

## ATI Allegheny Ludlum Stainless Steel Chromium-Nickel Type 304, Annealed (UNS S30400)

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

### Material Notes:

This alloy is one of the most familiar and most frequently used alloy in the stainless steel family. It may be best used in applications where the following properties are important: resistance to corrosion, prevention of product contamination, resistance to oxidation, ease of fabrication, excellent formability, beauty of appearance, ease of cleaning, high strength with low weight, good strength and toughness at cryogenic temperatures, and readily availability of a wide range of product forms. Food and beverage, sanitary, cryogenic, and pressure-containing applications are examples. Past users of Type 302 are generally now using Type 304 since AOD technology has made low carbon levels more easily attainable and economical. Min/max tensile and hardness properties below as requires by ASTM A 240 and ASME SA-240. Information provided by Allegheny Ludlum Corporation.

Order this product through the following link:

[http://www.lookpolymers.com/polymer\\_ATI-Allegheny-Ludlum-Stainless-Steel-Chromium-Nickel-Type-304-Annealed-UNS-S30400.php](http://www.lookpolymers.com/polymer_ATI-Allegheny-Ludlum-Stainless-Steel-Chromium-Nickel-Type-304-Annealed-UNS-S30400.php)

| Physical Properties | Metric    | English                  | Comments |
|---------------------|-----------|--------------------------|----------|
| Density             | 7.90 g/cc | 0.285 lb/in <sup>3</sup> |          |

| Mechanical Properties      | Metric     | English      | Comments   |
|----------------------------|------------|--------------|------------|
| Hardness, Brinell          | <= 201     | <= 201       |            |
| Hardness, Rockwell B       | <= 92      | <= 92        |            |
| Tensile Strength, Ultimate | >= 515 MPa | >= 74700 psi |            |
| Tensile Strength, Yield    | >= 205 MPa | >= 29700 psi |            |
| Elongation at Break        | >= 40 %    | >= 40 %      |            |
| Modulus of Elasticity      | 200 GPa    | 29000 ksi    | in tension |
| Charpy Impact              | 200 J      | 148 ft-lb    |            |

| Thermal Properties     | Metric                     | English                           | Comments |
|------------------------|----------------------------|-----------------------------------|----------|
| CTE, linear            | 16.6 µm/m-°C               | 9.22 µin/in-°F                    |          |
|                        | @Temperature 20.0 - 100 °C | @Temperature 68.0 - 212 °F        |          |
|                        | 19.8 µm/m-°C               | 11.0 µin/in-°F                    |          |
|                        | @Temperature 20.0 - 870 °C | @Temperature 68.0 - 1600 °F       |          |
| Specific Heat Capacity | 0.500 J/g-°C               | 0.120 BTU/lb-°F                   |          |
|                        | 16.3 W/m-K                 | 113 BTU-in/hr-ft <sup>2</sup> -°F |          |

| Thermal Properties | Metric              | English                           | Comments |
|--------------------|---------------------|-----------------------------------|----------|
|                    | 21.4 W/m-K          | 149 BTU-in/hr-ft <sup>2</sup> -°F |          |
|                    | @Temperature 100 °C | @Temperature 212 °F               |          |
|                    | @Temperature 500 °C | @Temperature 932 °F               |          |
| Melting Point      | 1399 - 1421 °C      | 2550 - 2590 °F                    |          |
| Solidus            | 1399 °C             | 2550 °F                           |          |
| Liquidus           | 1421 °C             | 2590 °F                           |          |

| Component Elements Properties | Metric       | English      | Comments   |
|-------------------------------|--------------|--------------|------------|
| Carbon, C                     | <= 0.080 %   | <= 0.080 %   |            |
| Chromium, Cr                  | 18 - 20 %    | 18 - 20 %    |            |
| Iron, Fe                      | 71 %         | 71 %         | as balance |
| Manganese, Mn                 | <= 2.0 %     | <= 2.0 %     |            |
| Nickel, Ni                    | 8.0 - 10.5 % | 8.0 - 10.5 % |            |
| Nitrogen, N                   | <= 0.10 %    | <= 0.10 %    |            |
| Phosphorous, P                | <= 0.045 %   | <= 0.045 %   |            |
| Silicon, Si                   | <= 0.75 %    | <= 0.75 %    |            |
| Sulfur, S                     | <= 0.030 %   | <= 0.030 %   |            |

| Electrical Properties  | Metric           | English          | Comments     |
|------------------------|------------------|------------------|--------------|
| Electrical Resistivity | 0.0000720 ohm-cm | 0.0000720 ohm-cm |              |
| Magnetic Permeability  | 1.004            | 1.004            | 0% cold work |

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