Royal 13-25 FC
Flux Cored Arc Welding
(FCAW)
Hard-Facing, Build-Up and Joining Alloy

DCEP
All Position

Premium Nickel Manganese Flux-Cored Wire

Typical Applications
Royal 13-25 FC is a premium quality, flux-cored tubular wire with excellent operating characteristics. It is a versatile joining, surfacing and unlimited build-up material which deposits "Hadfield" type manganese steel. Weld deposits work harden readily, retain good hardness at elevated temperatures, have moderate corrosion resistance and may be flame cut.

Royal 13-25 FC is a nickel-manganese-chrome build-up type alloy. It is also used to join manganese, carbon and stainless steels together as well as serving as a "cushion" for harder surfacing alloys such as the Royal 13-29 FC. Typically used on manganese casting repair, hammer mill hammers, breaker bars, shot blast cabinets, impact hammers, crusher jaws and rolls, shovel teeth and buckets, railroad frogs, switches and crossovers.

Specifications
- Hardness as welded: 16-22 (Rockwell C)
- Work Hardened: 45-50 (Rockwell C)
- Tensile Strength: 125,000 psi
- Yield Strength: 80,000 psi
- Elongation: 32%
- Number of passes: Unlimited
- Machinability: Poor – Can be flame cut
- Nonmagnetic

Procedure
Clean weld area. Use DC reverse polarity (DCEP). An external shielding gas is not necessary, but a better weld appearance and greater weld coverage can be achieved by using 75% Argon – 25% CO₂. Before repairing any manganese steel, be sure to remove the work-hardened surface of the part first especially when repairing rail components. To prevent embrittlement of manganese steels, the interpass temperatures should NOT exceed 500°F at any point that is one inch from the area being welded and avoid lingering in any one spot. Peening while still hot helps to shape the part, reduce stresses and increase surface hardness. Can be used with variable speed wire feeders and any conventional power source.

<table>
<thead>
<tr>
<th>Diameter</th>
<th>Shielding Gas</th>
<th>Welding Current (amps)</th>
<th>Arc Voltage (volts)</th>
<th>Stickout (inches)</th>
</tr>
</thead>
<tbody>
<tr>
<td>.045</td>
<td>Not necessary, however best bead appearance and greater weld coverage is achieved using 75% Ar - 25% CO₂.</td>
<td>120 - 230</td>
<td>21 - 26</td>
<td>1” to 1½”</td>
</tr>
<tr>
<td>.045</td>
<td></td>
<td>120 - 230</td>
<td>21 - 26</td>
<td>1” to 1½”</td>
</tr>
<tr>
<td>1/16</td>
<td></td>
<td>180 - 310</td>
<td>23 - 29</td>
<td>1” to 1½”</td>
</tr>
</tbody>
</table>

Sizes and Part Numbers

<table>
<thead>
<tr>
<th>Diameter</th>
<th>2 lb (4”) Spools</th>
<th>8” Spools</th>
<th>25 lb Spools</th>
</tr>
</thead>
<tbody>
<tr>
<td>.045</td>
<td>RS1325/1G</td>
<td>RS1325/2G</td>
<td>RS1325/3G</td>
</tr>
<tr>
<td>1/16</td>
<td>RS1325/1L</td>
<td>RS1325/2L</td>
<td>RS1325/3L</td>
</tr>
</tbody>
</table>
WELDING FUMES AND GASES CAN BE DANGEROUS TO YOUR HEALTH.

BEFORE USING THIS PRODUCT THE WELDER (END-USER) MUST READ AND UNDERSTAND THE COMPLETE PRODUCT WARNING LABEL AND THE NEW 16 SECTION SAFETY DATA SHEET (SDS).

THE SAFETY DATA SHEET (SDS) WHICH OUTLINES THE POTENTIAL HEALTH HAZARDS AND SAFETY INFORMATION RELATED TO THIS PRODUCT CAN BE DOWNLOADED FROM THE SDS PORTION OF THIS WEBSITE. IT IS ALSO AVAILABLE FROM YOUR EMPLOYER AND WELDING SUPPLY DISTRIBUTOR.

DO NOT PROCEED WITH USE OF THIS PRODUCT UNTIL YOU READ AND UNDERSTAND THE SAFETY DATA SHEET (SDS) AND PRODUCT WARNING STATEMENT.

BE SURE TO CONSULT THE LATEST VERSION OF THE SDS.

SEE THE PRODUCT WARNING LABEL AND SDS FOR COMPLETE WARNING INFORMATION.