



# ESB 52



Basic low hydrogen electrode - AWS A5.1/ASME SFA-A5.1: E7018-1 H4R

### Key Benefits

- Excellent welding properties, weld bead appearance and arc strike performance.
- Excellent mechanical properties at low temperatures: -60°C (-76°F).
- Meets H4 weld metal hydrogen requirements and has low moisture absorption abilities.
- Produces tough and crack free weld metal
- Certificates with lot specific chemical composition of weld metal as well as lot specific mechanical properties

### Conformity and Approvals

|                 |                |
|-----------------|----------------|
| AWS A5.1:       | ER7018-1 H4R   |
| ASME SFA-A5.1:  | ER7018-1 H4R   |
| CWB/CSA W48-14: | E4918-1-H4     |
| EN ISO2560-1:   | E 42 6 B 42 H5 |
| ABS:            | 3YH10          |
| BV:             | 3Y             |
| DNV:            | 3YH5           |
| LR:             | 3YSH5          |
| TÜV:            | 1153:2012      |

### Typical applications

- Heavy steel structures, pressure vessels
- Pipes, shipbuilding, petrochemical
- Energy and power generation

### Welding Positions



All weld metal composition as per AWS A5.1/ASME SFA-A5.1: E7018-1 H4R

|  |                   |                   |                   |                   |   |                  |
|--|-------------------|-------------------|-------------------|-------------------|---|------------------|
| Requirements – AWS E7018-1 H4R<br>Typical Wire Composition | %C                | %Mn               | %Si               | %S                | %P  | %Ni              |
|  | 0.15 max<br>0.08  | 1.60 max<br>1.18  | 0.75 max<br>0.49  | 0.35 max<br>0.006 | 0.035 max<br>0.013                          | 0.30 max<br>0.03 |
| Requirements - AWS E7018-1 H4R<br>Typical Wire Composition | %Cr               | %Mo               | %V                | %Mn+Ni+Cr+Mo+V    | Diffusible Hydrogen<br>(mL/100g weld metal) |                  |
|  | 0.20 max<br>0.058 | 0.30 max<br>0.009 | 0.08 max<br>0.009 | 1.75 max<br>1.29  | 4.0 max<br>2-3                              |                  |

**Mechanical Properties as per AWS A5.1/ASME SFA-A5.1: E7018-1 H4R**

|  | Yield Strength<br>MPa (ksi) | Tensile Strength MPa<br>(ksi) | Elongation % | Impact Energy<br>J (ft = lbf)  |
|--|-----------------------------|-------------------------------|--------------|--------------------------------|
| <b>Requirements - AWS E7018-1 H4R</b><br>As Welded   | 400 (58) min                | 490 (70) min.                 | 22 min.      | 27J at -46°C (20 lbf at -50°F) |
| <b>Typical Results (all weld metal)</b><br>As welded | 500 (72)                    | 570 (82)                      | 26           | 90J at -46°C (66 lbf at -51°F) |
| As welded  | 500 (72)                    | 570 (82)                      | 26           | 70J at -60°C (51 lbf at -76°F) |

**Ordering Information**

| Product Number | AWS Specification    | Dimension mm/inches         | Single Pack Weight kg/lb | Box Weight kg/lb  |
|----------------|----------------------|-----------------------------|--------------------------|-------------------|
| 1127010PIE     | ESB 52 (E7018-1 H4R) | 2.50 x 350 mm (3/32" x 14") | 2.5 kg (5.5 lb)          | 15.0 kg (33.0 lb) |
| 1127016PIE     | ESB 52 (E7018-1 H4R) | 3.25 x 350 mm (1/8" x 14")  | 2.5 kg (5.5 lb)          | 15.0 kg (33.0 lb) |
| 1127018PIE     | ESB 52 (E7018-1 H4R) | 3.25 x 450 mm (1/8" x 18")  | 2.5 kg (5.5 lb)          | 15.0 kg (33.0 lb) |
| 1127020PIE     | ESB 52 (E7018-1 H4R) | 4.00 x 350 mm (5/32" x 14") | 2.5 kg (5.5 lb)          | 15.0 kg (33.0 lb) |
| 1127024PIE     | ESB 52 (E7018-1 H4R) | 4.00 x 450 mm (5/32" x 18") | 2.5 kg (5.5 lb)          | 15.0 kg (33.0 lb) |
| 1127032PIE     | ESB 52 (E7018-1 H4R) | 5.00 x 450 mm (3/16" x 18") | 2.5 kg (5.5 lb)          | 15.0 kg (33.0 lb) |
| 1127038PIE     | ESB 52 (E7018-1 H4R) | 6.00 x 450 mm (3/16" x 18") | 2.5 kg (5.5 lb)          | 15.0 kg (33.0 lb) |

**Note: All products are vacuum packed.**



Box (15kg)



Single Pack (2.5kg)