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# PrJSC DNIPROSPETSSTAL, YUZHNOYE SHOSSE 81, 69008 ZAPOROZHYYE, UKRAINE

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|  | Contract No.: 20002<br>TECHN.PROTOCOL № 390-11 SPEC.№ 9728/PO44311<br>DIN EN 10088-3-05, DIN EN 10272-08, DIN EN 10222-5-00, ASTM A182/A182M-10; ASME SA-182/SA-182M-10; ASTM A276-10; ASTM A314-08, ASTM A479/A479M-10; ASME SA-479/SA-479M-10; ASTM A484/A484M-10; AMS-QQ-S-763B-06<br>Cond.A: AMS 5648K-07; AMS 5653F-07; ASTM A193/A193M-10GR B8M, CL1; ASME SA-193/SA-193M-10 GR B8, CL1; ASTM A320/A320M-08 GR B8M, CL1; ASME SA-320/SA-320M-10 GR B8, CL1; <b>NACE MR 0175-03; NACE MR 0103-10</b> | <b>Sheets: 5</b> <b>Sheet: 1</b><br><b>INSPECTION CERTIFICATE EN10204/3.1 Nr.335801</b><br><b>PLANT ORDER № 8014909728</b> |
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|  | <b>CUSTOMER</b><br><b>DSS INTERNATIONAL</b><br><b>SA Switzerland</b> | <b>PRODUCT DESCRIPTION</b><br>Bars and rods of corrosion-resistant (stainless) steel forged, peeled. Прутки из коррозионноустойчивых (нержавеющих) сталей кованные, обточенные.<br><b>STEEL MAKING PROCESS: EAF+AOD</b><br><b>СПОСОБ ВЫПЛАВКИ: Электродуговая печь+АКР</b><br>Round 13.000in/330.20 mm L=10.459 ft/3.19 m<br><b>Grade: 316/316L/1.4401/1.4404</b> | <b>QUANTITY:</b> <b>1bund Q-4938 lb/2240 kg</b><br>(number of pcs)   |
|  |  |   | Delivery condition<br>solution annealed :1940° F(1060° C)water 30minutes<br>термообработка: закалка в воду |

| ANALYSIS, %             | C     | Si    | Mn        | P     | S         | Cr          | Ni          | Mo        | Al   | Cu   | V    | W    | Ti   | Co   | Nb   | N    | Sn    | B     |
|-------------------------|-------|-------|-----------|-------|-----------|-------------|-------------|-----------|------|------|------|------|------|------|------|------|-------|-------|
| REQUIRED                | <.030 | <1,00 | 1.20-2.00 | <.040 | .015-.030 | 16.50-18.00 | 10.00-13.00 | 2.00-2.50 | <.10 | <.40 | <.10 | <.20 | <.15 | <.40 | <.20 | <.10 |       |       |
| CAST<br><b>№ A06147</b> | .017  | .41   | 1.36      | .040  | .025      | 16,85       | 10.20       | 2.05      | .067 | .36  | .06  | .08  | .005 | .13  | .013 | .025 | .0129 | .0025 |

| DIN EN 10002-1, ASTM A370-09                      |  |     |  |            |    |                             |                     |                                       |          | TECHNICAL REQUIREMENTS:  |       |      |       |  |       |      |       |     |     |     |     |     |     |     |     |
|---|--|-----|--|------------|----|-----------------------------|---------------------|---------------------------------------|----------|--|-------|------|-------|--|-------|------|-------|-----|-----|-----|-----|-----|-----|-----|-----|
| MECHANICAL PROPERTIES                             | Yield Strength, (N/mm <sup>2</sup> )<br>R0.2% R 1.0% |     | Tensile Strength, Rm, (N/mm <sup>2</sup> ) | Elongation |    | Reduction of area, Z %<br>L | Brinell Hardness HB | Impact strength, KV, J                |          | A  | B     | C    | D     | Macrostructure – GOOD                    |       |      |       |     |     |     |     |     |     |     |     |
|   | L  | Q   |  | L          | Q  |                             |                     | GRAIN SIZE : 5 to ASTM E 112-96(2004) |          |  |       |      |       |  |       |      |       |     |     |     |     |     |     |     |     |
| REQUIRED  | 205  | 240 | 515-690                                    | 45 35      | 40 | 50                          | 140-217             | 100                                   | 60       | thin   | thick | thin | thick | thin                                     | thick | thin | thick | 3.0 | 2.0 | 2.0 | 1.0 | 0.0 | 0.0 | 1.0 | 1.0 |
| EFFECTIVE   | 286  | 305 | 590  | 61 55      | 58 | 75                          | 174                 | 184 184 184                           | 67 67 67 | Nonmetallic inclusions ASTM E 45-05 (Method A)   |       |      |       | ICC-ASTM A262-08 (practice E)-test: O.K. |       |      |       |     |     |     |     |     |     |     |     |
| Mechanical properties tested in state of delivery |  |     |  |            |    |                             |                     |                                       |          | Dimension/surface defects test, anti-mixing test – OK<br>We acknowledge that the delivered products conform to the requirements of the order/Подтверждаем, что поставленная продукция соответствует требованиям заказа<br>Ratio of reduction-5.9:1 |       |      |       |  |       |      |       |     |     |     |     |     |     |     |     |

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| US - testing  | yes | Results: ASTM A388/A388M-FBIH1/5"; EN 10228-4 type 1a; class 3:OK | Manufacturer: PrJSC DNIPROSPETSSTAL<br>Date: 12.07.18<br>Manager of quality assurance department - V. Kapaiieva<br>Signed:<br>Zaporozhye<br>Made in Ukraine. |
| Radiation free; mercury free. No Weld or Weld repair. |     |   |  |

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