



**CARBON COLD FINISH STEEL BARS - ASTM A108**

| <b>Chemistry</b>        |              |           |           |            |                    |                 |                 |
|-------------------------|--------------|-----------|-----------|------------|--------------------|-----------------|-----------------|
| Grade:                  | Carbon:      | Iron, Fe: | Lead, PB: | Manganese: | Phosphorus (max.): | Sulphur (max.): | Silicon (max.): |
| 1018                    | 0.15/0.20    |           |           | 0.60/0.90  | 0.040              | 0.050           |                 |
| 1045                    | 0.43/0.50    |           |           | 0.60/0.90  | 0.040              | 0.050           |                 |
| 1117                    | 0.14/0.20    |           |           | 1.00/1.30  | 0.040              | 0.08/0.13       |                 |
| 11L17                   | 0.14/0.20    | Remainder | 0.15/0.36 | 1.00/1.30  | 0.040              | 0.08/0.13       |                 |
| 1141                    | 0.37/0.45    |           |           | 1.35/1.65  | 0.040              | 0.08/0.13       |                 |
| 11L41                   | 0.37/0.45    |           | 0.15/0.35 | 1.35/1.65  | 0.040              | 0.08/0.13       |                 |
| 1144                    | 0.40/0.48    |           |           | 1.35/1.65  | 0.040              | 0.24/0.33       |                 |
| 12L14                   | 0.150 (max.) |           | 0.15/0.35 | 0.85/1.15  | 0.04/0.09          | 0.26/0.35       |                 |
| 1215                    | 0.090 (max.) |           |           | 0.75/1.05  | 0.04/0.09          | 0.26/0.35       |                 |
| 1144 A311/Stressproof ® | 0.40/0.48    |           |           | 1.35/1.65  | 0.040              | 0.24/0.33       | 0.15/0.35       |
| *Fatigueproof ®         | 0.40/0.48    |           |           | 1.35/1.65  | 0.040              | 0.24/0.33       | 0.15/0.35       |

\*Open hearth or basic oxygen products AISI 1144 heats to be used for Fatigueproof ® are usually nitrogen treated, and contain nitrogen in quantities.

| <b>Mechanical Properties (typical)</b> |                       |                         |                   |                               |                                    |                             |                            |
|--|-----------------------|-------------------------|-------------------|-------------------------------|------------------------------------|-----------------------------|----------------------------|
| Grade:                                 | Yield Strength (psi): | Tensile Strength (psi): | Elongation in 2": | Reduction of Area:            | Brinell Hardness:                  | Rockwell C Hardness (min.): | Machining Characteristics: |
| 1018                                   | 54,000                | 64,000                  | 15%               | 40%                           | 126                                |                             |                            |
| 1045                                   | 77,000                | 91,000                  | 12%               | 35%                           | 179                                |                             |                            |
| 1045 TG&P                              | 45,000                | 82,000                  | 12%               | 35%                           | 163                                |                             |                            |
| 1117                                   | 58,000                | 69,000                  | 15%               | 40%                           | 137                                |                             |                            |
| 11L17                                  | 58,000                | 69,000                  | 15%               | 40%                           | 137                                |                             |                            |
| 1141                                   | 88,000                | 100,000                 | 10%               | 30%                           | 212                                |                             |                            |
| 11L41                                  | 90,000                | 100,000                 | 10%               | 30%                           | 197                                |                             |                            |
| 1144                                   | 90,000                | 108,000                 | 10%               | 30%                           | 217                                |                             |                            |
| 12L14                                  | 60,000                | 78,000                  | 15%               | 35%                           | 163                                |                             |                            |
| 1215                                   | 60,000                | 78,000                  | 10%               | 35%                           | 167                                |                             |                            |
| 1144 A311/Stressproof ®                | 100,000               | 115,000                 | 83% of 1212       | 8% min. (7% min. above 3 in.) | 25% of min. (20% min. above 2 in.) |                             |                            |
| *Fatigueproof ®                        | 125,000 (.2% offset)  | *140,000                | 5%                | 15%                           | *280 (min.)                        | *30                         | 80% of 1212                |

\*In the event of disagreement between hardness and tensile strength, the tensile strength will govern.

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