

Carlson C 201 Commercially Pure Nickel

Category : Metal , Nonferrous Metal , Nickel Alloy , Superalloy , Pure Element

Material Notes:

General Description Carlson Alloy C 200 is commercially pure nickel, combining good mechanical properties with excellent resistance to many corrosive environments. This alloy retains its strength at high temperatures. It is tough and ductile at sub-zero temperatures. C 200 is ferromagnetic and has one of the largest magnetostrictive effects of any commercial material. Its thermal and electrical conductivities are considerably higher than other stainless steels of nickel alloys. Carlson C 201 is a restricted carbon (0.02% max.) version of C 200. It is preferred for exposure to temperatures above 600°F (315°C); and it is superior whenever creep strength is an important criterion. **Applications** C200 and C 201 provide excellent corrosion resistance to hot concentrated alkali (except ammonium hydroxide). These alloys exhibit good corrosion resistance to dry chlorine, fluorine, hydrogen chloride and hydrogen fluoride up to moderately elevated temperatures. The corrosion resistance of both alloys make them particularly useful for maintaining product purity in food processing and in the production or processing of synthetic fibers, alkalis, fatty acids, soaps and detergents. **Chemical Processing** – caustic processing and storage, chemical shipping containers, synthetic fiber productions, fluorine electrolysis. **Food Processing Equipment** Magnetostrictive Devices **Aerospace and Missile components** – rocket motor cases. Information provided by Carlson

Order this product through the following link:

http://www.lookpolymers.com/polymer_Carlson-C-201-Commercially-Pure-Nickel.php

| Physical Properties | Metric | English | Comments |
|---------------------|-----------|--------------------------|----------|
| Density | 8.89 g/cc | 0.321 lb/in ³ | |

| Mechanical Properties | Metric | English | Comments |
|---------------------------|--------------------------------|---------------------------------|----------|
| Tensile Strength at Break | >= 379 MPa | >= 55000 psi | |
| Tensile Strength, Yield | >= 82.7 MPa @Strain 0.200 % | >= 12000 psi @Strain 0.200 % | |
| Elongation at Break | >= 40 % | >= 40 % | |
| Modulus of Elasticity | 193 GPa | 28000 ksi | Tension |
| Poissons Ratio | 0.29 | 0.29 | |
| Shear Modulus | 75.2 GPa | 10900 ksi | |

| Thermal Properties | Metric | English | Comments |
|------------------------|--|--|----------|
| CTE, linear | 13.0 μm/m-°C @Temperature 27.0 - 100 °C | 7.22 μin/in-°F @Temperature 80.6 - 212 °F | |
| Specific Heat Capacity | 0.4535 J/g-°C @Temperature 0.000 °C | 0.1084 BTU/lb-°F @Temperature 32.0 °F | |

| Thermal Properties | 60.7 W/m-K Metric | 420 BTU-in/hr-ft ² -°F English | Comments |
|----------------------|----------------------------|--|----------|
| Thermal Conductivity | @Temperature 27.0 - 100 °C | @Temperature 80.6 - 212 °F | |
| Melting Point | 1435 - 1446 °C | 2615 - 2635 °F | |
| Solidus | 1435 °C | 2615 °F | |
| Liquidus | 1446 °C | 2635 °F | |

| Component Elements Properties | Metric | English | Comments |
|-------------------------------|------------|------------|----------|
| Carbon, C | <= 0.020 % | <= 0.020 % | |
| Copper, Cu | <= 0.25 % | <= 0.25 % | |
| Iron, Fe | <= 0.40 % | <= 0.40 % | |
| Manganese, Mn | <= 0.35 % | <= 0.35 % | |
| Nickel, Ni | >= 99 % | >= 99 % | |
| Silicon, Si | <= 0.35 % | <= 0.35 % | |
| Sulfur, S | <= 0.010 % | <= 0.010 % | |

| Electrical Properties | Metric | English | Comments |
|------------------------|------------------|------------------|----------|
| Electrical Resistivity | 0.0000118 ohm-cm | 0.0000118 ohm-cm | |
| Curie Temperature | 360 °C | 680 °F | |

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