

# ASTM A500

## Cold-Formed ERW Round, Square and Rectangular Structural Steel Tubing in Grades B And C.

All of Nucor Tubular's structural tubing is produced in accordance with the mechanical and chemical property requirements of ASTM A500, Grades B & C.

| Chemical Composition                          | Grade B | Grade C |
|---|---------|---------|
| Carbon, max %                                 | 0.26    | 0.23    |
| Manganese, max %                              | ----    | 1.35    |
| Phosphorus, max %                             | 0.04    | 0.04    |
| Sulphur, max %                                | 0.05    | 0.05    |
| Copper, when copper steel is specified, min % | 0.20    | 0.20    |

| Mechanical Properties - Shapes | Grade B | Grade C |
|--------------------------------|---------|---------|
| Tensile Strength, min psi      | 58,000  | 62,000  |
| Yield Strength, min psi        | 46,000  | 50,000  |
| Elongation in 2" min           | 23%*    | 21%**   |
| *.180" wall and over           |         |         |
| **.120" wall and over          |         |         |

| Mechanical Properties -Rounds | Grade B | Grade C |
|-------------------------------|---------|---------|
| Tensile Strength, min psi     | 58,000  | 62,000  |
| Yield Strength, min psi       | 42,000  | 46,000  |
| Elongation in 2" min          | 23%*    | 21%**   |
| *.180" wall and over          |         |         |
| **.120" wall and over         |         |         |

### Outside Dimension Tolerances for Square and Rectangle Structural Tubing

| Largest Outside Dimension (in) | Plus/minus* |
|--------------------------------|-------------|
| 2-1/2" and under               | 0.020       |
| 2-1/2" to 3-1/2"               | 0.025       |
| 3-1/2" to 5-1/2"               | 0.030       |
| 5-1/2" and over                | 1%          |

\* Tolerance includes allowance for convexity or concavity. For rectangular tubing having a ratio of outside large to small flat dimension less than 1.5, and for square tubing, the tolerance on small flat dimension shall be identical to the large flat dimension tolerance. For rectangular tubing having a ratio of outside large to small flat dimension in the range of 1.5 to 3.9 inclusive, the tolerance on small flat dimension shall be 1.5 times the large flat dimension tolerance. For rectangular tubing having a ratio of outside large to small flat dimension greater than 3.0, the tolerance on small flat dimension shall be 2.0 times the permissible variations in large flat dimension.

#### NOTES:

Straightness: .025" times the number of ft of total length.

Squareness of Sides: For square and rectangular structural tubing, adjacent sides shall be square (90°), with a permissible variation of 2° max.

Radius of Corners: The radius of any outside corner shall not exceed 3.0 times the specified wall thickness.

Wall Thickness: ±10% of nominal wall thickness, as measured at the center of the flat.

### Permissible Variations in Twist for Square and Rectangular Structural Tubing

| Specified Outside Large Flat Dimension | Maximum twist in 3 feet |
|--|-------------------------|
| Over 1-1/2" to 2-1/2"                  | 0.062"                  |
| Over 2-1/2" to 4"                      | 0.075"                  |
| Over 4" to 6"                          | 0.087"                  |
| Over 6" to 8"                          | 0.100"                  |
| Over 8"                                | 0.112"                  |