

## Haynes 25 alloy, cold worked sheet, 15% cold reduction, aged at 370Â°C (700Â°F) for 1 hour

Category : Metal , Nonferrous Metal , Cobalt Alloy , Superalloy

### Material Notes:

Excellent high-temperature strength with good resistance to oxidizing environments up to 980Â°C for prolonged exposures and excellent resistance to sulfidation and excellent resistance to metal galling. Applications in the aerospace industry, including parts in military and commercial gas turbine engines. Data provided by the manufacturer, Haynes International, Inc.

Order this product through the following link:

[http://www.lookpolymers.com/polymer\\_Haynes-25-alloy-cold-worked-sheet-15-cold-reduction-aged-at-370C-700F-for-1-hour.php](http://www.lookpolymers.com/polymer_Haynes-25-alloy-cold-worked-sheet-15-cold-reduction-aged-at-370C-700F-for-1-hour.php)

| Physical Properties | Metric    | English       | Comments |
|---------------------|-----------|---------------|----------|
| Density             | 9.13 g/cc | 0.330 lb/inÂ³ | at RT    |

| Mechanical Properties      | Metric                                          | English                                             | Comments |
|----------------------------|-------------------------------------------------|-----------------------------------------------------|----------|
| Tensile Strength, Ultimate | 1160 MPa                                        | 168000 psi                                          |          |
|                            | 885 MPa<br>@Temperature 650 Â°C                 | 128000 psi<br>@Temperature 1200 Â°F                 |          |
| Tensile Strength, Yield    | 940 MPa<br>@Strain 0.200 %                      | 136000 psi<br>@Strain 0.200 %                       |          |
|                            | 715 MPa<br>@Strain 0.200 %, Temperature 650 Â°C | 104000 psi<br>@Strain 0.200 %, Temperature 1200 Â°F |          |
| Elongation at Break        | 31 %                                            | 31 %                                                | in 51 mm |
|                            | 23 %<br>@Temperature 650 Â°C                    | 23 %<br>@Temperature 1200 Â°F                       | in 51 mm |
| Modulus of Elasticity      | 225 GPa                                         | 32600 ksi                                           | RT       |
|                            | 146 GPa<br>@Temperature 1000 Â°C                | 21200 ksi<br>@Temperature 1830 Â°F                  |          |
|                            | 154 GPa<br>@Temperature 900 Â°C                 | 22300 ksi<br>@Temperature 1650 Â°F                  |          |
|                            | 163 GPa                                         | 23600 ksi                                           |          |

| Mechanical Properties | @Temperature 800 Â°C<br>Metric | @Temperature 1470<br>Â°F<br>English | Comments |
|-----------------------|--------------------------------|-------------------------------------|----------|
|                       | 174 GPa                        | 25200 ksi                           |          |
|                       | @Temperature 700 Â°C           | @Temperature 1290<br>Â°F            |          |
|                       | 181 GPa                        | 26300 ksi                           |          |
|                       | @Temperature 600 Â°C           | @Temperature 1110<br>Â°F            |          |
|                       | 188 GPa                        | 27300 ksi                           |          |
|                       | @Temperature 500 Â°C           | @Temperature 932 Â°F                |          |
|                       | 197 GPa                        | 28600 ksi                           |          |
|                       | @Temperature 400 Â°C           | @Temperature 752 Â°F                |          |
|                       | 204 GPa                        | 29600 ksi                           |          |
|                       | @Temperature 300 Â°C           | @Temperature 572 Â°F                |          |
|                       | 214 GPa                        | 31000 ksi                           |          |
|                       | @Temperature 200 Â°C           | @Temperature 392 Â°F                |          |
|                       | 222 GPa                        | 32200 ksi                           |          |
|                       | @Temperature 100 Â°C           | @Temperature 212 Â°F                |          |
| Charpy Impact         | 262 J                          | 193 ft-lb                           |          |
|                       | 144 J                          | 106 ft-lb                           |          |
|                       | @Temperature 980 Â°C           | @Temperature 1800<br>Â°F            |          |
|                       | 148 J                          | 109 ft-lb                           |          |
|                       | @Temperature -196<br>Â°C       | @Temperature -321<br>Â°F            |          |
|                       | 163 J                          | 120 ft-lb                           |          |
|                       | @Temperature 870 Â°C           | @Temperature 1600<br>Â°F            |          |
|                       | 182 J                          | 134 ft-lb                           |          |
|                       | @Temperature -138<br>Â°C       | @Temperature -216<br>Â°F            |          |
|                       | 194 J                          | 143 ft-lb                           |          |
|                       | @Temperature 760 Â°C           | @Temperature 1400<br>Â°F            |          |
|                       | 212 J                          | 156 ft-lb                           |          |

| Mechanical Properties | Metric<br>@Temperature -78.0<br>Â°C | English<br>@Temperature -108<br>Â°F | Comments |
|-----------------------|-------------------------------------|-------------------------------------|----------|
|                       | 230 J                               | 170 ft-lb                           |          |
|                       | @Temperature 650 Â°C                | @Temperature 1200<br>Â°F            |          |
|                       | 243 J                               | 179 ft-lb                           |          |
|                       | @Temperature -29.0<br>Â°C           | @Temperature -20.2<br>Â°F           |          |
|                       | 273 J                               | 201 ft-lb                           |          |
|                       | @Temperature 540 Â°C                | @Temperature 1000<br>Â°F            |          |
|                       | 297 J                               | 219 ft-lb                           |          |
|                       | @Temperature 260 Â°C                | @Temperature 500 Â°F                |          |

| Thermal Properties | Metric                         | English                         | Comments |
|--------------------|--------------------------------|---------------------------------|----------|
| CTE, linear        | 12.3 Âµm/m-Â°C                 | 6.83 Âµin/in-Â°F                |          |
|                    | @Temperature 25.0 -<br>100 Â°C | @Temperature 77.0 -<br>212 Â°F  |          |
|                    | 12.9 Âµm/m-Â°C                 | 7.17 Âµin/in-Â°F                |          |
|                    | @Temperature 25.0 -<br>200 Â°C | @Temperature 77.0 -<br>392 Â°F  |          |
|                    | 13.6 Âµm/m-Â°C                 | 7.56 Âµin/in-Â°F                |          |
|                    | @Temperature 25.0 -<br>300 Â°C | @Temperature 77.0 -<br>572 Â°F  |          |
|                    | 14.3 Âµm/m-Â°C                 | 7.94 Âµin/in-Â°F                |          |
|                    | @Temperature 25.0 -<br>500 Â°C | @Temperature 77.0 -<br>932 Â°F  |          |
|                    | 14.3 Âµm/m-Â°C                 | 7.94 Âµin/in-Â°F                |          |
|                    | @Temperature 25.0 -<br>400 Â°C | @Temperature 77.0 -<br>752 Â°F  |          |
|                    | 14.6 Âµm/m-Â°C                 | 8.11 Âµin/in-Â°F                |          |
|                    | @Temperature 25.0 -<br>600 Â°C | @Temperature 77.0 -<br>1110 Â°F |          |
|                    | 15.1 Âµm/m-Â°C                 | 8.39 Âµin/in-Â°F                |          |
|                    | @Temperature 25.0 -<br>700 Â°C | @Temperature 77.0 -<br>1290 Â°F |          |
|                    | 15.8 Âµm/m-Â°C                 | 8.78 Âµin/in-Â°F                |          |
|                    | @Temperature 25.0 -            | @Temperature 77.0 -             |          |

| Thermal Properties   | 800 Â°C<br>Metric            | 1470 Â°F<br>English          | Comments |
|----------------------|------------------------------|------------------------------|----------|
|                      | 16.5 Âµm/m-Â°C               | 9.17 Âµin/in-Â°F             |          |
|                      | @Temperature 25.0 - 900 Â°C  | @Temperature 77.0 - 1650 Â°F |          |
|                      | 17.0 Âµm/m-Â°C               | 9.44 Âµin/in-Â°F             |          |
|                      | @Temperature 25.0 - 1000 Â°C | @Temperature 77.0 - 1830 Â°F |          |
| Thermal Conductivity | 9.40 W/m-K                   | 65.2 BTU-in/hr-ftÂ²-Â°F      | RT       |
|                      | 10.9 W/m-K                   | 75.6 BTU-in/hr-ftÂ²-Â°F      |          |
|                      | @Temperature 100 Â°C         | @Temperature 212 Â°F         |          |
|                      | 12.9 W/m-K                   | 89.5 BTU-in/hr-ftÂ²-Â°F      |          |
|                      | @Temperature 200 Â°C         | @Temperature 392 Â°F         |          |
|                      | 14.8 W/m-K                   | 103 BTU-in/hr-ftÂ²-Â°F       |          |
|                      | @Temperature 300 Â°C         | @Temperature 572 Â°F         |          |
|                      | 16.8 W/m-K                   | 117 BTU-in/hr-ftÂ²-Â°F       |          |
|                      | @Temperature 400 Â°C         | @Temperature 752 Â°F         |          |
|                      | 18.7 W/m-K                   | 130 BTU-in/hr-ftÂ²-Â°F       |          |
|                      | @Temperature 500 Â°C         | @Temperature 932 Â°F         |          |
|                      | 20.7 W/m-K                   | 144 BTU-in/hr-ftÂ²-Â°F       |          |
|                      | @Temperature 600 Â°C         | @Temperature 1110 Â°F        |          |
|                      | 22.6 W/m-K                   | 157 BTU-in/hr-ftÂ²-Â°F       |          |
|                      | @Temperature 700 Â°C         | @Temperature 1290 Â°F        |          |
|                      | 24.7 W/m-K                   | 171 BTU-in/hr-ftÂ²-Â°F       |          |
|                      | @Temperature 800 Â°C         | @Temperature 1470 Â°F        |          |
|                      | 26.7 W/m-K                   | 185 BTU-in/hr-ftÂ²-Â°F       |          |
|                      | @Temperature 900 Â°C         | @Temperature 1650 Â°F        |          |
|                      | 29.2 W/m-K                   | 203 BTU-in/hr-ftÂ²-Â°F       |          |
|                      | @Temperature 1000 Â°C        | @Temperature 1830 Â°F        |          |

| Melting Point      | 1330 - 1410 Â°C | 2430 - 2570 Â°F |          |
|--------------------|-----------------|-----------------|----------|
| Thermal Properties | Metric          | English         | Comments |
| Sondus             | 1330 Â°C        | 2430 Â°F        |          |
| Liquidus           | 1410 Â°C        | 2570 Â°F        |          |

| Component Elements Properties | Metric    | English   | Comments |
|-------------------------------|-----------|-----------|----------|
| Carbon, C                     | 0.10 %    | 0.10 %    |          |
| Chromium, Cr                  | 20 %      | 20 %      |          |
| Cobalt, Co                    | 51 %      | 51 %      |          |
| Iron, Fe                      | <= 3.0 %  | <= 3.0 %  |          |
| Manganese, Mn                 | 1.5 %     | 1.5 %     |          |
| Nickel, Ni                    | 10 %      | 10 %      |          |
| Silicon, Si                   | <= 0.40 % | <= 0.40 % |          |
| Tungsten, W                   | 15 %      | 15 %      |          |

| Electrical Properties  | Metric                | English               | Comments |
|------------------------|-----------------------|-----------------------|----------|
| Electrical Resistivity | 0.0000886 ohm-cm      | 0.0000886 ohm-cm      | RT       |
|                        | 0.0000950 ohm-cm      | 0.0000950 ohm-cm      |          |
|                        | @Temperature 1000 Â°C | @Temperature 1830 Â°F |          |
|                        | 0.0001011 ohm-cm      | 0.0001011 ohm-cm      |          |
|                        | @Temperature 900 Â°C  | @Temperature 1650 Â°F |          |
|                        | 0.0001066 ohm-cm      | 0.0001066 ohm-cm      |          |
|                        | @Temperature 700 Â°C  | @Temperature 1290 Â°F |          |
|                        | 0.0001078 ohm-cm      | 0.0001078 ohm-cm      |          |
|                        | @Temperature 800 Â°C  | @Temperature 1470 Â°F |          |

## Contact Songhan Plastic Technology Co.,Ltd.

Website : www.lookpolymers.com

Email : sales@lookpolymers.com

Tel : +86 021-51131842

Mobile : +86 13061808058

Skype : lookpolymers

Address : United North Road 215,Fengxian District, Shanghai City,China