

## MMA Electrodes C-Mn and low-alloy steels

Rutile-cellulosic general-purpose electrode for structural steelwork, workshop and maintenance welding. Excellent operating characteristics for all positional welding, including vertically-down. Smooth arc, well-suited for tack-welding and good for the bridging of gaps in poor fit up.. Welds are smooth and slightly concave, blending into the base metal without undercut. The slag is in most cases self-releasing.

| Classification |                      |
|----------------|----------------------|
| AWS            | A5.1: E6013          |
| EN             | 499: E 38 0 RC 11    |
| EN ISO         | 2560-A: E 38 0 RC 11 |

| Approvals | Grades |
|-----------|--------|
| DB        |        |
| TÜV       |        |

see Appendix, Classification Society Approvals, for details pag. 521

### Analysis of all-weld metal (Typical values in %)

| C    | Mn   | Si   | P | S | Cr | Ni | Mo | Nb | V | N | Cu |
|------|------|------|---|---|----|----|----|----|---|---|----|
| 0.08 | 0.50 | 0.30 | - | - | -  | -  | -  | -  | - | - | -  |

### All-weld metal Mechanical Properties

| Heat Treatment | Yield Strength<br>N/mm <sup>2</sup> | Tensile Strength<br>N/mm <sup>2</sup> | Elongation<br>A5 (%) | Impact Energy<br>ISO - V (J)<br>+ 20 °C | Hardness |
|----------------|-------------------------------------|---------------------------------------|----------------------|---|----------|
| As Welded      | ≥ 380                               | 470-600                               | ≥ 22                 | ≥ 60                                    | -        |

### Materials

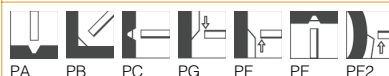
S(P)235 to S(P)355; GP240; GP280

### Storage and redrying

Keep dry and avoid condensation. Re-drying not generally required. If necessary: 100-110 °C for 1 hour.

### Current condition and welding position

AC; DC-



### Packaging data

| Diameter (mm) | Length (mm) | Current (A) | Electrode average weight (g) | Weld metal weight per electrode (g) |
|---------------|-------------|-------------|------------------------------|-------------------------------------|
| 2,0           | 250         | 50-60       | 8,0                          | 5,0                                 |
| 2,5           | 350         | 55-85       | 17,5                         | 10,3                                |
| 3,2           | 350         | 90-140      | 29,5                         | 17,7                                |
| 4,0           | 350         | 130-180     | 44,6                         | 27,3                                |