

# CARBO 4120 MPR

|                                |              |              |
|--------------------------------|--------------|--------------|
| <b>International Standards</b> | Material No. | 1.4120       |
|                                | EN 1600      | EZ 13 1 R 52 |
|                                | DIN 8555     | E6-UM-200-PR |

**Approvals** ---

**Characteristics and typical applications** CARBO 4120 MPR is a rutile coated electrode with a recovery of 160% for plating and joining equal and similar ferritic Cr-steels and cast steels. Proper weldings are subject to the recommended heat treatment. The electrode is specially suitable for sealing surfaces on water-, steam- and gas-valves, especially for sulphuric gases. The deposit is resistant to seawater, thin acids and scale resistant in air an oxidizing gases up to 800°C . The deposits can be tempered.

**Operating temperature** Room temperature up to 500° C

**Base materials** 1.4021 X20Cr13 1.4120 GX20CrMo13

**Recommendations for fabrication** Since ferritic steels tend to embrittlement caused by coarse grain development the heat input should be as low as possible. For hardfacing on low alloyed base materials a preheating of 150°C-350°C subject to the thickness (on materials with higher strength 350°C) should be done. Post weld treatment is not necessary but quench hardening to the desired hardness may be applied.

|   |   |  |                                       |                 |                     |
|---|---|--|---------------------------------------|-----------------|---------------------|
| <b>Mechanical properties of all-weld metal (typical values)</b> | <b>Tensile strength</b><br>R <sub>m</sub> N/mm <sup>2</sup> | <b>Yield strength</b><br>R <sub>p0,2</sub> N/mm <sup>2</sup> | <b>Elongation</b><br>A <sub>5</sub> % | <b>Hardness</b> |                     |
|   |   |  |                                       | <b>HB 30</b>    | <b>HB as welded</b> |
|   | 730   | 540  | 12                                    | ca. 150         | ca. 200             |

|  |          |           |           |           |           |           |
|--|----------|-----------|-----------|-----------|-----------|-----------|
| <b>Weld metal analysis (typical, wt %)</b> | <b>C</b> | <b>Si</b> | <b>Mn</b> | <b>Cr</b> | <b>Mo</b> | <b>Ni</b> |
|  | 0,2      | 0,9       | 0,8       | 14        | 1,2       | 1         |

**Current** = + / ~ , 50 V

**Welding positions** PA, PB,

**Rebaking** 1 h, 350° C + / - 10° C (if necessary)

| Dia./Length | Amperage (A) | Pcs./packet | Pcs./carton | kg/1000 | kg/packet | kg/carton |
|-------------|--------------|-------------|-------------|---------|-----------|-----------|
| 2,5 x 350   | 60 - 90      | 178         | 712         | 28,1    | 5,0       | 20,0      |
| 3,2 x 350   | 80 - 120     | 105         | 421         | 47,5    | 5,0       | 20,0      |
| 4,0 x 450   | 120 - 160    | 65          | 259         | 92,6    | 6,0       | 24,0      |
| 5,0 x 450   | 160 - 220    | 41          | 166         | 144,7   | 6,0       | 24,0      |