

## ATI Allegheny Ludlum Stainless Steel Type 201, 60% Cold Work (UNS S20100)

Category : Metal , Ferrous Metal , Stainless Steel , T S20000 Series Stainless Steel

### Material Notes:

Allegheny Ludlum Type 201 and 201L have the greatest tonnage of the Cr-Ni-Mn steels (200 series). Type 201 provides advantages over the 18-8 grades in certain applications. Lower cost manganese and nitrogen additions are partial substitutes for nickel making them more economical alloys. Because they possess a very desirable combination of economy plus good mechanical properties and corrosion resistance properties, they have been used in a wide variety of consumer and transportation applications. This austenitic structure achieves significant strengthening through cold working of the material to produce the transformation to a stronger martensitic structure. Type 201 is resistant to a wide variety of mild to moderately corrosive media. Typical applications for Types 201 and 201L are cookware bodies/lids, hose clamps, piston rings, transit car structural member, transit car roofing/siding, thermal window spacers, air bag containers, and truck trailer posts and door frames. Information provided by Allegheny Ludlum Corporation.

Order this product through the following link:

[http://www.lookpolymers.com/polymer\\_ATI-Allegheny-Ludlum-Stainless-Steel-Type-201-60-Cold-Work-UNS-S20100.php](http://www.lookpolymers.com/polymer_ATI-Allegheny-Ludlum-Stainless-Steel-Type-201-60-Cold-Work-UNS-S20100.php)

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

| Mechanical Properties      | Metric               | English              | Comments |
|----------------------------|----------------------|----------------------|----------|
| Hardness, Rockwell C       | 47                   | 47                   |          |
|                            | @Temperature 23.0 °C | @Temperature 73.4 °F |          |
|                            | 47                   | 47                   |          |
|                            | @Temperature 23.0 °C | @Temperature 73.4 °F |          |
| Tensile Strength, Ultimate | 1701 MPa             | 246700 psi           |          |
|                            | @Temperature 23.0 °C | @Temperature 73.4 °F |          |
|                            | 1742 MPa             | 252700 psi           |          |
|                            | @Temperature 23.0 °C | @Temperature 73.4 °F |          |
| Tensile Strength, Yield    | 1649 MPa             | 239200 psi           |          |
|                            | @Temperature 23.0 °C | @Temperature 73.4 °F |          |
|                            | 1731 MPa             | 251100 psi           |          |
|                            | @Temperature 23.0 °C | @Temperature 73.4 °F |          |
| Elongation at Break        | 1.5 %                | 1.5 %                |          |
|                            | @Temperature 23.0 °C | @Temperature 73.4 °F |          |
|                            | 3.5 %                | 3.5 %                |          |
|                            | @Temperature 23.0 °C | @Temperature 73.4 °F |          |

| Thermal Properties     | Metric   | English  | Comments |
|------------------------|--|--|----------|
| CTE, linear            | 16.6 $\mu\text{m}/\text{m}\cdot^\circ\text{C}$ | 9.22 $\mu\text{in}/\text{in}\cdot^\circ\text{F}$ |          |
|                        | @Temperature 20.0 - 100 $^\circ\text{C}$       | @Temperature 68.0 - 212 $^\circ\text{F}$         |          |
|                        | 18.0 $\mu\text{m}/\text{m}\cdot^\circ\text{C}$ | 10.0 $\mu\text{in}/\text{in}\cdot^\circ\text{F}$ |          |
|                        | @Temperature 20.0 - 316 $^\circ\text{C}$       | @Temperature 68.0 - 601 $^\circ\text{F}$         |          |
|                        | 18.0 $\mu\text{m}/\text{m}\cdot^\circ\text{C}$ | 10.0 $\mu\text{in}/\text{in}\cdot^\circ\text{F}$ |          |
|                        | @Temperature 20.0 - 358 $^\circ\text{C}$       | @Temperature 68.0 - 676 $^\circ\text{F}$         |          |
|                        | 20.3 $\mu\text{m}/\text{m}\cdot^\circ\text{C}$ | 11.3 $\mu\text{in}/\text{in}\cdot^\circ\text{F}$ |          |
|                        | @Temperature 20.0 - 871 $^\circ\text{C}$       | @Temperature 68.0 - 1600 $^\circ\text{F}$        |          |
| Specific Heat Capacity | 0.502 J/g- $^\circ\text{C}$                    | 0.120 BTU/lb- $^\circ\text{F}$                   |          |
|                        | @Temperature 0.000 - 100 $^\circ\text{C}$      | @Temperature 32.0 - 212 $^\circ\text{F}$         |          |
| Thermal Conductivity   | 16.3 W/m-K                                     | 113 BTU-in/hr-ft <sup>2</sup> - $^\circ\text{F}$ |          |
|                        | @Temperature 100 $^\circ\text{C}$              | @Temperature 212 $^\circ\text{F}$                |          |
|                        | 23.0 W/m-K                                     | 160 BTU-in/hr-ft <sup>2</sup> - $^\circ\text{F}$ |          |
|                        | @Temperature 500 $^\circ\text{C}$              | @Temperature 932 $^\circ\text{F}$                |          |
| Melting Point          | 1400 - 1455 $^\circ\text{C}$                   | 2550 - 2651 $^\circ\text{F}$                     |          |
| Solidus                | 1400 $^\circ\text{C}$                          | 2550 $^\circ\text{F}$                            |          |
| Liquidus               | 1455 $^\circ\text{C}$                          | 2651 $^\circ\text{F}$                            |          |

| Component Elements Properties | Metric        | English       | Comments   |
|-------------------------------|---------------|---------------|------------|
| Carbon, C                     | $\leq 0.15\%$ | $\leq 0.15\%$ |            |
| Chromium, Cr                  | 16 - 18 %     | 16 - 18 %     |            |
| Iron, Fe                      | 72 %          | 72 %          | as balance |
| Manganese, Mn                 | 5.5 - 7.5 %   | 5.5 - 7.5 %   |            |
| Nickel, Ni                    | 3.5 - 5.5 %   | 3.5 - 5.5 %   |            |
| Nitrogen, N                   | $\leq 0.25\%$ | $\leq 0.25\%$ |            |
| Silicon, Si                   | $\leq 1.0\%$  | $\leq 1.0\%$  |            |

| Electrical Properties  | Metric           | English          | Comments                       |
|------------------------|------------------|------------------|--------------------------------|
| Electrical Resistivity | 0.0000670 ohm-cm | 0.0000670 ohm-cm |                                |
| Magnetic Permeability  | 16               | 16               | D.C. Permeability (m at 200 H) |

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