

## MATERIAL DATA SHEET · CHROME-MOLY ALLOY STEEL

## ASTM A182 F9 — Chemical Composition &amp; Mechanical Properties

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ASTM A182 F9 is a chrome-moly alloy steel grade for forged flanges & fittings (UNS K90941, EN / W.Nr 1.7386). It is also known as 9Cr-1Mo. This sheet summarises its chemical composition limits, minimum mechanical properties, heat treatment and typical service. Teshi Group manufactures flanges and fittings in this grade.

## At a glance

|                 |                           |
|-----------------|---------------------------|
| Material family | Chrome-moly alloy steel   |
| Product form    | Forged flanges & fittings |
| UNS             | K90941                    |
| EN / W.Nr       | 1.7386                    |
| Also known as   | 9Cr-1Mo                   |

## Mechanical properties

|                                    |             |
|------------------------------------|-------------|
| Tensile strength, min              | 585 MPa     |
| Yield strength (0.2 % offset), min | 380 MPa     |
| Elongation, min                    | 20 %        |
| Hardness                           | 179–217 HBW |

## Chemical composition (weight %)

|                |                 |                |                |                 |
|----------------|-----------------|----------------|----------------|-----------------|
| C<br>0.15 max  | Mn<br>0.30–0.60 | P<br>0.030 max | S<br>0.030 max | Si<br>0.50–1.00 |
| Cr<br>8.0–10.0 | Mo<br>0.90–1.10 |                |                |                 |

Single values are maximums unless shown as a range or “min”.

## Heat treatment

Annealed, or normalised and tempered 675 °C min

## Typical service

Refinery furnace and high-temperature sulphidic service

## International equivalents (nearest)

|                            |                                |
|----------------------------|--------------------------------|
| USA — ASTM / ASME          | ASTM A182 F9 · ASME SA-182 F9  |
| USA — UNS                  | K90941                         |
| Europe — EN designation    | X11CrMo9-1 (EN 10216-2)        |
| Europe — W.Nr              | 1.7386                         |
| Japan — JIS                | STPA26 / SFVAF9                |
| China — GB / NB            | 12Cr9MoI (GB/T 9948) / 1Cr9Mo1 |
| China — old GB designation | 1Cr9Mo1                        |
| UK — BS (withdrawn)        | BS 3604 629                    |

**Teshi Group** — OEM manufacturer of flanges, pipe fittings, fasteners, valves and fabrications; stockist and supplier of pipes, plates and structural steel. ISO 9001:2015 · IBR approved · since 1971. Enquiries: info@teshigroup.com · sales@teshigroup.com · +91 78900 09110

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