



Astralloy-V[®]

Abrasion and Impact Resistant, Air Hardened Wear Steel Plate

Chemical Composition* – % Weight

C	Mn	P	S	Si	Ni	Cr	Mo
.29	1.20	0.015	.010	.40	4.00	2.00	.50

Physical Properties – Typical Values at 68°F

BHN Hardness	Tensile Strength	Yield Strength	Elongation in 2"	Charpy Test Toughness Index
418 – 512	241 ksi	157 ksi	12%	22 ft. lbs. @ RT

Comparative Benefits

Astralloy-V Air Hardened	Quenched and Tempered Wear Steel
1. Hardness combined with toughness	1. Hardness with less toughness
2. Work hardenability up to 550 BHN	2. No work hardening ability
3. Lower coefficient of friction	3. Higher coefficient of friction
4. Excellent cold weather properties	4. Loss of properties at lower temperatures
5. Cold and hot formable and weldable, without loss of properties	5. Loss of properties during heating and welding

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.



Astralloy-V

CUTTING

Astralloy-V plate can be cut using traditional methods (oxy-fuel, plasma, laser). Plates less than 1" do not need preheating, except in cold or humid climates. Recommended preheating temperature is 250°F (120°C). All plates larger than 1" should be preheated between 400°F and 600°F (205°C and 315°C) in order to avoid premature hardening and cracking.

Preheated areas should be 2" to 3" on each side of the projected cut. We recommend that sufficient time is allowed for preheating so that the temperature can be evenly distributed throughout the plate thickness.

When fabricating gears or sprockets, we recommend the material be stress relieved between 500°F and 600°F (260°C – 315°C). Please contact our technical department for more information.

Shearing is not recommended, as damage to shears may result from Astralloy-V's higher physical properties.

DRILLING

Astralloy-V can be drilled with a high speed alloy or hardened bit.

The drill bit must be sharpened so that it has an angle of 140° to 150°, being careful to center the point of union between both sides. The speed for cobalt drill bits should be 8 – 10 SFM and 4 – 6 SFM for high speed drills with a feed of 0.004" per revolution.

To prevent Astralloy-V from work hardening, it is essential to use a positive power feed with abundant soluble lubricant to dissipate heat and lubricate the cutting edges.

FORMING AND ROLLING

When preparing for forming or rolling Astralloy-V, we recommend grinding all edges to round off sharp corners in order to prevent cracking. The minimum ambient temperature should be at least 80°F (25°C) when cold forming with a hydraulic press. The required minimum internal radius is 24 times the plate thickness. It is recommended that Astralloy-V be cross grained formed, however it is not essential.

One of the greatest advantages of Astralloy-V, compared to other wear steels, is that it can be hot formed and allowed to air cool without losing its original properties. We recommend a minimum temperature of 1600°F (870°C). Hot forming at a temperature below 1450°F (788°C) will result in lower hardness, greater stress levels and reduced abrasion resistance.

WELDING

In order to weld Astralloy-V, a fresh and dry electrode that is low in Hydrogen is recommended. The E7018 is excellent for normal welding procedures, providing adequate strength with good ductility.

In colder climates, it is always recommended that the plate be preheated to over 300°F (149°C) to remove moisture. The preheating should be applied to areas that will be welded and must uniformly penetrate the full thickness of the plate. In cold temperatures or moving air, insulate the weld to prevent rapid cooling.

THICKNESS

Astralloy-V is stocked in thicknesses ranging from 3/16" to 6". Additional thicknesses available upon request.



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