

|                       |                         |
|-----------------------|-------------------------|
| Quality               | F9                      |
| According to Standard | ASTM A 182/A 182M - 10a |
| Number                | -                       |



| Comparable Standards | EN     | W.N.         | BS           |       |             |      |              |       |                |
|----------------------|--------|--------------|--------------|-------|-------------|------|--------------|-------|----------------|
|                      | 1.7386 | -            | -            |       |             |      |              |       |                |
| Chemical Analysis    | 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 | -              |

### Hot Work and Heat Treatment Temperatures

| Grade                   | Heat Treat Type      | Austenitizing/Solubilizing Temperature, Minimum or Range, °F [°C] <sup>A</sup> | Cooling Media | Quenching Cool Below °F [°C] | Tempering Temperature, Minimum or Range, °F [°C] |
|-------------------------|----------------------|--|---------------|------------------------------|--|
| <b>Low Alloy Steels</b> |                      |  |               |                              |  |
| F 9                     | anneal               | 1750 [955]   | furnace cool  | -                            | -  |
|                         | normalize and temper | 1750 [955]   | air cool      | -                            | 1250 [670]                                       |

### Mechanical Properties at Room Temperature

| Grade Symbol | Tensile Strength, min, ksi [Mpa] | Yield Strength, min, ksi [Mpa] | Elongation in 2 in, [50 mm] of 4D, min, % | Reduction of Area, min, % | Brinell Hardness Number, HBW |
|--------------|----------------------------------|--------------------------------|---|---------------------------|------------------------------|
| F9           | 85 [585]                         | 50 [380]                       | 20  | 40                        | 179 - 217                    |