# Outershield® MC710-H

## Mild steel metal cored wire

### Classification

AWS A5.18/A5.18M-01 : E70C-6M H4
EN 758-97 : T 42 3 M M 2 H5 (ø1.2 and 1.6 mm) / T 42 2 M M 2 H5 (ø2.0 and 2.4 mm)

### General description

**All position high efficiency gas shielded metal cored wire**
**Excellent arc characteristics give outstanding operator appeal**
**Little slag and spatter, fast travel speed, excellent wire feeding- "robotic" quality**
**Superior on scaly plate, good resistance to porosity**
**Very good mechanical properties (CVN >47J at -30°C)**
**Superior product consistency with optimal alloy control**

### Welding positions

ISO/ASME PA/1G PB/2F PC/2G PF/3G up PG/3G down PE/4G

### Current type/Shielding gas

DC +
Ar+ (>5-25)% $CO_2$ (EN 439: M21)
15-25 l/min

### Approvals

| Shielding gas | ABS | BV | CTL | DB | DNV | FORCE | GL | LR | RINA | RMRS | TÜV |
|---|---|---|---|---|---|---|---|---|---|---|---|
| M21 | 3SA,3YSA,H | SA3,3YMH | + | + | IIIYMSH5 | + | 3YH10S | 3S,3YSH15 | 3YS | 3S,3YSH5 | + |

### Chemical composition (w%), typical, all weld metal

| Shielding gas | C | Mn | Si | P | S | $H_{DM}$ ml/100g |
|---|---|---|---|---|---|---|
| M21 | 0.05 | 1.35 | 0.6 | 0.015 | 0.023 | 3 |

### Mechanical properties, all weld metal

| | Shielding gas | Condition | Yield strength (N/mm²) | Tensile strength (N/mm²) | Elongation (%) | Impact ISO-V (J) -20°C | -29°C | -30°C |
|---|---|---|---|---|---|---|---|---|
| Required: AWS A5.18-01 | | | min. 400 | min. 480 | min. 22 | | min. 27 | |
| EN 758-97 (1.2/1.6) | | | min. 420 | 500-640 | min. 20 | | | min. 47 |
| Typical values | M21 | AW | 495 | 570 | 26 | 90 | | 60 |

### Packaging and available sizes

| Unit type | Net weight/unit (kg) | Diameter (mm) 1.2 | 1.4 | 1.6 | 2.0 | 2.4 |
|---|---|---|---|---|---|---|
| Plastic spool S200 | 4.5 | X | | | | |
| Wire reel B300 | 15 | X | X | X | | |
| Wire reel B435 | 25 | | X | X | X | X |
| AccuTrack® | 200 | X | X | X | | |
| Metal coil | 270 | X | | X | X | X |

## Materials to be welded

| Steel | Code | Type |
|---|---|---|
| General structural steel | EN 10025 | S185, S235, S275, S355 |
| Ship plates | ASTM A131 | Grade A, B, D, AH32 to EH36 |
| Caststeel | EN 10213-2 | G P 240R |
| Pipe material | EN 10208-1 | L210, L240, L290, L360 |
| | EN 10208-2 | L240NB, L290NB, L360NB, L360QB, L240MB, L290MB, L360MB, L415MB, L415NB |
| | API 5LX | X42, X46, X52, X60 |
| | EN 10216-1/ EN 10217-1 | P235T1, P235T2, P275T1 P275T2, P355N |
| Boiler & pressure vessel steel | EN 10028-2 | P235GH, P265GH, P295GH, P355GH |
| Fine grained steel | EN 10113-2 | S275, S275, S355, S420 |
| | EN 10113-3 | S275M, S275ML, S355M, S355ML, S420M, S420ML |

## Calculation data

| Diameter (mm) | Arc mode | Electrical Stick-out (mm) | Wire feed speed (cm/min) | Current (A) | Arc Voltage (V) | Deposition Rate (kg/h) | kg Wire/ kg weld metal |
|---|---|---|---|---|---|---|---|
| 1.2 | short-arc | 15 | 460 | 90 | 15 | 1.1 | 1.10 |
| | | | 655 | 120 | 16 | 1.4 | 1.10 |
| | | | 870 | 150 | 17 | 1.9 | 1.10 |
| 1.2 | spray-arc | 20 | 635 | 180 | 28-30 | 2.7 | 1.10 |
| | | | 1145 | 275 | 31-34 | 4.8 | 1.10 |
| | | | 1650 | 340 | 35-38 | 6.8 | 1.10 |
| 1.4 | spray-arc | 25 | 445 | 170 | 27-29 | 2.5 | 1.10 |
| | | | 890 | 270 | 29-32 | 5.0 | 1.10 |
| | | | 1400 | 355 | 32-34 | 8.1 | 1.10 |
| 1.6 | spray-arc | 25 | 635 | 325 | 29-32 | 5.0 | 1.10 |
| | | | 890 | 400 | 34-37 | 7.0 | 1.10 |
| | | | 1145 | 460 | 36-38 | 9.1 | 1.10 |
| 2.0 | spray-arc | 28 | 320 | 290 | 25-27 | 3.7 | 1.05 |
| | | | 510 | 385 | 28-31 | 6.1 | 1.05 |
| | | | 760 | 510 | 32-35 | 9.3 | 1.05 |
| 2.4 | spray-arc | 30 | | 400 | 28-32 | | |
| | | | | 475 | 28-32 | | |
| | | | | 550 | 30-34 | | |

## Welding parameters, optimum fill, shielding gas Ar + (>5 - 25)% $CO_2$

| Diameter (mm) | Current/ Voltage | Welding position PA/1G | PB/2F | PC/2G | PF/3G up | PE/4G |
|---|---|---|---|---|---|---|
| 1.2 | (A) | 230-380 | 230-380 | 230-300 | 130-170 | 140-175 |
| | (V) | 26-36 | 26-36 | 26-30 | 15-17 | 16-17 |
| 1.4 | (A) | 240-385 | 240-385 | 240-340 | 160-180 | 175-185 |
| | (V) | 26-36 | 26-36 | 26-31 | 14-15 | 15-16 |
| 1.6 | (A) | 280-460 | 280-460 | 270-300 | | |
| | (V) | 28-36 | 28-36 | 28-30 | | |
| 2.0 | (A) | 300-510 | 300-510 | | | |
| | (V) | 28-33 | 28-33 | | | |
| 2.4 | (A) | 400-550 | 400-550 | | | |
| | (V) | 32-36 | 32-36 | | | |