

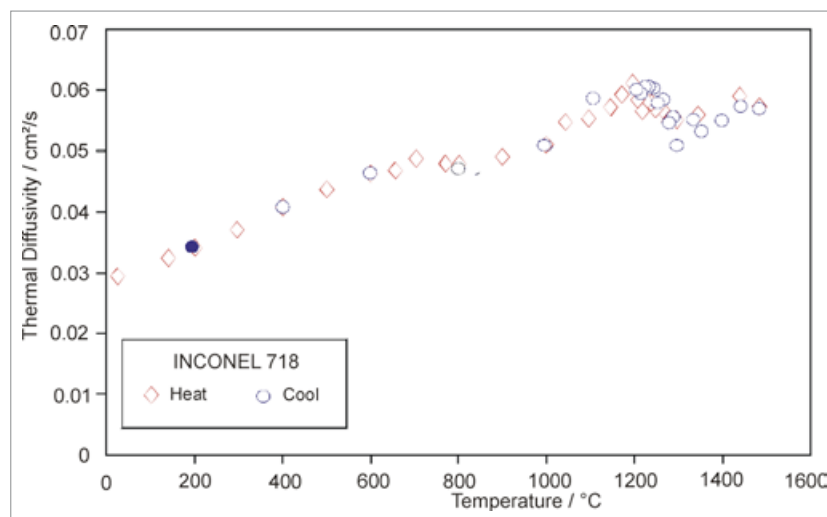
# APPLICATION SHEET

## METALS – AEROSPACE

# INCONEL 718

Inconel 718 is a nickel-based superalloy (nickel-chromium-iron) with a high strength. It is a corrosion-resistant nickel chromium material used at -253°C to 700°C. The age-hardenable alloy can be readily fabricated, even into complex parts. Its welding characteristics, especially its resistance to postweld cracking, are outstanding. The ease and economy with which INCONEL alloy 718 can be fabricated,

combined with good tensile, fatigue, creep, and rupture strength, have resulted in its use in a wide range of applications. Examples of these are components for liquid fueled rockets, rings, casings and various formed sheet metal parts for aircraft and land-based gas turbine engines, and cryogenic tankage. It is also used for fasteners and instrumentation parts.



### Instrument

LFA 427

### Test Conditions

Temperature range	RT ... 1500°C
Heating/cooling rates	20 K/min
Atmosphere	Ar at 60 ml/min
Sample mass	Liquid metal sample holder
Sensor	InSb

### Results

The measurement was carried out during heating and cooling. No significant difference was obtained between the heating and cooling cycles. Between 600 and 900°C, a slight slope change can be seen which is caused by a solid-solid-phase transition (formation of Nickel-Chromium clusters). Above 1200°C, a drop is visible in the thermal diffusivity caused by the melting of the material. In the liquid region (above 1300°C), the thermal diffusivity increases versus temperature. The result proves that the liquid metal container of the LFA 427 even works on critical metal molts.