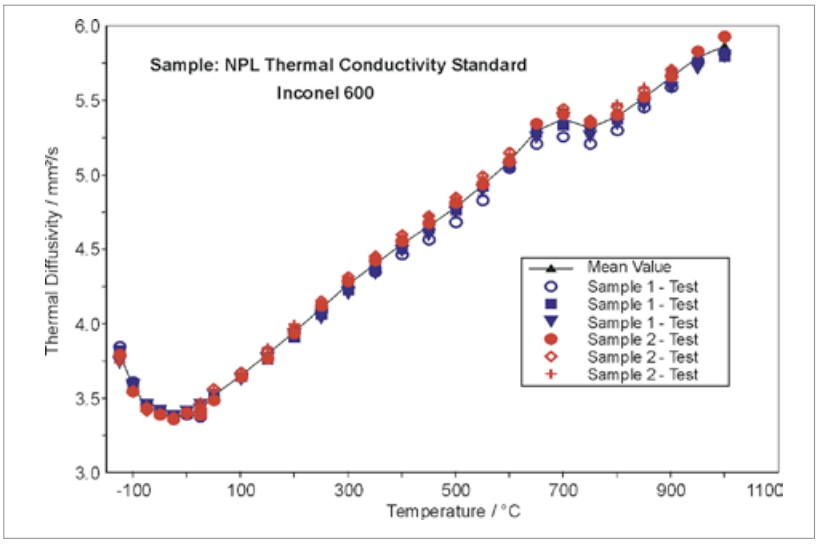
APPLICATION**SHEET**

METALS/ALLOYS – AEROSPACE

NICKEL-BASED SUPERALLOY

(INCONEL 600)

Inconel alloys are a family of non-magnetic nickel-based superalloys. Inconel alloy 600 is 72% nickel, 16% chromium, and 8% iron. The high chromium content of Inconel 600 raises its oxidation resistance considerably above that of pure nickel, while its high nickel content provides good corrosion resistance under reducing conditions. Therefore, Inconel 600 offers a high oxidation and corrosion resistance, even at very high temperatures, and also retains a high mechanical strength under these conditions. Thus, it is often used under extreme conditions, such as in aircraft engine parts, turbocharger turbine wheels, chemical processing and pressure vessels. Inconel 600 & 800 are also used in the pressure tubes of CANDU nuclear reactors. Furthermore, Inconel 600 is a certified reference material for the thermal conductivity.



Instrument

LFA 457 *MicroFlash®*

Test Conditions

Temperature range	-125 … 1000°C
Sample holder	12.7 mm
Sample thickness	approx. 3 mm
Sample surface preparation	Sand blasted
C_p from DSC	-

Results

Presented in the plot are the results of six different runs on Inconel superalloy between -125 and 1000°C. Two different furnace systems were employed for the tests (-125 … 25 °C and 25 … 1000°C). The differences between the individual runs are in the range of ±2% which corresponds to the typical accuracy of the unit. A minimum was obtained in the thermal diffusivity slightly below 0°C. This might be due to a change in the magnetic properties. Between 500 and 700°C, a step overlaps the thermal diffusivity. This step is caused by the formation of $NiCr_3$ clusters. Outside the transition range, a nearly linear increase was obtained in the thermal diffusivity.

NGB · AS · 103-2006 · EN · 07/13 · Technical specifications are subject to change.

NETZSCH-Gerätebau GmbH
Wittelsbacherstraße 42 · 95100 Selb · Germany
Tel.: +49 9287/881-0 · Fax: +49 9287/881505
at@netzsch.com · www.netzsch.com

NETZSCH