

Special Metals INCOLOY® Alloy DS

Category : Metal , Superalloy , Iron Base

Material Notes:

A nickel-iron-chromium alloy with an addition of silicon. It has good high-temperature strength and excellent resistance to oxidation and carburization. The silicon content makes the alloy resistant to internal oxidation in high-temperature atmospheres that vary between oxidizing and reducing. Used in industrial furnaces and for heat-treating baskets, trays, and fixtures. Standard product forms are round, plate, sheet, strip, tube, pipe, and wire. Data provided by the manufacturer, Special Metals.

Order this product through the following link:

http://www.lookpolymers.com/polymer_Special-Metals-INCOLOY-Alloy-DS.php

| Physical Properties | Metric | English | Comments |
|---------------------|-----------|--------------------------|----------|
| Density | 7.86 g/cc | 0.284 lb/in ³ | |

| Mechanical Properties | Metric | English | Comments |
|----------------------------|--------------------------------------|--------------------------------------|---|
| Tensile Strength, Ultimate | 500 MPa | 72500 psi | Solution Annealed prior to test |
| | @Temperature 425 Â°C | @Temperature 797 Â°F | |
| Tensile Strength, Yield | 580 MPa | 84100 psi | Precipitation Hardened. Value at room temperature |
| | @Temperature 23.0 Â°C | @Temperature 73.4 Â°F | |
| Tensile Strength, Yield | 215 MPa | 31200 psi | Precipitation Hardened prior to test |
| | @Strain 0.200 % | @Strain 0.200 % | |
| Elongation at Break | 120 MPa | 17400 psi | Solution Annealed |
| | @Strain 0.200 %, Temperature 425 Â°C | @Strain 0.200 %, Temperature 797 Â°F | |
| Elongation at Break | 60 % | 60 % | Solution Annealed prior to test. |
| | 64 % | 64 % | |
| | @Temperature 425 Â°C | @Temperature 797 Â°F | |

| Thermal Properties | Metric | English | Comments |
|------------------------|-----------------------------|-----------------------------|----------|
| CTE, linear | 15.0 Âµm/m-Â°C | 8.33 Âµin/in-Â°F | |
| | @Temperature 20.0 - 100 Â°C | @Temperature 68.0 - 212 Â°F | |
| Specific Heat Capacity | 0.452 J/g-Â°C | 0.108 BTU/lb-Â°F | |
| Thermal Conductivity | 12.0 W/m-K | 83.3 BTU-in/hr-ftÂ²-Â°F | |

| Melting Point Thermal Properties | 1330 - 1400 Å°C Metric | 2430 - 2550 Å°F English | Comments |
|-------------------------------------|---------------------------|----------------------------|----------|
| Solidus | 1330 Å°C | 2430 Å°F | |
| Liquidus | 1400 Å°C | 2550 Å°F | |

| Component Elements Properties | Metric | English | Comments |
|-------------------------------|--------------|--------------|------------------|
| Carbon, C | <= 0.10 % | <= 0.10 % | |
| Chromium, Cr | 17 - 19 % | 17 - 19 % | |
| Copper, Cu | <= 0.50 % | <= 0.50 % | |
| Iron, Fe | 40 % | 40 % | As remainder |
| Manganese, Mn | 0.80 - 1.5 % | 0.80 - 1.5 % | |
| Nickel, Ni | 34.5 - 41 % | 34.5 - 41 % | Including Cobalt |
| Silicon, Si | 1.9 - 2.6 % | 1.9 - 2.6 % | |
| Sulfur, S | <= 0.030 % | <= 0.030 % | |
| Titanium, Ti | <= 0.20 % | <= 0.20 % | |

| Electrical Properties | Metric | English | Comments |
|------------------------|-----------------|-----------------|----------------------------|
| Electrical Resistivity | 0.000108 ohm-cm | 0.000108 ohm-cm | |
| Magnetic Permeability | 1.038 | 1.038 | at 200 oersted (15.9 kA/m) |

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