

# Data sheet P 690

Revision 01

## 1. CHEMICAL COMPOSITION

„P690“ is a high pitting corrosion resistant nonmagnetic, austenitic Cr-Ni-Mo-N-steel, specifically developed for oilfield applications.

C	Mn	Cr	Ni	Mo	N
max. 0,05	3,00-8,00	22,00-28,00	14,00-18,00	3,00-5,00	min. 0,40

## 2. MECHANICAL PROPERTIES

Following mechanical properties (tested at room temperature) are achieved by a special cold-working process over the full length of the collar:

Yield Strength (min.):	OD up to 9 <sup>1</sup> / <sub>4</sub> "	150 ksi	1035 N/mm <sup>2</sup>
0,2%-offset method	OD 9 <sup>1</sup> / <sub>2</sub> " and larger	140 ksi	965 N/mm <sup>2</sup>
Tensile Strength (min.):		160 ksi	1104 N/mm <sup>2</sup>
Elongation (min.):		20%	20%
Reduction of area (min.):		50%	50%
Impact energy (min.):		120 ft.lb	162 J
Endurance Strength / N=10 <sup>5</sup> (min.):		± 90 ksi	± 550 N/mm <sup>2</sup>
Hardness Brinell:		350-450 HB	350-450 HB

## 3. MAGNETIC PROPERTIES

Relative permeability: ≤ 1,001.

## 4. CORROSION RESISTANCE

- **Transgranular SCC:** Prevented by special surface treatments (Hammer peening, roller burnishing, shot peening).
- **Intergranular SCC:** The occurrence of material sensitization is prevented by quenching after warmforging. Each collar is tested according to ASTM A 262, Pract.A and E, last edition.
- **Pitting Corrosion:** Due to the high chromium-, nickel- molybdenum and nitrogen contents and the unique forging process an excellent resistance to pitting corrosion is given.

## 5. NON-DESTRUCTIVE TESTING

- **Magnetic inspection:** Drill collars are 100% tested by a proprietary probe-testing process using a Förster Magnetomat 1.782. ("Hot Spot"-test). Magnetic permeability of each collar is certified with the printout of probe-testing.
- **Ultrasonic inspection:** Each collar is ultrasonically inspected over 100% of the volume according to ASTM E 114, last edition as a minimum level.

P690 Non-Magnetic Drill Collars meet all requirements of API Spec. 7.1, last edition.  
All tests are carried out according to ASTM-Standards, last editions.  
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