




C282604

| <b>PrJSC DNIPROSPETSSTAL, YUZHNOYE SHOSSE 81, 69008 ZAPOROZHYE, UKRAINE</b>   |  |   |                         |  |                        |             |   |           |      |      |      |      |   |      |      |      |   |             |      |       |      |       |      |     |     |     |     |     |     |     |     |     |     |  |  |  |          |  |  |   |                         |                     |                        |             |           |          |      |      |         |           |            |           |      |    |     |               |      |     |      |      |      |       |       |      |     |     |     |     |      |     |     |      |  |  |
|---|--|---|-------------------------|--|------------------------|-------------|---|-----------|------|------|------|------|---|------|------|------|---|-------------|------|-------|------|-------|------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|--|--|--|----------|--|--|---|-------------------------|---------------------|------------------------|-------------|-----------|----------|------|------|---------|-----------|------------|-----------|------|----|-----|---------------|------|-----|------|------|------|-------|-------|------|-----|-----|-----|-----|------|-----|-----|------|--|--|
|    | Contract No. : 20002<br>TECHN.PROTOCOL № 210-11 SPEC.№ 4008/PO5757<br>ASTM A182/A182M-16a; ASME SA-182/SA-182M-17; ASTM A276-17; ASTM A314-15; ASTM A479/A479M-17; ASME SA-479/SA-479M-17; ASTM A484/A484M-18; AMS-QQ-S-763D-15 Cond.A; AMS 5648M-16; AMS 5653H-12; ASTM A193/A193M-16 GR B8M,CL1 ; ASME SA-193/SA-193M-17 GR B8M,CL1; ASTM A320/A320M-17b GR B8M,CL 1; ASME SA-320/SA-320M-17 GR B8M,CL 1; ANSI/NACE MR 0175/ISO 15156-3-15; ANSI/NACE MR 0103/ISO 17945-15 |   |                         |  |                        |             |   |           |      |      |      |      | INSPECTION CERTIFICATE EN10204/3.1 Nr.349859<br>PLANT ORDER № 8015204008  |      |      |      |   |             |      |       |      |       |      |     |     |     |     |     |     |     |     |     |     |  |  |  |          |  |  |   |                         |                     |                        |             |           |          |      |      |         |           |            |           |      |    |     |               |      |     |      |      |      |       |       |      |     |     |     |     |      |     |     |      |  |  |
| <br>GMS Certified  | <b>CUSTOMER</b><br>DSS INTERNATIONAL SA<br>Switzerland   |   |                         | <b>PRODUCT DESCRIPTION</b><br>Bars and rods of corrosion-resistant (stainless) steel forged, peeled. Прутки из коррозионностойких (нержавеющих) сталей кованные, обточенные.<br><b>STEEL MAKING PROCESS: EAF+AOD</b><br><b>СПОСОБ ВЫПЛАВКИ: Электродуговая печь+АКР</b><br>Round 19.000in/482.60 mm L=10.820ft/3.300m<br><b>Grade: 316/F316/316L/F316L</b> |                        |             |   |           |      |      |      |      | <b>QUANTITY:</b><br>(number of pcs)      1bund Q-10873 lb/4932 kg<br><br>Delivery condition<br>solution annealed :1900-2010 <sup>o</sup> F(1040-1100 <sup>o</sup> C)/water<br>термообработка:закалка в воду |      |      |      |   |             |      |       |      |       |      |     |     |     |     |     |     |     |     |     |     |  |  |  |          |  |  |   |                         |                     |                        |             |           |          |      |      |         |           |            |           |      |    |     |               |      |     |      |      |      |       |       |      |     |     |     |     |      |     |     |      |  |  |
| <table border="1" style="width:100%; border-collapse: collapse; text-align: center;"> <thead> <tr> <th style="width: 15%;">ANALYSIS, %</th> <th>C</th> <th>Si</th> <th>Mn</th> <th>P</th> <th>S</th> <th>Cr</th> <th>Ni</th> <th>Mo</th> <th>Al</th> <th>Cu</th> <th>V</th> <th>W</th> <th>Ti</th> <th>Co</th> <th>Nb</th> <th>N</th> <th></th> <th></th> </tr> </thead> <tbody> <tr> <td>REQUIRED</td> <td>&lt;.030</td> <td>&lt;1,00</td> <td>1.25-2.00</td> <td>&lt;.040</td> <td>.020-.030</td> <td>16.00-18.00</td> <td>10.00-14.00</td> <td>2.00-3.00</td> <td>&lt;.10</td> <td>&lt;.40</td> <td>&lt;.10</td> <td>&lt;.20</td> <td>&lt;.15</td> <td>&lt;.40</td> <td>&lt;.20</td> <td>&lt;.10</td> <td></td> <td></td> </tr> <tr> <td>CAST № A07668</td> <td>.020</td> <td>.43</td> <td>1.55</td> <td>.038</td> <td>.020</td> <td>16.42</td> <td>10.28</td> <td>2.06</td> <td>.06</td> <td>.29</td> <td>.06</td> <td>.06</td> <td>.005</td> <td>.13</td> <td>.01</td> <td>.030</td> <td></td> <td></td> </tr> </tbody> </table> |  |   |                         |  |                        |             |   |           |      |      |      |      |   |      |      |      |   | ANALYSIS, % | C    | Si    | Mn   | P     | S    | Cr  | Ni  | Mo  | Al  | Cu  | V   | W   | Ti  | Co  | Nb  | N  |  |  | REQUIRED | <.030  | <1,00  | 1.25-2.00   | <.040                   | .020-.030           | 16.00-18.00            | 10.00-14.00 | 2.00-3.00 | <.10     | <.40 | <.10 | <.20    | <.15      | <.40       | <.20      | <.10 |    |     | CAST № A07668 | .020 | .43 | 1.55 | .038 | .020 | 16.42 | 10.28 | 2.06 | .06 | .29 | .06 | .06 | .005 | .13 | .01 | .030 |  |  |
| ANALYSIS, %   | C  | Si  | Mn                      | P  | S                      | Cr          | Ni  | Mo        | Al   | Cu   | V    | W    | Ti  | Co   | Nb   | N    |   |             |      |       |      |       |      |     |     |     |     |     |     |     |     |     |     |  |  |  |          |  |  |   |                         |                     |                        |             |           |          |      |      |         |           |            |           |      |    |     |               |      |     |      |      |      |       |       |      |     |     |     |     |      |     |     |      |  |  |
| REQUIRED  | <.030  | <1,00   | 1.25-2.00               | <.040  | .020-.030              | 16.00-18.00 | 10.00-14.00   | 2.00-3.00 | <.10 | <.40 | <.10 | <.20 | <.15  | <.40 | <.20 | <.10 |   |             |      |       |      |       |      |     |     |     |     |     |     |     |     |     |     |  |  |  |          |  |  |   |                         |                     |                        |             |           |          |      |      |         |           |            |           |      |    |     |               |      |     |      |      |      |       |       |      |     |     |     |     |      |     |     |      |  |  |
| CAST № A07668   | .020   | .43   | 1.55                    | .038   | .020                   | 16.42       | 10.28   | 2.06      | .06  | .29  | .06  | .06  | .005  | .13  | .01  | .030 |   |             |      |       |      |       |      |     |     |     |     |     |     |     |     |     |     |  |  |  |          |  |  |   |                         |                     |                        |             |           |          |      |      |         |           |            |           |      |    |     |               |      |     |      |      |      |       |       |      |     |     |     |     |      |     |     |      |  |  |
| <b>MECHANICAL PROPERTIES</b>  |  |   |                         |  |                        |             | <b>TECHNICAL REQUIREMENTS:</b><br>Macrostructure – GOOD<br>GRAIN SIZE : 5 to ASTM E 112-96(2004)<br>Nonmetallic inclusions ASTM E 45-05 (Method A)<br><table style="width:100%; text-align: center; font-size: small;"> <tr> <td></td> <td>A</td> <td>B</td> <td>C</td> <td>D</td> </tr> <tr> <td>thin</td> <td>thick</td> <td>thin</td> <td>thick</td> <td>thin</td> </tr> <tr> <td>2.5</td> <td>2.0</td> <td>2.0</td> <td>0.0</td> <td>0.0</td> </tr> <tr> <td>1.0</td> <td>1.0</td> <td>1.0</td> <td>1.0</td> <td>1.0</td> </tr> </table> ICC-ASTM A262-08 (practice E)-test: O.K.<br>Dimension/surface defects test, anti-mixing test – OK<br>We acknowledge that the delivered products conform to the requirements of the order<br>Ratio of reduction-4,6:1 |           |      |      |      |      |   |      | A    | B    | C | D           | thin | thick | thin | thick | thin | 2.5 | 2.0 | 2.0 | 0.0 | 0.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | <table border="1" style="width:100%; border-collapse: collapse; text-align: center;"> <thead> <tr> <th>Yield Strength, Ksi(N/mm<sup>2</sup>)<br/>Re (R<sub>eL</sub>)</th> <th>Tensile Strength, Rm,ksi<br/>(N/mm<sup>2</sup>)</th> <th>Elongation ASTM A370-09<br/>In2inches<br/>(50mm)<br/>or 4D</th> <th>Reduction of area, Z, %</th> <th>Brinell Hardness HB</th> <th>Impact strength, KV, J</th> </tr> </thead> <tbody> <tr> <td>REQUIRED</td> <td>30(207)</td> <td>75 (517)</td> <td>45</td> <td>50</td> <td>140-223</td> </tr> <tr> <td>EFFECTIVE</td> <td>43.5 (299)</td> <td>81.1(557)</td> <td>60</td> <td>78</td> <td>208</td> </tr> </tbody> </table> |  |  |          | Yield Strength, Ksi(N/mm <sup>2</sup> )<br>Re (R <sub>eL</sub> ) | Tensile Strength, Rm,ksi<br>(N/mm <sup>2</sup> ) | Elongation ASTM A370-09<br>In2inches<br>(50mm)<br>or 4D | Reduction of area, Z, % | Brinell Hardness HB | Impact strength, KV, J | REQUIRED    | 30(207)   | 75 (517) | 45   | 50   | 140-223 | EFFECTIVE | 43.5 (299) | 81.1(557) | 60   | 78 | 208 |               |      |     |      |      |      |       |       |      |     |     |     |     |      |     |     |      |  |  |
|   | A  | B   | C                       | D  |                        |             |   |           |      |      |      |      |   |      |      |      |   |             |      |       |      |       |      |     |     |     |     |     |     |     |     |     |     |  |  |  |          |  |  |   |                         |                     |                        |             |           |          |      |      |         |           |            |           |      |    |     |               |      |     |      |      |      |       |       |      |     |     |     |     |      |     |     |      |  |  |
| thin  | thick  | thin  | thick                   | thin   |                        |             |   |           |      |      |      |      |   |      |      |      |   |             |      |       |      |       |      |     |     |     |     |     |     |     |     |     |     |  |  |  |          |  |  |   |                         |                     |                        |             |           |          |      |      |         |           |            |           |      |    |     |               |      |     |      |      |      |       |       |      |     |     |     |     |      |     |     |      |  |  |
| 2.5   | 2.0  | 2.0   | 0.0                     | 0.0  |                        |             |   |           |      |      |      |      |   |      |      |      |   |             |      |       |      |       |      |     |     |     |     |     |     |     |     |     |     |  |  |  |          |  |  |   |                         |                     |                        |             |           |          |      |      |         |           |            |           |      |    |     |               |      |     |      |      |      |       |       |      |     |     |     |     |      |     |     |      |  |  |
| 1.0   | 1.0  | 1.0   | 1.0                     | 1.0  |                        |             |   |           |      |      |      |      |   |      |      |      |   |             |      |       |      |       |      |     |     |     |     |     |     |     |     |     |     |  |  |  |          |  |  |   |                         |                     |                        |             |           |          |      |      |         |           |            |           |      |    |     |               |      |     |      |      |      |       |       |      |     |     |     |     |      |     |     |      |  |  |
| Yield Strength, Ksi(N/mm <sup>2</sup> )<br>Re (R <sub>eL</sub> )  | Tensile Strength, Rm,ksi<br>(N/mm <sup>2</sup> )   | Elongation ASTM A370-09<br>In2inches<br>(50mm)<br>or 4D | Reduction of area, Z, % | Brinell Hardness HB  | Impact strength, KV, J |             |   |           |      |      |      |      |   |      |      |      |   |             |      |       |      |       |      |     |     |     |     |     |     |     |     |     |     |  |  |  |          |  |  |   |                         |                     |                        |             |           |          |      |      |         |           |            |           |      |    |     |               |      |     |      |      |      |       |       |      |     |     |     |     |      |     |     |      |  |  |
| REQUIRED  | 30(207)  | 75 (517)  | 45                      | 50   | 140-223                |             |   |           |      |      |      |      |   |      |      |      |   |             |      |       |      |       |      |     |     |     |     |     |     |     |     |     |     |  |  |  |          |  |  |   |                         |                     |                        |             |           |          |      |      |         |           |            |           |      |    |     |               |      |     |      |      |      |       |       |      |     |     |     |     |      |     |     |      |  |  |
| EFFECTIVE   | 43.5 (299)   | 81.1(557)   | 60                      | 78   | 208                    |             |   |           |      |      |      |      |   |      |      |      |   |             |      |       |      |       |      |     |     |     |     |     |     |     |     |     |     |  |  |  |          |  |  |   |                         |                     |                        |             |           |          |      |      |         |           |            |           |      |    |     |               |      |     |      |      |      |       |       |      |     |     |     |     |      |     |     |      |  |  |
| Mechanical properties tested in state of delivery   |  |   |                         |  |                        |             |   |           |      |      |      |      |   |      |      |      |   |             |      |       |      |       |      |     |     |     |     |     |     |     |     |     |     |  |  |  |          |  |  |   |                         |                     |                        |             |           |          |      |      |         |           |            |           |      |    |     |               |      |     |      |      |      |       |       |      |     |     |     |     |      |     |     |      |  |  |
| US - testing  |  | yes   |                         | Results: SEP 1921, group 3/class.Cc - OK   |                        |             |   |           |      |      |      |      |   |      |      |      |   |             |      |       |      |       |      |     |     |     |     |     |     |     |     |     |     |  |  |  |          |  |  |   |                         |                     |                        |             |           |          |      |      |         |           |            |           |      |    |     |               |      |     |      |      |      |       |       |      |     |     |     |     |      |     |     |      |  |  |
| Radiation free; mercury free. No Weld or Weld repair.   |  |   |                         |  |                        |             |   |           |      |      |      |      |   |      |      |      |   |             |      |       |      |       |      |     |     |     |     |     |     |     |     |     |     |  |  |  |          |  |  |   |                         |                     |                        |             |           |          |      |      |         |           |            |           |      |    |     |               |      |     |      |      |      |       |       |      |     |     |     |     |      |     |     |      |  |  |
| Date: 29.09.19 Manager of quality assurance department<br>- V: Kapaieva<br>Signed:<br><br>Zaporozhye<br>Melted and Produced in Ukraine.<br>MELTED and MANUFACTURED PrJSC " Dnipropetsstal"<br>Phone number +380612834255<br>e-mail: info@dss.com.ua<br>http://www.dss-ua.com   |  |   |                         |  |                        |             |   |           |      |      |      |      |   |      |      |      |   |             |      |       |      |       |      |     |     |     |     |     |     |     |     |     |     |  |  |  |          |  |  |   |                         |                     |                        |             |           |          |      |      |         |           |            |           |      |    |     |               |      |     |      |      |      |       |       |      |     |     |     |     |      |     |     |      |  |  |

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