

Data sheet P 670

Revision 1

1. CHEMICAL COMPOSITION

"P670" is a special nonmagnetic, austenitic Cr-Ni-Mn -steel with a high nitrogen content

С	Mn	Cr	Ni	Мо	N
max. 0,06	19,5-22,0	19,5-22,0	8,50-10,00	min 2,20	min. 0,60

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 91/4"	160 ksi	1103 N/mm ²
0,2%-offset method OD 91/2" and larger	150 ksi	1034 N/mm ²
Tensile Strength (min.):	170 ksi	1172 N/mm ²
Elongation (min.):	20%	20%
Reduction of area (min.):	50%	50%
Impact energy (min.):	80 ft.lb	108 J
Endurance Strength / N=10 ⁵ (min.):	± 80 ksi	± 550 N/mm ²
Hardness Brinell:	350-450 HB	350-450 HB

3. MAGNETIC PROPERTIES

Relative permeability: $\leq 1,005$.

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 a high chromium-, molybdenum- and nitrogen content a 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.

P670 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. Prepared / released: Date: June, 2013