


|   |   |   |              |  |                                     |   |              |                                     |                |
|---|---|---|--------------|--|-------------------------------------|---|--------------|-------------------------------------|----------------|
| <b>Quality</b>  | F9                                      |   |              |  |                                     |   |              |                                     |                |
| <b>According to Standard</b>  | ASTM A 182/A 182M - 10a                 |   |              |  |                                     |   |              |                                     |                |
| <b>Number</b>   | -                                       |   |              |  |                                     |   |              |                                     |                |
|  |   |   |              |  |                                     |   |              |                                     |                |
| <b>Comparable Standards</b>   | EN                                      | W.N.  | BS           |  |                                     |   |              |                                     |                |
|   | 1.7386                                  | -   | -            |  |                                     |   |              |                                     |                |
| <b>Chemical Analysis</b>  | C %                                     | Mn %  | Si %         | P%   | Cr %                                | Ni %  | Mo %         | S%                                  | Other Elements |
|   | 0.15                                    | 0.30 to 0.60                                  | 0.50 to 1.00 | 0.030  | 8.0 to 10.0                         | -   | 0.90 to 1.10 | 0.030                               | -              |
| <b>Hot Work and Heat Treatment</b>  |   |   |              |  |                                     |   |              |                                     |                |
| <b>Grade</b>  | <b>Heat Treat Type</b>                  | <b>Austenitizing/Solutioning Temperature,</b> |              | <b>Cooling Media</b>                             | <b>Quenching Cool Below °F [°C]</b> | <b>Tempering Temperature, Minimum or Range,</b> |              |                                     |                |
| <b>Low Alloy Steels</b>   |   |   |              |  |                                     |   |              |                                     |                |
| F 9   | anneal                                  | 1750 [955]                                    |              | furnace cool                                     | -                                   | -   |              |                                     |                |
|   | normalize and temper                    | 1750 [955]                                    |              | air cool   | -                                   | 1250 [670]                                      |              |                                     |                |
| <b>Mechanical Properties at Room Temperature</b>                                    |   |   |              |  |                                     |   |              |                                     |                |
| <b>Grade Symbol</b>   | <b>Tensile Strength, min, ksi [Mpa]</b> | <b>Yield Strength, min, ksi [Mpa]</b>         |              | <b>Elongation in 2 in, [50 mm] of 4D, min, %</b> |                                     | <b>Reduction of Area, min, %</b>                |              | <b>Brinell Hardness Number, HBW</b> |                |
| F9  | 85 [585]                                | 50 [380]                                      |              | 20   |                                     | 40  |              | 179 - 217                           |                |