



NUHEAT® 450F PLATE

NUHEAT® 450F steel plate is an abrasion resistant plate product available in thicknesses from 3/16" through 2" (4.7mm through 50mm). This specialty plate product is specifically designed for service applications that require both wear resistance and impact toughness. NUHEAT® 450F plate exhibits a superior combination of hardness, abrasion resistance, formability, weldability, toughness and flatness.

NUHEAT® 450F steel plate exhibits through thickness hardness in combination with minimum carbon and alloy content (low carbon equivalent) for improved weldability.

Hardness

NUHEAT® 450F plate is designed with a through thickness Brinell hardness range of 430-480 and a nominal hardness of 450 BHN. NUHEAT® 450F plate has similar chemistry and physical characteristics to NUHEAT® 400F plate while exhibiting slightly higher hardness levels.

Composition

	C	Mn	P	S	Si	Ni	Cr	Mo	B
NUHEAT® 450F		max	max	max	max	max	max	max	
3/16"- 2" Thickness	.18/.23	1.55	.025	.010	.40	1.00	1.00	.50	.0005/.003
Thickness	Carbon Equivalent								
3/16" – 1.00"	CE = .50 Typ			CE = C + Mn/6 + (Cr + Mo + V)/5 + (Cu + Ni)/15					
Over 1.00" – 2.00"	CE = .64 Max								

Mechanical Properties (Typical in a .75" thick plate)

Tensile Strength	= 205 ksi (1,413 MPa)
Yield Strength	= 175 ksi (1,207 MPa)
Elongation	= 12%
Impact Toughness	= 25 ft-lbs (34 J) Longitudinal (LCVN) at -40°F (-40°C)

Flatness

NUHEAT® 450F plate is produced to 1/2 ASTM A6 Commercial Flatness Tolerances.

Production Size Capability

NUHEAT® 450F plate is produced in thicknesses from 3/16" (4.7mm) through 2" (50mm) and in widths from 72" through 120". Thicknesses of 5/16" and less have a maximum width of 96". Standard thicknesses include 3/16"* , 1/4"* , 5/16" , 3/8"* , 1/2" , 5/8" , 3/4" , 1" , 1-1/4" , 1-1/2" , 1-3/4" and 2". Maximum length is 600". Standard pattern widths and lengths are 96" x 288" , 96" x 240" and 96" x 576". Metric and other sizes are available on inquiry (* - Inquire on 3/16" , 1/4" and 5/16" sizes for availability).

Thermal Cutting

NUHEAT® 450F plate can be thermally cut using conventional methods of laser, plasma and oxy-fuel cutting techniques provided that the minimum plate temperature is +60°F prior to cutting.

Cold Forming

Following good shop forming practices and uniform load application, NUHEAT® 450F plate can be formed to a minimum radius of 4t (4 x thickness) against a bend line transverse to the rolling direction and 5t against a bend line that is parallel to the rolling direction. Good shop practices include a minimum plate temperature of +60°F, grinding plate edges, conditioning and lubricating forming dies and applying uniform bending force. The recommended minimum bottom die opening should be at least 15 times the plate thickness. Because of the enhanced mechanical properties of this plate, the bending forces required to form the plate will be greater and more plate "springback" can be expected to occur.

Welding

NUHEAT® 450F plate can be welded using conventional welding practices such as SMAW, GMAW and SAW provided low-hydrogen filler metal and welding practices are employed. Interpass temperatures should not exceed 400°F and postweld heat treatment is not recommended if the original hardness levels are to be maintained.

Applications

NUHEAT® 450F abrasion resistant plate is used in a variety of demanding applications where resistance to sliding abrasion is critical such as: heavy construction, raw material handling, mining, aggregate, road building, scrap processing, demolition, forestry and oil and gas exploration. Typical product applications include: dump bodies, conveyors, crushers, hoppers, feeders, buckets, chutes, pavers, shovels, sprockets, gears, cutting edges, rock hammers, longwall mine pans, screens, grapples, mixer drums, knives, etc.