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# SUPER 25 CHROME

## UNS S32750 • UNS S32760 • UNS S39274

Super Duplex 25 Chrome grades, 25CRW & 25CRS (UNS S32750/S32760/S39274), are cold-hardened duplex stainless steels intended for corrosion resistance in sweet ($CO_2$) and moderately sour ($H_2S$) environments with high chloride content, requiring high strength up to 450°F. The "Super" designation indicates that it has a Pitting Resistance Equivalence (PREN) ≥40. This provides increased resistance to $H_2S$ and localized corrosion from high chlorides and/or oxygen relative to standard 25 Chrome.

It is therefore a common choice for use as tubing and liner in seawater and water injection wells. However, all environmental factors, including $H_2S$, $CO_2$, temperature, pH, and chloride concentration, should be considered before final material selection.

These alloys are classified in MR0175/ISO15156 as duplex stainless steels having a Pitting Resistance Equivalent Number ≥40, suitable for $H_2S$ partial pressure ≤3.0 psi.

### NOMINAL COMPOSITION

| | | | | | |
|---|---|---|---|---|---|
| S32750 | Chromium 25% | Nickel 7.0% | Molybdenum 3.5% | - | Iron Balance |
| S32760 | Chromium 25% | Nickel 7.0% | Molybdenum 3.5% | Tungsten 0.75% | Iron Balance |
| S39274 | Chromium 25% | Nickel 7.0% | Molybdenum 3.0% | Tungsten 2.0% | Iron Balance |

### SPECIFIED MECHANICAL PROPERTIES - API 5CRA / ISO 13680 Group 2 Category 25-7-4

| Grade | Yield Strength min. (ksi) | Tensile Strength min. (ksi) | Elongation min. (%) | NACE MR0175/ISO 15156 Environmental Limits |
|---|---|---|---|---|
| 80 | 80 | 110 | 20 | Table A.25 |
| 110 | 110 | 115 | 12 | Table A.25 |
| 125 | 125 | 130 | 10 | Table A.25 |
| 140 | 140 | 145 | 9 | Not recommended for sour service. |

### TYPICAL PHYSICAL PROPERTIES

| | | 70°F | 200°F | 400°F |
|---|---|---|---|---|
| Density | $lbs/in^3$ | 0.28 | - | - |
| Thermal Expansion | $X10^{-6}/°F$ | 7.5 | 7.5 | 7.5 |
| Elastic Modulus | $psi \times 10^6$ | 29.0 | 28.2 | 27.0 |
| Poisson Ratio | | 0.24 | 0.24 | 0.24 |
| Thermal Conductivity | Btu/ft h °F | 8 | 9 | 10 |
| Specific Heat | Btu/lb °F | 0.12 | 0.12 | 0.12 |



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