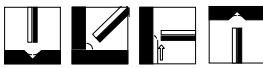




**MANUFACTURERS OF A DIVERSE RANGE OF  
ADVANCED WELDING CONSUMABLES**

**SECTION  
5**

WI-0304 DS56 RD-18B9 Rev. 3, Date 01.03.2012

|   |   |      |                   |      |                                  |   |                |     |   |      |      |      |                |
|---|---|------|-------------------|------|----------------------------------|---|----------------|-----|---|------|------|------|----------------|
| <b>RD-18B9</b>                                    | <b>BASIC LOW HYDROGEN ELECTRODE FOR<br/>WELDING 9Cr-1Mo STEELS OPERATING<br/>AT ELEVATED TEMPERATURES UP TO 650°C</b>   |      |                   |      | <b>DATA SHEET<br/>NO.<br/>56</b> |   |                |     |   |      |      |      |                |
| SPECIFICATION                                     | AWS A5.5  |      | BS EN 1599        |      |                                  |   |                |     |   |      |      |      |                |
| CLASSIFICATION                                    | E9018-B9  |      | E CrMo91 B        |      |                                  |   |                |     |   |      |      |      |                |
| WELDING<br>FEATURES<br>OF THE<br>ELECTRODE        | <p>The chemical nature of the flux together with a significant proportion of iron powder ensures maximum deposition efficiency without detracting from its ability to be used in all positions except vertical down.</p> <p>Overall the arc is very stable, slag detachability is good and metal recovery is some 115% with respect to the core wire.</p>   |      |                   |      |                                  |   |                |     |   |      |      |      |                |
| PRODUCT<br>DESCRIPTION                            | <p>The design emphasis of the chemically basic flux is engineered to ensure the optimum weld metal properties demanded by the specification are fully met.</p> <p>The basic flux containing the appropriate alloying elements with a controlled balanced addition of iron powder, is extruded onto a high purity ferritic core wire with a blend of silicated that ensures both coating strength and a coating resistant to subsequent moisture absorption.</p>       |      |                   |      |                                  |   |                |     |   |      |      |      |                |
| APPLICATIONS<br>AND<br>MATERIALS<br>TO BE WELDED  | <p>PLATE           ASTM A387 Grade 91,<br/>TUBES/PIPES   ASTM A335 Grade 91, A234 Grade WP91, A199 Grade T91,<br/>                      A213 Grade T91.<br/>                      BS 3604 Grades CFS &amp; HFS 629-470 CFS/HFS 629-590.<br/>FORGINGS       A182 Grade F91, A336 Grade F91<br/>CAST             ASTM A217 Grade C12A, BS1503 Grade 91</p> <p>PWHT recommended range is 745 - 775°C (2 hours), pre-heat 200 - 300°C.<br/>Cool to 150°C before PWHT.</p> |      |                   |      |                                  |   |                |     |   |      |      |      |                |
| WELD METAL<br>ANALYSIS<br>COMPOSITION<br>% BY Wt. |   | C    | Mn                | Si   | S*                               | P*  | Cr             | Ni  | Mo  | Nb   | V    | Al   | N <sub>2</sub> |
|   | MIN   | 0.08 | -                 | -    | -                                | -   | 8.0            | -   | 0.85  | 0.02 | 0.15 | -    | 0.02           |
|   | MAX   | 0.13 | 1.2               | 0.30 | 0.015                            | 0.015   | 10.5           | 0.8 | 1.2   | 0.10 | 0.30 | 0.04 | 0.07           |
|   | TYPICAL   | 0.10 | 0.9               | 0.28 | 0.01                             | 0.01  | 8.5            | 0.7 | 1.0   | 0.05 | 0.22 | 0.01 | 0.05           |
|   | * AWS A5.5 specifies Ni = 0.8% max., S = 0.01% max., and P = 0.01% max.   |      |                   |      |                                  |   |                |     |   |      |      |      |                |
| ALL WELD METAL<br>PROPERTIES<br>(AFTER PWHT)      | <u>PROPERTY</u>   |      | <u>UNITS</u>      |      | <u>MINIMUM</u>                   |   | <u>TYPICAL</u> |     | <u>OTHERS</u>                                     |      |      |      |                |
|   | Tensile strength  |      | N/mm <sup>2</sup> |      | 620                              |   | 750 – 880      |     | Results relate to<br>PWHT 765°C<br>furnace cooled |      |      |      |                |
|   | 0.2% Proof stress   |      | N/mm <sup>2</sup> |      | 530                              |   | 620 – 780      |     |   |      |      |      |                |
|   | Elongation on 4d  |      | %                 |      | 17                               |   | 21             |     |   |      |      |      |                |
|   | Reduction of Area (RA)  |      | %                 |      | -                                |   | 60             |     |   |      |      |      |                |
|   | Impact energy 20 °C   |      | J                 |      | -                                |   | 65             |     |   |      |      |      |                |
| WELDING<br>AMPERAGE<br>AC or DC+                  | Ø (mm)  | 2.6  | 3.2               | 4.0  | 5.0                              |  |                |     |   |      |      |      |                |
|   | MIN   | 60   | 90                | 130  | 180                              |   |                |     |   |      |      |      |                |
|   | MAX   | 90   | 130               | 180  | 240                              |   |                |     |   |      |      |      |                |
| OTHER DATA  | Electrodes that have become damp should be re-dried at 150°C for 1 hour.  |      |                   |      |                                  |   |                |     |   |      |      |      |                |
| RELATED<br>PRODUCTS                               | Please contact our Technical Department for detail.   |      |                   |      |                                  |   |                |     |   |      |      |      |                |