# Algoma 130

Superior surface quality and greater strength
Extra high strength, structural quality heat-treated steel plate

Algoma 130 is a higher strength version of Algoma 100, and may allow for weight savings due to its greater yield and tensile strengths. This product exhibits excellent weldability and formability characteristics, in addition to superior resistance to brittle fracture at low service temperatures.

Typical applications of Algoma 130 include highway trailers, crane booms, forestry and mining equipment, and any other uses where weight savings and high strength are critical factors.

## Dimensions

Thickness range: 0.188" (5mm) – 2.5" (65mm)

Maximum width: 152" (3860mm)
Maximum length: 960" (24400mm)

## Notch Toughness

Algoma 130 is produced to a minimum CVNT average value of 20 ft-lbs at -40°F (27 Joules at -40°C). Other testing temperatures and Charpy V-Notch values may be available on request.

Notch toughness (impact) testing is conducted and reported on a per-thickness per-heat basis.

## Hardness

Algoma 130 is heat-treated to develop yield strength. This results in a through-thickness hard product with a hardness range of 280-340 HBW, although there is no minimum hardness specified for this grade. Hardness values will be reported if requested at the time the order is placed.

## Forming (Up to 90°)

Algoma 130's low alloy levels and consistent properties make it ideal for cold forming.

Plate up to 1" (25.4mm) thick can be cold bent to a minimum inside bend radius of 3t (where t is the plate thickness), with the bend axis transverse to the rolling direction (i.e. across the grain), and a radius of 4t when bending parallel to the rolling direction.

For plate over 1" to 2.5" (25.4mm to 65mm) thick, a radius of 4t should be used for cold forming with a bend axis transverse to the rolling direction, and a radius of 5t when bending parallel to the rolling direction.

## Maximum Temperatures for Hot Forming and Stress-Relief

Algoma 130 can be heated to approximately 900°F (475°C) for about 20 minutes for hot forming or stress relief operations. Additional time at these temperatures may result in some loss of mechanical properties.

### Chemical Composition - Heat Analysis (% maximum)

| Thickness | C | Mn | P | S | Si | Cr | Mo | B |
|---|---|---|---|---|---|---|---|---|
| 0.188" (5mm) to 0.250" (6.35mm) | 0.17 | 1.50 | 0.025 | 0.015 | 0.45 | 0.20 | 0.20 | 0.003 |
| Over 0.25" (6.35mm) to 1.375" (35mm) | 0.21 | 1.50 | 0.025 | 0.015 | 0.45 | 0.65 | 0.40 | 0.003 |
| Over 1.375" (35mm) to 2.5" (65mm) | 0.26 | 1.50 | 0.025 | 0.015 | 0.45 | 0.60 | 0.45 | 0.003 |

*Notes:*

1. *The molybdenum content will vary according to thickness.*
2. *To meet the required mechanical properties, Algoma may use additional alloy elements, which it will report to purchasers.*

### Mechanical Properties (transverse)

| Tensile Strength Mimimum | Yield Strength Minimum | Elongation (percent) Minimum In 2" (50mm) |
|---|---|---|
| 136 ksi (940 MPa) | 130 ksi (900 MPa) | 12* |

**See elongation adjustment in ASTM A6 for thicknesses of 0.311" (8mm) or less.*

## Welding

Algoma 130 exhibits excellent weldability. Because of its low alloy content, this grade can be welded using simple procedures and common, readily available consumables.

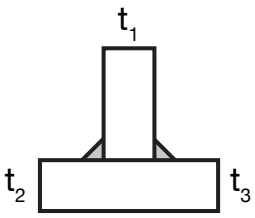
Algoma recommends low hydrogen (H4 designation) electrodes (E120X or higher) conforming to CSA W59-03 clause 5.5.1.6.

In the case of fillet welds, E4918 (E7018) electrodes may be used provided the welds are appropriately sized and the electrodes are categorized as low hydrogen H4 type.

High heat inputs when using conventional arc welding processes should be used cautiously, particularly for thinner thicknesses, since the leaner chemistries of these gauges are more susceptible to a reduction of mechanical properties and hardness along the heat-affected zone. Electrogas and electroslag processes are not suitable for the Algoma 130 grade because of their inherent high heat input.

## Preheat and Interpass Temperatures

Algoma recommends the following preheat and interpass temperatures, which should be monitored with temperature crayons, thermocouples, etc. Higher preheat temperatures may be required when the weld metal hydrogen level is greater than 4ml/100g deposited weld metal, or when higher joint restraint is present.




| Combined plate thickness (t1+t2+t3) | H4 Designation | |
|---|---|---|
| | Low restraint | High restraint |
| <=1.25" (32mm) | no preheat | 170°F (75°C) |
| <=1.50" (38mm) | 120°F (50°C) | 210°F (100°C) |
| <=2.25" (57mm) | 170°F (75°C) | 255°F (125°C) |
| <=2.75" (70mm) | 210°F (100°C) | 255°F (125°C) |
| <=4.00" (100mm) | 255°F (125°C) | 300°F (150°C) |
| >4.00" (100mm) | 255°F (125°C) | 300°F (150°C) |

**Ambient temperature is assumed as 68°F (20°C).*

### The Dearden-O'Neill Carbon Equivalent (C.E.) of Algoma 130 is:

| Thickness | Nominal Aim Carbon Equivalent | Maximum Carbon Equivalent |
|---|---|---|
| 0.188" (5mm) to 0.25" (6.35mm) | 0.38 | 0.43 |
| Over 0.25" (6.35mm), to 1.375" (35mm) | 0.56 | 0.62 |
| Over 1.375" (35mm) to 2.50" (65mm) | 0.57 | 0.63 |

*The carbon equivalent calculated from the mill test report should be used for critical applications.*