



DS API Sucker Rod & Pony Rod

OVERVIEW

DS is a newly introduced product grade in API 11B 2025 specification. SANHE offers four material choices for DS, UNS G43300, G432000, G47200 and G31300, each tailored to customer well conditions and usage preference. The 3130 version is manufactured in a quenching and tempering process, and the rest in normalizing and tempering process. Due to its superior corrosion resistance, DS is ideal for corrosive and inhibited wells with medium to heavy load. Even for wells with minimal corrosion, DS has been proven to extend product run-time and reduce overall operational costs.

PRODUCT FEATURES

The special Q&T heat-treatment process for DS 3130 version creates a denser martensitic internal grain structure. This helps to slow down the development of inter-granular fracture in corrosive environment, giving DS improved fatigue and corrosion resistance performance. DS shares standard API design and SANHE's standard manufacturing features including cold rolled pin threads for extra strength and whole-body shot-peening for improved fatigue resistance. To ensure optimal protection during transportation and storage, all sucker rod are coated with rust inhibitors, bundled with rust-free spacers, and securely packaged with end-caps for individual rods and bundles.

DESIGN CONSIDERATIONS

When designing with DS, we recommend using a service factor up to 1.0 in design software to ensure reliability. However, some of our customers had success with DS using service factors up to 1.2. DS can be used for light-load PCP wells. Alternatively, for improved reliability please consider SANHE's HT series products with modified API pin design.

CHEMICAL COMPOSITION

| Steel | C | Mn | P | S | Si | Cu | Ni | Cr | Mo |
|-------|-----------|-----------|-----------|-----------|-----------|----------|-----------|-----------|-----------|
| 3130 | 0.22-0.29 | 0.71-1.00 | 0.025 Max | 0.035 Max | 0.15-0.35 | 0.35 Max | 0.70-1.00 | 0.41-0.65 | 0.05 Max |
| 4320 | 0.18-0.24 | 0.80-1.00 | 0.025 Max | 0.025 Max | 0.15-0.35 | 0.35 Max | 1.15-1.50 | 0.70-.90 | 0.20-0.30 |
| 4720 | 0.19-0.23 | 0.85-1.05 | 0.035 Max | 0.04 Max | 0.15-0.35 | - | 0.90-1.20 | 0.80-1.05 | 0.20-0.30 |
| 4330 | 0.30-0.37 | 0.70-0.95 | 0.025 Max | 0.025 Max | 0.15-0.35 | 0.25 Max | 1.65-2.00 | 0.80-1.10 | 0.20-0.30 |

MECHANICAL PROPERTIES

| Tensile Strength ksi Mpa | Yield ksi Mpa | Elongation (2", %) | Reduction % | Hardness (HRC) |
|--------------------------------|---------------------|-----------------------|----------------|-------------------|
| 125-140 862-965 | 115 Min 793 Min | 12 Min | 55 Min | 25-31 |

DESIGN PARAMETERS

$$Sa = SF \left(\frac{120,000}{4} + 0.5625 S_{min} \right)$$

Note: Sanhe recommends using service factor (SF) 0.8-1.0 in well design to ensure reliability.