



## NUHEAT® 400F PLATE

NUHEAT® 400F 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® 400F plate exhibits a superior combination of hardness, abrasion resistance, formability, weldability, toughness and flatness.

NUHEAT® 400F steel plate exhibits through thickness hardness in combination with minimum carbon and alloy content (low carbon equivalent) for improved weldability.

### Hardness

NUHEAT® 400F plate is designed with a through thickness Brinell hardness range of 360-444 and a nominal hardness of 400 BHN.

### Composition

NUHEAT® 400F	C	Mn max	P max	S max	Si max	Ni max	Cr max	Mo max	B
3/16"- 2" Thickness	.12/.16	1.55	.025	.010	.40	.80	.60	.50	.0005/.003

Thickness	Carbon Equivalent	CE = C + Mn/6 + (Cr + Mo + V)/5 + (Cu + Ni)/15
3/16" – 5/16"	CE = .42 Max	
Over 5/16" – 3/4"	CE = .46 Max	
Over 3/4" – 1.25"	CE = .50 Max	
Over 1.25" – 2.00"	CE = .59 Max	

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

Tensile Strength	= 180 ksi (1,241 MPa)
Yield Strength	= 145 ksi (1,000 MPa)
Elongation	= 16%
Impact Toughness	= 25 ft-lbs (34 J) Longitudinal (LCVN) at -40°F (-40°C) 20 ft-lbs (27 J) Transverse (TCVN) at -40°F (-40°C)

### Flatness

NUHEAT® 400F plate is produced to 1/2 ASTM A6 Commercial Flatness Tolerances.

## **Production Size Capability**

NUHEAT® 400F 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.

## **Thermal Cutting**

NUHEAT® 400F 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® 400F plate can be formed to a minimum radius of 3t (3 x thickness) against a bend line transverse to the rolling direction and 4t 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 14 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® 400F 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® 400F 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.