



## Smart Elbow Alloy Characteristics

Aluminum (CI)	90-100 BHN	
<p>Available in pipe schedule 10/40 sizes and tube sizes with socket weld or flange end configurations. Lightweight and strong with good wearing properties as compared to the low tensile.</p> <p>Example of products conveyed: PVC pellets, plastic, resins, nylon and plastic pellets, flour, sugar, tea, etc. Qualify dry foods.</p>		
Cast Iron (CI)	174-228 BHN	Max Temp 600°F
<p>Available in pipe schedule 10/40 and schedule 80 sizes and tube sizes with flanged end configurations only. Strong and low cost. Used for medium abrasive type materials up to approximately 5 on the Mohs scale.</p> <p>Example of products conveyed: Bituminous coal-50 mesh, shelled corn, grain, charcoal, hog fuel, alfalfa seeds, malt (dry ground), oats, wood chips, epoxy powders, condensate, soybeans, etc.</p>		
Hammerlast™ Series 400 (H4)	380-420 BHN	Max Temp 600°F
<p>Available in pipe schedule 10/40 and schedule 80 sizes and tube sizes with flanged end configurations only. Conveys materials up to 5.5/6.0 on the Mohs scale. This alloy also has excellent wear resistant properties.</p> <p>Example of products conveyed: Bottom ash, sand, lime, pulverized coal, diatomaceous earth, feldspar-1/2", flue dust, crushed limestone, mica, oyster shells, fly ash, slate dust, core sand, bank sand, trap rock-1/2", pebble lime, bank run gravel, copper, crushed ore, hard brick, wet cement, bauxite, etc.</p>		
Hammerloy™ (HL)	500-555 BHN	Max temp: *see below
<p>Available in pipe schedule 10/40 and schedule 80 sizes and tube sizes with flanged end configurations only. Conveys materials up to 8.0/9.0 on the Mohs scale. This alloy is used for extremely heavy situations and/or replaces HammerLast Series 400 when light material loading and high velocity exists. Has also replaced ceramic lined carbon steel in fly ash situations.</p> <p>*Maximum working temperature is as follows: Constant 200-250°F; Intermittent 400°F</p> <p>Example of products conveyed: Fly ash, silica sand, zirconia, coke breeze, alumina, emery, etc.</p>		



## Characteristics continued...

Hard Ductile Iron (DH)	240-300 BHN	Max Temp: 500°F
<p>Available in tube sizes with socket-weld end configurations only. Hard Ductile Iron is a reliable substitute for aluminum and not as brittle as cast iron. Allows line flex (elongation=3%) and is more wear resistant than regular ductile iron, aluminum, cast iron, or carbon steel.</p> <p>Example of products conveyed: Similar to products conveyed by aluminum, stainless steel, carbon steel, and cast iron. Can be used to convey glass-filled plastic pellets. Used when tube size is specified.</p>		

Carbon Steel (SC)	175-190 BHN	Max Temp 800°F
<p>Available in pipe schedule 10/40 sizes and tube sizes with socket-weld and flange end configurations. Call for availability of pipe schedule 80 sizes. Used in industries as absolute specified alloy. Operates well with temperature differential. Often, carbon steel is inappropriately specified when other, more economical alloys will out-perform it. Elongation: 24%.</p> <p>Example of products conveyed: Used as a specified alloy in the petroleum and mining industries due to its capability to withstand sudden changes from hot to cold</p>		

Stainless Steel 304 (S4)	130-150 BHN	Max Temp 1100-1400°F
Stainless Steel 316 (S6)	130-150 BHN	Max Temp 1100-1400°F
<p>Available in pipe schedule 10/40 sizes and tube sizes with socket-weld and flange end configurations. Call for availability of pipe schedule 80 sizes. Uses for smooth bore operations and clean industries. Will accept high heat factors. Aluminum may be a substitute when stainless steel is indiscriminately specified. Type 316 is more resistant to harsh chemicals and has a larger amount of chromium and nickel than type 304.</p> <p>Examples of products conveyed: Plastics, plastic pellets, pharmaceuticals, clean products, finished food products, products with chemical properties that are corrosive to other standard alloys, etc.</p> <p>Composition: Carbon, Manganese, Silicon, Phosphorus, Sulphur, Chromium, Nickel, Molybdenum</p>		

Special Notes:

- Brinell Hardness (BHN) numbers are usually a varied range.
- The Brinell Hardness and Mohs scale are guidelines for basic conveying operations only. EXAMPLE: Fly ash is approximately 7.0 on the Mohs scale. Under normal circumstances, we would recommend Hammerlast Series 400; however, suppose that the system is extremely light loaded with high velocity. Then the alloy recommended would be Hammerloy.