Specialized Steel Solutions for the Heavy Manufacturing Industry

www.astralloy.com
Astralloy-V Plate®
Abrasion & Impact Resistant, Air-Hardened Wear Steel Plate

Astralloy-V is a unique, deep air-hardened steel that is rich in chemical composition and physical properties. It is through-hardened and unsurpassed in resistance to impact and abrasion.

With continuous impact and abrasion, Astralloy-V can reach a hardness in excess of 550 BHN without brittleness.

<table>
<thead>
<tr>
<th>Chemical Composition* – % Weight</th>
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<tr>
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<th>Physical Properties – Typical Values at 68°F</th>
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<tr>
<td>BHN Hardness</td>
</tr>
<tr>
<td>418 – 512</td>
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Comparative Benefits

Astralloy-V Air Hardened
1. Hardness combined with toughness
2. Work hardenability up to 550 BHN
3. Lower coefficient of friction
4. Excellent cold weather properties
5. Cold and hot formable and weldable, without loss of properties

Quenched & Tempered Wear Steel
1. Hardness with less toughness
2. No work hardening ability
3. Higher coefficient of friction
4. Loss of properties at lower temperatures
5. Loss of properties during heating and welding

EB-450®

EB-450 is a liquid, quenched and tempered, through-hardened, high impact alloy steel with excellent abrasion-resistant properties. Its balanced boron, modified nickel-chrome, molybdenum chemistry is ideal for achieving an optimum hardness to toughness ratio.

EB-450 boasts a longer wear life due to its through-hardness which is more uniform than what is found in conventional carbon/manganese steels. This quench-hardened material is competitively priced for optimum cost/wear ratios. This steel’s resistance to atmospheric corrosion further reduces surface pitting. EB-450 is field proven in extremely abrasive bulk handling systems.

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Benefits

* Higher wear resistance, when compared to conventional steels, due to its uniform hardness.
* Easy to weld with normal low hydrogen simple techniques.
* May be flame cut with oxyacetylene, plasma or similar methods.
* Cold formable with heavy presses or rolls.
* The high hardness and toughness in combination with its low friction coefficient, reduces maintenance costs.
* EB-450 may be easily cut, welded, machined and cold formed, as required.

<table>
<thead>
<tr>
<th>Thickness</th>
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<tbody>
<tr>
<td>1/4&quot; – 3 1/2”</td>
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Additional thicknesses available upon request.

*Typical maximum values. Mill certifications are available upon request.
### Chemical Composition* – % Weight

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<tr>
<td></td>
<td>.20</td>
<td>1.05</td>
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<th>Property</th>
<th>Value</th>
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<tr>
<td>Hardness</td>
<td>320-388</td>
</tr>
<tr>
<td>Tensile Strength (ksi)</td>
<td>175</td>
</tr>
<tr>
<td>Yield Strength (ksi)</td>
<td>153</td>
</tr>
<tr>
<td>Elongation in 2&quot;</td>
<td>15%</td>
</tr>
<tr>
<td>Charpy Test Toughness Index (ft. lbs.)</td>
<td>27 @ RT</td>
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### Benefits

- Uniform hardness throughout the bar (340 BHN) to resist abrasion and promote slidability, and toughness to absorb impact without cracking.
- Maintains its toughness and hardness without brittleness at temperatures of up to -75°F (-60°C) and as low as -40°F.
- Hardenability will reach a range of 550 BHN by impact or sliding action, without deformation or brittleness.
- Astralloy-V’s small oxide surface quickly disappears, exposing a slick, durable surface.
- Can be hot worked and allowed to air cool without loss of hardness or toughness and without warpage problems.

### Astralloy 4800®

Astralloy 4800 is a wear resistant steel offering up to 50% additional in-service life compared with a 400 HB water-quenched steel. Rather than just using a high hardness level, the steel achieves this state by using proven and controlled metallurgical mechanisms. Depending on the thickness, various combinations of an enriched chemical analysis (Cr, Mo, Ti) and controlled quenching rate are used, along with the reinforcement of the structure with titanium carbides which help maintain the properties and wearability of Astralloy 4800. Using Astralloy 4800 in processing operations like cutting, machining and forming is no more difficult than processing AR400 water-quenched steel. Astralloy 4800 is designed to provide the optimum combination of wear resistance, controlled hardness and ease of processing.

### Astralloy-V Round Bar®

Astralloy-V round bars have the same chemistry, uniform toughness and hardness as plate, from surface to core. Astralloy-V’s ultra-fine grain structure, free of massive carbide particles due to its lower carbon content, provides better machinability at its higher strength/hardness level than quenched and tempered alloys.

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<tr>
<td>Hardness</td>
<td>370</td>
</tr>
<tr>
<td>Tensile Strength (ksi)</td>
<td>174</td>
</tr>
<tr>
<td>Yield Strength (ksi)</td>
<td>130</td>
</tr>
<tr>
<td>Elongation in 2&quot;</td>
<td>12%</td>
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<td>Charpy Test Toughness Index (ft. lbs.)</td>
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### Diameter

- **1" – 10"** Hot Rolled Rounds
- **10-1/4" – 20-1/4"** Astralloy-V® RTF (Rough Turned Forgings)

Larger diameters are available upon request. Please call for details.
Astralloy Steel Products
* Offering superior customer service with readily available inventory of proprietary and quenched and tempered steel grades
* Extensive product line of abrasion resistant and specialty steel plate and bar
* Unparalleled experience with thousands of applications across various markets and industries

Processing Capabilities
* 1,000 ton 20’ press brake
* 30” plate rolls capable of rolling 2” mild steel 10’ wide
* High definition plasma and precision oxyacetylene cutting
* CAD/CAM and nesting software
* Bar sawing capacity of 20” diameter

Quality Assurance
* ISO 9001:2008 Certified
* Original Certified Mill Test Reports

Our Locations
**Specialized Steel Solutions for the Heavy Manufacturing Industry**

For more than 50 years, Astralloy Steel Products has been providing innovative and cost-effective solutions. We have an extensive product line of abrasion resistant and specialty steel plate and bar.

### AstraWear 550
- Severe sliding abrasion.
- Water quenched and tempered.
- Hardness: 514–600 BHN.

### AstraWear 500F
- Moderate impact and severe sliding abrasion.
- Produced for enhanced formability and ease of welding.
- Hardness: 470–530 BHN.

### AstraWear 450F
- Excellent resistance to impact and sliding abrasion.
- Produced for enhanced formability and ease of welding.
- Hardness: 430–480 BHN.

### AstraWear 400F
- Excellent resistance to impact and sliding abrasion.
- Produced for enhanced formability and ease of welding.
- Hardness: 360–444 BHN.

### AstraWear 350F
- Excellent resistance to impact and sliding abrasion.
- Produced for enhanced formability and ease of welding.
- Hardness: 350–420 BHN.

### AstraWear 300F
- Excellent resistance to impact and sliding abrasion.
- Produced for enhanced formability and ease of welding.
- Hardness: 300–370 BHN.

### AstraWear 200F
- Excellent resistance to impact and sliding abrasion.
- Produced for enhanced formability and ease of welding.
- Hardness: 200–270 BHN.

### AstraWear 150F
- Excellent resistance to impact and sliding abrasion.
- Produced for enhanced formability and ease of welding.
- Hardness: 150–220 BHN.

### AstraWear 100F
- Excellent resistance to impact and sliding abrasion.
- Produced for enhanced formability and ease of welding.
- Hardness: 100–170 BHN.

### AstraWear 50F
- Excellent resistance to impact and sliding abrasion.
- Produced for enhanced formability and ease of welding.
- Hardness: 50–120 BHN.

### AstraWear 10F
- Excellent resistance to impact and sliding abrasion.
- Produced for enhanced formability and ease of welding.
- Hardness: 10–20 BHN.

### AstraWear 5F
- Excellent resistance to impact and sliding abrasion.
- Produced for enhanced formability and ease of welding.
- Hardness: 5–10 BHN.

### AstraWear 1F
- Excellent resistance to impact and sliding abrasion.
- Produced for enhanced formability and ease of welding.
- Hardness: 1–5 BHN.

### AstraWear 0.5F
- Excellent resistance to impact and sliding abrasion.
- Produced for enhanced formability and ease of welding.
- Hardness: 0.5–1 BHN.

### SEVERE SLIDING ABRASION
- Water quenched and tempered.
- Hardness: 514–600 BHN.

### MODERATE IMPACT AND SEVERE SLIDING ABRASION
- Water quenched and tempered.
- Hardness: 470–530 BHN.

### EXCELLENT RESISTANCE TO IMPACT AND SLIDING ABRASION
- Water quenched and tempered.
- Hardness: 430–480 BHN.

### STRUCTURAL STEEL PLATE
- For wear applications in multiple industries.
- Offers the optimum in strength, toughness, corrosion resistance, and impact-abrasion resistance.
- Minimum 150 ksi yield; Hardness: 321–375 BHN.

### FACTORY DIRECT
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- Main Office: (724) 230-5100
- Main Fax: (724) 734-5838

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Astralloy Steel Products is a wholly-owned subsidiary of Nucor Corporation, the largest producer of steel in the United States. (07/19)