

|                       |                 |
|-----------------------|-----------------|
| Quality               | 4145            |
| According to Standard | ASTM A 29/A 29M |
| Number                | -               |



|                      |    |      |        |     |
|----------------------|----|------|--------|-----|
| Comparable Standards | EN | W.N. | BS 970 | DIN |
|                      | -  | -    | -      | -   |

|                   |             |             |             |             |      |             |            |
|-------------------|-------------|-------------|-------------|-------------|------|-------------|------------|
| Chemical Analysis | C % max     | Mn %        | Si %        | Cr %        | Ni % | Mo %        | S%         |
|                   | 0.43 - 0.48 | 0.75 - 1.00 | 0.15 - 0.35 | 0.80 - 1.10 | -    | 0.15 - 0.25 | 0.040 max. |
|                   | P %         |             |             |             |      |             |            |
|                   | 0.035 max.  |             |             |             |      |             |            |

**Hot Work and Heat Treatment Temperatures**

| Preheat Treatment °F (°C) | Austenitizing Temperature, °F (°C) |                                | Austenitizing Time (minutes) | Quench Medium | Tempering Temperature, °F (°C) | Minimum Hardness, RC |
|---------------------------|------------------------------------|--------------------------------|------------------------------|---------------|--------------------------------|----------------------|
|                           | Salt Bath                          | Controlled Atmosphere Furnaces |                              |               |                                |                      |
| -                         | -                                  | -                              | -                            | -             | -                              | -                    |

**Mechanical Properties at Room Temperature**

|           |     |            |       |          |           |                       |                |
|-----------|-----|------------|-------|----------|-----------|-----------------------|----------------|
| Condition | Ø   | Rp0,2 min. | Rm    | A min. % | KV min. J | Max. Brinell Hardness |                |
|           | mm. | N/mm2      | N/mm2 |          |           | Annealed BHN          | Cold Drawn BHN |
|           | -   | -          | -     | -        | -         | -                     | -              |