refractory inclusions in crucial applications. Leveraging innate nonwetting properties and BN coatings, it ensures durable, low-maintenance performance, while tight material tolerances maintain a secure seal at the tip's seating surface.



PHYSICAL PROPERTIES

Property	Value
Maximum Continuous Use Temperature	850°C (1562°F)
Density–g/cm^3 (lb/ft^3)	1.97 (123)
Modulus of Rupture–MPa (psi)	15 ± 1 (2030 ± 145)
Cold Crushing Strength–MPa (psi)	130 ± 10 (18855 ± 1450)
Specific Heat (J/kg°C) (BTU/°F*lb)	1150 at 400°C 1156 at 500°C 1143 at 600°C 1332 at 700°C 1481 at 800°C
Coefficient of Thermal Expansion at 30°C-700°C – mm/mm°C (in/in°F)	1.6 x 10^{-6} (0.89 x 10^{-6})
Thermal Conductivity – W/m·K (BTU in/ft^2 hr °F)	0.54 (3.8) at 400°C 0.75 (5.2) at 600°C 0.86 (5.9) at 700°C 0.98 (6.8) at 800°C

APPLICATIONS

- VDC slab (rolling ingot) casting
- VDC T-ingot casting
- Downspout
- All aluminium alloys

BENEFITS

- Longer service life
- Reduced maintenance

FEATURES

- Low off-gassing
- Smooth, non-friable surface finish
- High hardness and modulus of rupture
- High thermal shock resistance
- Low thermal conductivity

STORAGE AND HANDLING

Prior to use, a control pin should be preheated to 700°C and following all additional industry and facility best practices for preheating to reduce the likelihood of molten metal explosions or freeze casts.

MAINTENANCE

Boron nitride (BN) improves the control pin's resistance to corrosion, premature failure, spinel formation, and reduces the maintenance required after each cast. It is important to recoat the control pin with BN after every cast to ensure the material remains in good condition. If the recommended coating practices are not followed, then the product life can be shortened

If oxide or aluminium skin buildup is noticed, the surface should be treated to prevent more permanent damage. Treatment requires the removal of the surface contaminate with a soft abrasive surface tool and then reapplication of BN coating. Hard tools used for scraping and prying metal loose should be avoided because the refractory can be damaged.

For more specific guidance, please contact a Pyrotek sales engineer.

JULY-25-EN-1849