

006022

94732.



## DNEPROSPETSSTAL, YUZHNOYE SHOSSE 81, ZAPOROZHYE 69008, UKRAINE

QMS Certified

Contract No.: 07149  
 TECHN. PROTOCOL № 237-06 SPEC. № 5734/P003307  
 „AD 2000-Merkblatt WO/TRD 100(DGRL)97/23/EG”  
 "DIN EN 10222-5, DIN EN 10088-3, DIN EN 10272, ASTM A 276, ASTM A 479, ASME SA-479"  
 DIN EN 10088-3, DIN EN 10222-5, DIN EN 10272, ASTM A182/A182M-05, ASME SA-182/SA-182M-04, ASTM A276-04, ASTM A 314-97(2002), ASTM A479/A479M-04, ASME SA-479/SA-479M-04, ASTM A484/A484M-05, AMS-QQ-S-763A-03 Cond. A, QQ-S-763F Cond. A, NACE MR 0175, AMS 5648K-02, AMS 5653F-02, ASTM A193/A193M-04c GR B8M, CL 1, ASME SA-193/SA-193M-04 GR B8M, CL 1, ASTM A320/A320M-08 GR B8M, CL 1, ASME SA-320/SA-320M-04 GR B8M, CL 1

EN10204/3.1

Sheets: 6                      Sheet: 6  
 QUALITY CERTIFICATE Nr. 231156  
 PLANT ORDER № 8071495734

**CUSTOMER**  
 „DSS INTERNATIONAL SA”  
 Switzerland

**PRODUCT DESCRIPTION**  
 Bars and rods of corrosion-resistant (stainless) steel forged peeled.  
 Прутки из коррозионностойких (нержавеющих) сталей кованные обточенные.  
**STEEL MAKING PROCESS:** Electric furnace  
**СПОСОБ ВЫПЛАВКИ:** Электродуговая печь  
 Round 11.00in/279,40 mm L=3.92m L=3.74m  
 Grade: 316/316L/1.4401/1.4404

**QUANTITY:**                      1bund. Q-1960 kg  
 (number of pcs)                      1bund. Q-1870 kg

**Delivery condition**  
 Heat-treated (solution annealing 1000-1010°C water 18minutes)  
 С термич.обработ. (закалка в воду 1000-1010°C 18мин.)

ANALYSES, %	C	Si	Mn	P	S	Cr	Ni	Mo	Al	Cu	V	W	Ti	Co	Nb	N <sub>2</sub>	Sn	B
REQUIRED	<.030	<1,00	1.20-2.00	<.045	.015-.030	16.50-18.00	10.00-13.00	2.00-2.50	<.10	<.40	<.10	<.20	<.15	<.40	<.20	<.10		
HEAT № 94732	.021	.34	1.29	.038	.028	16,78	10.22	2.05	.055	.23	.05	.07	.11	.074	.01	.032	.006	.0013

DIN EN 10002-1, ASTM A 370

MECHANICAL PROPERTIES	Yield Strength, N/mm <sup>2</sup> (ksi) R0.2% R1.0%		Tensile Strength, Rm, N/mm <sup>2</sup> (ksi)	Elongation			Reduction of area, Z %		Brinell Hardness HB	Impact strength, KV, J				
				A <sub>5</sub> %		L	Q	L		Q	L		Q	
				L	Q						L	Q		
REQUIRED	205	240	515-690	45	35	40	50	Max 215	100	60				
EFFECTIVE	320 (46.6)	345 (50.2)	568 (82,7)	61	54	-	77	167	247	248	252	62	61	61
	-	-	-	-	-	56	-	-	-	-	-	-	-	-
	324 (47.2)	349 (50,8)	565 (82.6)	60	55	-	77	167	247	248	252	62	61	61
-	-	-	-	-	-	56	-	-	-	-	-	-	-	-

**TECHNICAL REQUIREMENTS:**  
 Macrostructure – GOOD  
 GRAIN SIZE : 5 to ASTM E 112  
 Nonmetallic inclusions ASTM E 45 (Method A) -  

A	B	C	D
thin	thick	thin	thick
2.5	2.0	2.0	1.5
0.0	0.0	0.0	1.0
1.0	1.0		

 ICC-EN ISO 3651-2(EN 114, ASTM A262, method E)-test: O.K.  
 "Anti-mixing test-O.K."  
 „Dimension test and surface defects test is accomplished “

Mechanical properties tested in state of delivery

US - testing                      yes                      Results: DIN EN 10228-4 type 1a; class 3: O.K.  
 «ASME SA-388/SA-388M» «ASTM A388/A388M» «FBH 1/5”»

Radiation free; mercury free. No Weld or Weld repair.

Manufacturer: JSC DNEPROSPETSSTAL  
 Date: 23.03.10 Signed:   
 V. Kapilova  
 Zaporozhye  
 Made in Ukraine.