

## Material: EN 1.4311

### Standard Specification for Seamless Steel Tubes for Pressure Purposes

**Group:** Ferrous Stainless Steel Alloys

**Sub Group:** EN 1.4311 Seamless Steel Tubes for Pressure Purposes

**Application:** Intended for Valve, Pump, General Engineering, Automotive and Other Industries

**Grade Belongs to the Industry:** Steel

| Chemical Composition |      |                 | Heat Treatment          |           |
|----------------------|------|-----------------|-------------------------|-----------|
| Carbon               | C %  | 0.030 max.      | Solution Annealing      |           |
| Silicon              | Si % | 1.000 max.      |                         |           |
| Manganese            | Mn % | 2.000 max.      |                         |           |
| Phosphorus           | P %  | 0.045 max.      |                         |           |
| Sulphur              | S %  | 0.015 max.      |                         |           |
| Chromium             | Cr % | 17.500 - 19.500 |                         |           |
| Nickel               | Ni % | 8.500 - 11.500  |                         |           |
| Nitrogen             | N %  | 0.120 - 0.220   |                         |           |
| Iron                 | Fe % | Balance         | Mechanical Properties   |           |
| -                    | -    | -               | Tensile Strength in Mpa | 550 - 760 |
| -                    | -    | -               | Yield Strength in Mpa   | 270 min.  |
| -                    | -    | -               | Elongation in %         | 30 min.   |
| -                    | -    | -               | Reduction of Area in %  | -         |
| -                    | -    | -               | Hardness in HB          | 230 max.  |
| -                    | -    | -               | Impact in Joule         | 60 J @ RT |

| Cross Reference Table |          |                |                               |
|-----------------------|----------|----------------|-------------------------------|
| Material              | Standard | Country        | Grade Belong to the Industry  |
| 1.4311                | DIN      | Germany        | Tube                          |
| 1.4311                | EN       | European Union | Steel                         |
| CrNi18/9-0.03C/N      | BS       | British        | Steel and Flat                |
| X3CrNi18-10           | AFNOR NF | France         | Steel and Tube                |
| SUS 304 LN            | JIS      | Japan          | Steel, Plate, Sheet and Strip |
| X20CrNi 18-10         | UNI      | Italy          | Sheet, Plate, Strip and Bar   |
| X2CrNi18 10 KKW       | ONORM    | Australia      | Steel                         |

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