

## Industeel SIRIUS S12 20% Cr - 1.8% Si Heat Resistant Steel

Category : Metal , Ferrous Metal , Austenitic , Stainless Steel , T 300 Series Stainless Steel

### Material Notes:

Description: CLI SIRIUS S12 grade is an austenitic stainless steel containing 20% Cr, 1.8 % Si and 12% Ni. The low nickel content combined with high chromium and high silicon contents provide good resistance to high temperature oxidation, even in sulphur containing gases The structure stability of the grade is enhanced compared to other more alloyed heat resistant steels. The alloy is designed to resist in oxidizing atmospheres up to 1000Â°C (1832Â°F). In cyclic conditions, a maximum temperature of 950Â°C (1742Â°F) should be considered. The alloy performs much better than 304 H and 304 N grades. Information provided by manufacturer.

Order this product through the following link:

[http://www.lookpolymers.com/polymer\\_Industeel-SIRIUS-S12-20-Cr-18-Si-Heat-Resistant-Steel.php](http://www.lookpolymers.com/polymer_Industeel-SIRIUS-S12-20-Cr-18-Si-Heat-Resistant-Steel.php)

| Physical Properties | Metric    | English       | Comments |
|---------------------|-----------|---------------|----------|
| Density             | 7.90 g/cc | 0.285 lb/inÂ³ |          |

| Mechanical Properties      | Metric                                    | English                                     | Comments                         |
|----------------------------|-------------------------------------------|---------------------------------------------|----------------------------------|
| Tensile Strength, Ultimate | 540 MPa                                   | 78300 psi                                   | Typical after Solution Annealing |
| Tensile Strength, Yield    | 245 MPa                                   | 35500 psi                                   | Typical after Solution Annealing |
|                            | @Strain 0.200 %                           | @Strain 0.200 %                             |                                  |
|                            | 265 MPa                                   | 38400 psi                                   | Typical after Solution Annealing |
|                            | @Strain 1.00 %                            | @Strain 1.00 %                              |                                  |
| Elongation at Break        | 40 %                                      | 40 %                                        | Typical                          |
| Creep Strength             | 140 MPa                                   | 20300 psi                                   |                                  |
|                            | @Temperature 600 Â°C,<br>Time 3.60e+6 sec | @Temperature 1110<br>Â°F,<br>Time 1000 hour |                                  |
| Modulus of Elasticity      | 200 GPa                                   | 29000 ksi                                   |                                  |
| Poissons Ratio             | 0.333                                     | 0.333                                       | Calculated                       |
| Shear Modulus              | 75.0 GPa                                  | 10900 ksi                                   |                                  |
|                            | @Temperature 20.0<br>Â°C                  | @Temperature 68.0 Â°F                       |                                  |

| Thermal Properties | Metric                         | English                        | Comments |
|--------------------|--------------------------------|--------------------------------|----------|
| CTE, linear        | 16.0 Âµm/m-Â°C                 | 8.89 Âµin/in-Â°F               |          |
|                    | @Temperature 20.0 -<br>100 Â°C | @Temperature 68.0 -<br>212 Â°F |          |
|                    | 17.0 Âµm/m-Â°C                 | 9.44 Âµin/in-Â°F               |          |

| Thermal Properties     | Metric                       | English                       | Comments |
|------------------------|------------------------------|-------------------------------|----------|
|                        | @ Temperature 20.0 - 200 Â°C | @ Temperature 68.0 - 392 Â°F  |          |
|                        | 18.0 Âµm/m-Â°C               | 10.0 Âµin/in-Â°F              |          |
|                        | @ Temperature 20.0 - 400 Â°C | @ Temperature 68.0 - 752 Â°F  |          |
|                        | 18.5 Âµm/m-Â°C               | 10.3 Âµin/in-Â°F              |          |
|                        | @ Temperature 20.0 - 600 Â°C | @ Temperature 68.0 - 1110 Â°F |          |
| Specific Heat Capacity | 0.500 J/g-Â°C                | 0.120 BTU/lb-Â°F              |          |
|                        | @ Temperature 20.0 Â°C       | @ Temperature 68.0 Â°F        |          |
| Thermal Conductivity   | 15.0 W/m-K                   | 104 BTU-in/hr-ftÂ²-Â°F        |          |
|                        | @ Temperature 20.0 Â°C       | @ Temperature 68.0 Â°F        |          |

| Component Elements Properties | Metric        | English       | Comments     |
|-------------------------------|---------------|---------------|--------------|
| Carbon, C                     | <= 0.10 %     | <= 0.10 %     |              |
| Chromium, Cr                  | 20 %          | 20 %          |              |
| Iron, Fe                      | 66.1 - 66.2 % | 66.1 - 66.2 % | As remainder |
| Nickel, Ni                    | 12 %          | 12 %          |              |
| Silicon, Si                   | 1.8 %         | 1.8 %         |              |

| Electrical Properties  | Metric                 | English                | Comments |
|------------------------|------------------------|------------------------|----------|
|                        | 0.0000900 ohm-cm       | 0.0000900 ohm-cm       |          |
| Electrical Resistivity | @ Temperature 20.0 Â°C | @ Temperature 68.0 Â°F |          |

## Contact Songhan Plastic Technology Co.,Ltd.

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