

## OK Flux 10.71

OK Flux 10.71 is an agglomerated, basic flux for submerged arc welding. It is used for single and multi-run welding of all plate thicknesses. It can be combined with a wide range of solid wires and cored wires and thus it is suitable for all kinds of steels. OK Flux 10.71 combines good toughness values with excellent weldability. It is used for single and multiwire procedures such as tandem, twin-arc, tandem-twin welding and many more, for butt, overlap and fillet welds. It works equally well on DC and AC current. The good slag detachability and limited alloying of Si and Mn makes it well suited for multi-pass thick section welding. High welding speeds can be achieved producing a finely rippled weld metal, all this in combination with very good impact values. In general construction, OK Flux 10.71 is one of the most used SAW fluxes. Not just for structural steels and fine-grained steels, but also for weather resistant steels e.g. for bridges. Pressure vessels are welded with this flux, because it can be used for a wide range of steels including low temperature steels. This reduces the number of different fluxes a customer needs to have in stock. Wind tower production with plate thicknesses of greater than 50 mm require not only excellent slag detachability, particularly in the first run, and high deposition rates in all following runs, but also excellent toughness values. Since OK Flux 10.71 offers all this it is well established in this market segment. Other applications are in shipbuilding with approvals or in the production of pipes with steels up to X70 strength level. OK Flux 10.71 can also be combined with a number of SAW cored wires in order to increase the productivity and the mechanical properties of the weld metal.

|                         |   |
|-------------------------|---|
| <b>Classifications:</b> | EN ISO 14174:S A AB 1 67 AC H5  |
| <b>Approvals:</b>       | CE EN 13479, NAKS/HAKC RD 03-613-03, NAKS/HAKC RD 03-613-03, DB 51.039.05 |

Approvals are based on factory location. Please contact ESAB for more information.

|                             |  |
|-----------------------------|--|
| <b>Diffusible Hydrogen:</b> | max 5 ml H/100g weld metal (Redried flux)            |
| <b>Slag Type:</b>           | Aluminate-basic                                      |
| <b>Alloy Transfer:</b>      | Slightly Silicon and moderately Manganese alloying   |
| <b>Density:</b>             | nom: 1.2 kg/dm <sup>3</sup>                          |
| <b>Basicity Index:</b>      | nom: 1.5   |
| <b>Grain Size (met):</b>    | 0.2-1.6 mm (10x65 mesh) or 0.315 -2.0 mm (9x48 mesh) |

### Flux Consumption

| Volts | kg Flux / kg Wire DC+ | kg Flux / kg Wire AC |
|-------|-----------------------|----------------------|
| 26 V  | 0.7 kg                | 0.6 kg               |
| 30 V  | 1.0 kg                | 0.9 kg               |
| 34 V  | 1.3 kg                | 1.2 kg               |
| 38 V  | 1.6 kg                | 1.4 kg               |

| Dimensions | Amps  | Travel Speed |
|------------|-------|--------------|
| Ø 4.0 mm   | 580 A | 55 cm/min    |

| Classifications | Wire                         | Weld Metal     |                   |                   |
|-----------------|------------------------------|----------------|-------------------|-------------------|
| Wire            | AWS/EN                       | EN - As Welded | AWS - As Welded   | AWS - PWHT        |
| OK Autrod 12.10 | A5.17:EL12/<br>14171-A:S1    | S 35 4 AB S1   | A5.17: F6A4-EL12  | A5.17: F6P5-EL12  |
| OK Autrod 12.20 | A5.17:EM12/<br>14171-A:S2    | S 38 4 AB S2   | A5.17: F7A4-EM12  | A5.17: F6P4-EM12  |
| OK Autrod 12.22 | A5.17:EM12K/<br>14171-A:S2Si | S 38 4 AB S2Si | A5.17: F7A5-EM12K | A5.17: F6P5-EM12K |

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| Classifications |   | Weld Metal           |                      |                      |
|-----------------|---|----------------------|----------------------|----------------------|
| Wire            | AWS/EN  | EN - As Welded       | AWS - As Welded      | AWS - PWHT           |
| OK Autrod 12.24 | A5.23:EA2/<br>14171-A:S2Mo;<br>24598-A:S S Mo   | S 46 2 AB S2Mo       | A5.23: F8A2-EA2-A4   | A5.23: F7P0-EA2-A4   |
| OK Autrod 12.30 | 14171-A:S3                                      | S 46 3 AB S3         | -                    | -                    |
| OK Autrod 12.32 | A5.17:EH12K/<br>14171-A:S3Si                    | S 46 4 AB S3Si       | A5.17: F7A5-EH12K    | A5.17: F7P5-EH12K    |
| OK Autrod 12.34 | A5.23:EA4/<br>14171-A:S3Mo;<br>24598-A:S S MnMo | S 50 3 AB S3Mo       | A5.23: F8A4-EA4-A3   | A5.23: F8P2-EA4-A3   |
| OK Autrod 13.24 | A5.23:ENi6/<br>14171-A:S3Ni1Mo0,2               | S 50 4 AB S3Ni1Mo0,2 | A5.23: F8A5-ENi6-Ni6 | A5.23: F8P4-ENi6-Ni6 |
| OK Autrod 13.27 | A5.23:ENi2/<br>14171-A:S2Ni2                    | S 46 5 AB S2Ni2      | A5.23: F8A6-ENi2-Ni2 | A5.23: F7P6-ENi2-Ni2 |
| OK Autrod 13.36 | A5.23:EG/<br>14171-A:S2Ni1Cu                    | S 46 3 AB S2Ni1Cu    | A5.23: F8A2-EG-G     | -                    |
| OK Autrod 13.64 | A5.23:EA2TiB/<br>14171-A:S2MoTiB                | -                    | A5.23: F8TA6-EA2TiB  | -                    |

## Approvals

| Wire            | ABS | BV | DNV | GL | LR | DB | CE | PRS | RINA | RS | ClassNK | VdTÜV |
|-----------------|-----|----|-----|----|----|----|----|-----|------|----|---------|-------|
| OK Autrod 12.10 | •   | •  | •   | •  | •  | •  | •  | •   | -    | •  | -       | •     |
| OK Autrod 12.20 | •   | •  | •   | •  | •  | •  | •  | •   | •    | •  | -       | •     |
| OK Autrod 12.22 | •   | •  | •   | •  | •  | •  | •  | -   | -    | •  | •       | •     |
| OK Autrod 12.24 | •   | •  | •   | •  | •  | •  | •  | •   | •    | •  | •       | •     |
| OK Autrod 12.30 | -   | -  | -   | -  | -  | •  | •  | -   | -    | -  | -       | •     |
| OK Autrod 12.32 | -   | -  | -   | -  | -  | •  | •  | -   | -    | -  | -       | •     |
| OK Autrod 13.27 | -   | -  | -   | -  | -  | -  | -  | -   | -    | -  | -       | •     |
| OK Autrod 13.36 | -   | -  | -   | -  | -  | -  | •  | -   | -    | -  | -       | -     |

\*Selected production units only. Please contact ESAB for more information.

Visit [esab.com](http://esab.com) to download specific flux/wire combination fact sheets for more details.

## Typical Mechanical Properties

| Wire            | Condition         | Yield Strength | Tensile Strength | Elongation | Charpy V-Notch  |
|-----------------|-------------------|----------------|------------------|------------|---|
| OK Autrod 12.10 | As Welded AWS DC+ | 360 MPa        | 465 MPa          | 30 %       | 125 J @ 0°C<br>95 J @ -20°C<br>75 J @ -30°C<br>65 J @ -40°C |
| OK Autrod 12.20 | As Welded AWS DC+ | 410 MPa        | 510 MPa          | 29 %       | 135 J @ 20°C<br>125 J @ 0°C<br>80 J @ -20°C<br>55 J @ -40°C |

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| Typical Mechanical Properties |  |                |                  |            |  |
|-------------------------------|--|----------------|------------------|------------|--|
| Wire                          | Condition  | Yield Strength | Tensile Strength | Elongation | Charpy V-Notch   |
| OK Autrod 12.22               | As Welded AWS DC+  | 425 MPa        | 520 MPa          | 29 %       | 140 J @ 0°C<br>100 J @ -20°C<br>60 J @ -40°C<br>40 J @ -46°C                 |
| OK Autrod 12.24               | As Welded AWS DC+  | 500 MPa        | 580 MPa          | 24 %       | 125 J @ 20°C<br>100 J @ 0°C<br>60 J @ -18°C<br>40 J @ -29°C                  |
| OK Autrod 12.30               | As Welded EN DC+   | 490 MPa        | 580 MPa          | 29 %       | 130 J @ 20°C<br>110 J @ 0°C<br>90 J @ -20°C<br>60 J @ -30°C                  |
| OK Autrod 12.32               | As Welded AWS DC+  | 480 MPa        | 580 MPa          | 28 %       | 150 J @ 20°C<br>130 J @ 0°C<br>95 J @ -20°C<br>65 J @ -40°C<br>40 J @ -46°C  |
| OK Autrod 12.34               | As Welded AWS DC+  | 535 MPa        | 620 MPa          | 27 %       | 120 J @ 20°C<br>105 J @ 0°C<br>70 J @ -20°C<br>60 J @ -30°C<br>45 J @ -40°C  |
| OK Autrod 12.24               | As Welded AWS DC+  | 560 MPa        | 630 MPa          | 25 %       | 120 J @ 20°C<br>85 J @ -20°C<br>70 J @ -30°C<br>60 J @ -40°C<br>40 J @ -46°C |
| OK Autrod 12.27               | As Welded AWS DC+  | 500 MPa        | 600 MPa          | 28 %       | 100 J @ -20°C<br>60 J @ -40°C<br>50 J @ -51°C                                |
| OK Autrod 13.36               | As Welded AWS DC+  | 490 MPa        | 580 MPa          | 27 %       | 120 J @ 20°C<br>70 J @ -20°C<br>55 J @ -29°C                                 |
| OK Autrod 13.64               | Two-Run (acc. to AWS)<br>Plate thickness 12mm<br>Heat input 2.2kJ/mm<br>700A, 32V, 60cm/min<br>DC+ | 550 MPa        | 650 MPa          | 28 %       | 40 J @ -51°C   |

| Typical Weld Metal Analysis %          |      |     |    |    |    |    |
|--|------|-----|----|----|----|----|
| C                                      | Mn   | Si  | Ni | Cr | Mo | Cu |
| <b>OK Autrod 12.10 DC+ , 580A, 29V</b> |      |     |    |    |    |    |
| 0.04                                   | 1.0  | 0.3 | -  | -  | -  | -  |
| <b>OK Autrod 12.20 DC+, 580A, 29V</b>  |      |     |    |    |    |    |
| 0.05                                   | 1.35 | 0.3 | -  | -  | -  | -  |

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| Typical Weld Metal Analysis %         |      |     |     |     |     |     |
|---------------------------------------|------|-----|-----|-----|-----|-----|
| C                                     | Mn   | Si  | Ni  | Cr  | Mo  | Cu  |
| <b>OK Autrod 12.22 DC+, 580A, 29V</b> |      |     |     |     |     |     |
| 0.05                                  | 1.4  | 0.5 | -   | -   | -   | -   |
| <b>OK Autrod 12.24 DC+, 580A, 29V</b> |      |     |     |     |     |     |
| 0.05                                  | 1.4  | 0.4 | -   | -   | 0.5 | -   |
| <b>OK Autrod 12.30 DC+, 580A, 29V</b> |      |     |     |     |     |     |
| 0.09                                  | 1.65 | 0.4 | -   | -   | -   | -   |
| <b>OK Autrod 12.32 DC+, 580A, 29V</b> |      |     |     |     |     |     |
| 0.09                                  | 2.0  | 0.5 | -   | -   | -   | -   |
| <b>OK Autrod 12.34 DC+, 580A, 29V</b> |      |     |     |     |     |     |
| 0.09                                  | 1.6  | 0.4 | -   | -   | 0.5 | -   |
| <b>OK Autrod 13.24 DC+, 580A, 29V</b> |      |     |     |     |     |     |
| 0.07                                  | 1.70 | 0.5 | 0.9 | -   | 0.2 | -   |
| <b>OK Autrod 13.27 DC+, 580A, 29V</b> |      |     |     |     |     |     |
| 0.05                                  | 1.4  | 0.4 | 2.2 | -   | -   | -   |
| <b>OK Autrod 13.36 DC+, 580A, 29V</b> |      |     |     |     |     |     |
| 0.08                                  | 1.3  | 0.5 | 0.7 | 0.3 | -   | 0.5 |