



| Material  |                 | Chemical composition<br>(DIN EN 573-3) |    |    |    |    |    |    |    |         | Wire (essentially following DIN EN 1301-2) |                           |                        |                         |  | Bars (essentially following DIN EN 754-2) |  |                        |                           |   |
|-----------|-----------------|--|----|----|----|----|----|----|----|---------|--|---------------------------|------------------------|-------------------------|--|---|--|------------------------|---------------------------|---|
|           |                 |  |    |    |    |    |    |    |    |         | Condition of supply) <sup>5</sup>          | Diameter d<br>up to<br>mm | Rm<br>MPa<br>min. max. | Rp0,2<br>MPa<br>typical | Elongation after<br>fracture %A100<br>%<br>typical | Condition of supply) <sup>5</sup>         | Measure-<br>ments<br>mm<br>D) <sup>1</sup>   S) <sup>2</sup> | Rm<br>MPa<br>min. max. | Rp0,2<br>MPa<br>min. max. | Elongation after<br>fracture % min.-A)<br>%<br>min. |
| Numerical | Chemical symbol | Si                                     | Fe | Cu | Mn | Mg | Cr | Zn | Ti | Remarks |  |                           |                        |                         |  |   |  |                        |                           |   |

### 1000er series

|                  |                               |       |       |       |       |       |   |       |           |                |                  |    |     |     |     |    |                  |                 |     |     |     |     |     |   |   |
|------------------|-------------------------------|-------|-------|-------|-------|-------|---|-------|-----------|----------------|------------------|----|-----|-----|-----|----|------------------|-----------------|-----|-----|-----|-----|-----|---|---|
| not standardized | Kryal<br>Al99,999 bis 99,9999 |       |       |       |       |       |   |       |           |                | H18              | 3  | -   | -   | -   | -  |                  |                 |     |     |     |     |     |   |   |
| EN AW - 1050A    | EN AW - Al99,5                | 0,25  | 0,40  | 0,05  | 0,05  | 0,05  | - | 0,07  | 0,05      |                | 0                | 20 | -   | 95  | -   | 35 |                  |                 |     |     |     |     |     |   |   |
|                  |                               |       |       |       |       |       |   |       |           |                | H14              | 18 | 100 | -   | 95  | 5  |                  | H14             | 1,8 | 1,4 | 100 | 135 | 70  | - | 6 |
|                  |                               |       |       |       |       |       |   |       |           |                | H16              | 15 | 120 | -   | 115 | 3  |                  | H16             | 1,6 | 1,2 | 120 | 160 | 105 | - | 4 |
|                  |                               |       |       |       |       |       |   |       |           |                | H18              | 10 | 140 | -   | 135 | 3  |                  | H18             | 1,4 | 1,0 | 145 | -   | 125 | - | 3 |
| EN AW - 1070A    | EN AW - Al99,7                | 0,20  | 0,25  | 0,03  | 0,03  | 0,03  | - | 0,07  | 0,03      | -              | 0                | 20 | -   | 85  | -   | 35 |                  |                 |     |     |     |     |     |   |   |
|                  |                               |       |       |       |       |       |   |       |           |                | H14              | 18 | 95  | -   | 90  | 5  |                  | also applicable | 1,6 | 1,2 |     |     |     |   |   |
|                  |                               |       |       |       |       |       |   |       |           |                | H18              | 10 | 125 | -   | 120 | 3  |                  | for bars        | 1,4 | 1,0 |     |     |     |   |   |
| EN AW - 1080A    | EN AW - Al99,8(A)             | 0,15  | 0,15  | 0,03  | 0,02  | 0,02  | - | 0,06  | 0,02      | -              | 0                | 20 | -   | 80  | -   | 35 |                  |                 |     |     |     |     |     |   |   |
|                  |                               |       |       |       |       |       |   |       |           |                | H14              | 18 | 90  | -   | 85  | 5  |                  | also applicable | 1,6 | 1,2 |     |     |     |   |   |
|                  |                               |       |       |       |       |       |   |       |           |                | H18              | 10 | 120 | -   | 115 | 3  |                  | for bars        | 1,4 | 1,0 |     |     |     |   |   |
| Al 1080A         | Al 99,8(A) <sup>4</sup>       | 0,15  | 0,15  | 0,03  | 0,02  | 0,02  | - | 0,06  | 0,02      | -              |                  |    |     |     |     |    |                  |                 |     |     |     |     |     |   |   |
| EN AW - 1090     | EN AW - Al99,90               | 0,07  | 0,07  | 0,02  | 0,01  | 0,01  | - | 0,03  | 0,01      | -              | see EN AW - 1098 |    |     |     |     |    | see EN AW - 1098 |                 |     |     |     |     |     |   |   |
| EN AW - 1098     | EN AW - Al99,98               | 0,010 | 0,006 | 0,003 | -     | -     | - | 0,015 | 0,003     | -              | 0                | 20 | -   | 70  | -   | 25 |                  |                 |     |     |     |     |     |   |   |
|                  |                               |       |       |       |       |       |   |       |           |                | H14              | 18 | 85  | -   | 80  | 3  |                  | also applicable | 1,6 | 1,2 |     |     |     |   |   |
|                  |                               |       |       |       |       |       |   |       |           |                | H18              | 10 | 115 | -   | 110 | 2  |                  | for bars        | 1,4 | 1,0 |     |     |     |   |   |
| Al - 1098        | Al 99,98) <sup>4</sup>        | 0,010 | 0,006 | 0,003 | -     | -     | - | 0,015 | 0,003     | -              |                  |    |     |     |     |    |                  |                 |     |     |     |     |     |   |   |
| EN AW - 1199     | EN AW - Al99,99               | 0,006 | 0,006 | 0,006 | 0,002 | 0,006 | - | 0,006 | 0,002     |                | 0                | 6  | -   | 60  | 10  | 40 |                  |                 |     |     |     |     |     |   |   |
|                  |                               |       |       |       |       |       |   |       |           |                | H14              | 4  | 70  | 110 | 80  | 10 |                  |                 |     |     |     |     |     |   |   |
|                  |                               |       |       |       |       |       |   |       |           |                | H18              | 3  | 110 | -   | 105 | 5  |                  |                 |     |     |     |     |     |   |   |
| EN AW - 1350A    | EN AW - EA199,5(A)            | 0,25  | 0,40  | 0,02  | -     | 0,05  | - | 0,05  | -         | 0,03Cr+Mn+Ti+V | see EN AW 1050 A |    |     |     |     |    | see EN AW 1050 A |                 |     |     |     |     |     |   |   |
| Al 1450          | Al 99,5 Ti) <sup>4</sup>      | 0,25  | 0,40  | 0,05  | 0,05  | 0,05  | - | 0,07  | 0,10-0,20 |                |                  |    |     |     |     |    |                  |                 |     |     |     |     |     |   |   |
| not standardized | Al 99,5Ti0,6                  | 0,25  | 0,40  | 0,05  | 0,05  | 0,05  | - | 0,07  | 0,55-0,65 |                | H18              | 6  | 140 | -   | 135 | 3  |                  |                 |     |     |     |     |     |   |   |

### 2000er series

|               |                       |          |      |         |          |           |      |      |      |                                  |                       |    |                |     |     |    |     |     |     |     |     |     |     |   |   |
|---------------|-----------------------|----------|------|---------|----------|-----------|------|------|------|----------------------------------|-----------------------|----|----------------|-----|-----|----|-----|-----|-----|-----|-----|-----|-----|---|---|
| EN AW - 2007  | EN AW - Al Cu4PbMgMn  | 0,8      | 0,8  | 3,3-4,6 | 0,50-1,0 | 0,40-1,8  | 0,10 | 0,8  | 0,2  | 0,20 Bi<br>0,8-1,5 Pb<br>0,20 Sn | T39                   | 12 | 350            | -   | 340 | 12 | T39 | 1,4 | 1,2 | 370 | -   | 330 | -   | 8 |   |
| EN AW - 2011  | EN AW - Al Cu6BiPb    | 0,40     | 0,7  | 5,0-6,0 | -        | -         | -    | 0,30 | -    | 0,20-0,6 Bi<br>0,20-0,6 Pb       | T39                   | 12 | 310            | -   | 295 | -  | T39 | 1,4 | 1,2 | 320 | -   | 270 | -   | - |   |
|               |                       |          |      |         |          |           |      |      |      |                                  |                       | 12 | 370            | -   | 310 | -  |     |     | 1,4 | 1,2 | 370 | -   | 270 | - | - |
| EN AW - 2014  | EN AW - Al Cu4SiMg    | 0,50-1,2 | 0,7  | 3,9-5,0 | 0,40-1,2 | 0,20-0,8  | 0,10 | 0,25 | 0,15 | -                                | H13/14                | 12 | 210            | 300 | 190 | 5  | T39 | 1,4 | 1,2 | 450 | -   | 380 | -   | - |   |
| EN AW - 2017A | EN AW - Al Cu4MgSi(A) | 0,20-0,8 | 0,7  | 3,5-4,5 | 0,40-1,0 | 0,40-1,0  | 0,10 | 0,25 | -    | 0,25Zr+Ti                        | H13/14                | 18 | 210            | 300 | 190 | 5  | T39 | 1,4 | 1,2 | 400 | -   | 250 | -   | - |   |
|               |                       |          |      |         |          |           |      |      |      |                                  | T4 (for testpurposes) | 8  | shear strength | 255 |     |    |     |     |     |     |     |     |     |   |   |
| EN AW - 2024  | EN AW - Al Cu4Mg1     | 0,50     | 0,50 | 3,8-4,9 | 0,30-0,9 | 1,2-1,8   | 0,10 | 0,25 | 0,15 | -                                | H13/14                | 18 | 230            | 300 | 200 | 5  | T39 | 1,4 | 1,2 | 455 | -   | 400 | -   | - |   |
| EN AW - 2117  | EN AW - Al Cu2,5Mg    | 0,8      | 0,7  | 2,2-3,0 | 0,20     | 0,20-0,50 | 0,10 | 0,25 | -    | -                                | H13/14                | 8  | 170            | 240 | 110 | 5  |     |     |     |     |     |     |     |   |   |
|               |                       |          |      |         |          |           |      |      |      |                                  | T4 (for testpurposes) | 8  | shear strength | 195 |     |    |     |     |     |     |     |     |     |   |   |

### 3000er series

|              |                       |      |     |      |         |      |      |      |   |             |     |    |     |     |     |    |     |     |     |     |     |     |     |   |   |
|--------------|-----------------------|------|-----|------|---------|------|------|------|---|-------------|-----|----|-----|-----|-----|----|-----|-----|-----|-----|-----|-----|-----|---|---|
| EN AW - 3103 | EN AW - AlMn1         | 0,50 | 0,7 | 0,10 | 0,9-1,5 | 0,30 | 0,10 | 0,20 | - | 0,10(Zr+Ti) | 0   | 20 | -   | 130 | 60  | 35 |     |     |     |     |     |     |     |   |   |
|              |                       |      |     |      |         |      |      |      |   |             | H14 | 18 | 135 | 180 | 120 | 5  |     | H14 | 1,6 | 1,4 | 130 | 165 | 110 | - | 6 |
|              |                       |      |     |      |         |      |      |      |   |             | H18 | 12 | 170 | -   | 165 | 3  |     | H16 | 1,4 | 1,2 | 160 | 195 | 130 | - | 4 |
| Al 3103      | Al Mn 1) <sup>4</sup> | 0,50 | 0,7 | 0,10 | 0,9-1,5 | 0,30 | 0,10 | 0,20 | - | 0,10(Zr+Ti) |     |    |     |     |     |    | H18 | 1,2 | 1,0 | 180 | -   | 145 | -   | 3 |   |

### 4000er series

|          |                        |           |      |      |      |           |   |      |      |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|----------|------------------------|-----------|------|------|------|-----------|---|------|------|--|--|--|--|--|--|--|--|--|--|--|--|--|--|
| Al 4018  | AlSi7Mg) <sup>4</sup>  | 6,5-7,5   | 0,20 | 0,05 | 0,10 | 0,50-0,80 | - | 0,10 | 0,20 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| AL 4043A | AlSi5(A) <sup>4</sup>  | 4,5-6,0   | 0,60 | 0,30 | 0,15 | 0,20      | - | 0,10 | 0,15 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Al 4046  | AlSi10Mg) <sup>4</sup> | 9,0-11,0  | 0,50 | 0,03 | 0,40 | 0,20-0,50 | - | 0,10 | 0,15 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Al 4047A | AlSi12(A) <sup>4</sup> | 11,0-13,0 | 0,60 | 0,30 | 0,15 | 0,10      | - | 0,20 | 0,15 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |

### 5000er series

|              |                 |      |      |      |          |         |      |      |      |                  |     |    |     |     |     |    |  |  |  |  |  |  |  |  |
|--------------|-----------------|------|------|------|----------|---------|------|------|------|------------------|-----|----|-----|-----|-----|----|--|--|--|--|--|--|--|--|
| EN AW-5005A  | EN AW-Al Mg1(C) | 0,3  | 0,45 | 0,05 | 0,15     | 0,7-1,1 | 0,10 | 0,20 | -    | -                | 0   | 16 | -   | 150 | 50  | 25 |  |  |  |  |  |  |  |  |
|              |                 |      |      |      |          |         |      |      |      |                  | H14 | 14 | 150 | 200 | 155 | 5  |  |  |  |  |  |  |  |  |
|              |                 |      |      |      |          |         |      |      |      |                  | H16 | 12 | 180 | 220 | 185 | 4  |  |  |  |  |  |  |  |  |
|              |                 |      |      |      |          |         |      |      |      |                  | H18 | 10 | 200 | -   | 205 | 3  |  |  |  |  |  |  |  |  |
|              |                 |      |      |      |          |         |      |      |      |                  | H32 | 14 | 125 | 170 | 90  | 10 |  |  |  |  |  |  |  |  |
|              |                 |      |      |      |          |         |      |      |      |                  | H34 | 12 | 145 | 190 | 130 | 8  |  |  |  |  |  |  |  |  |
|              |                 |      |      |      |          |         |      |      |      |                  | H36 | 10 | 170 | 210 | 170 | 6  |  |  |  |  |  |  |  |  |
| EN AW - 5019 | EN AW - AlMg5   | 0,40 | 0,50 | 0,10 | 0,10-0,6 | 4,5-5,6 | 0,20 | 0,20 | 0,20 | (Mn+Cr) 0,10-0,6 | 0   | 20 | -   | 320 | 150 | 17 |  |  |  |  |  |  |  |  |
|              |                 |      |      |      |          |         |      |      |      |                  | H12 | 18 | 295 | 355 | 255 | 6  |  |  |  |  |  |  |  |  |
|              |                 |      |      |      |          |         |      |      |      |                  | H14 | 18 | 325 | 385 | 315 | 3  |  |  |  |  |  |  |  |  |
|              |                 |      |      |      |          |         |      |      |      |                  | H18 | 18 | 370 | -   | 360 | 2  |  |  |  |  |  |  |  |  |
|              |                 |      |      |      |          |         |      |      |      |                  | H19 | 10 | 400 | -   | 400 | 1  |  |  |  |  |  |  |  |  |
|              |                 |      |      |      |          |         |      |      |      |                  | H32 | 18 | 280 | 340 | 205 | 11 |  |  |  |  |  |  |  |  |
|              |                 |      |      |      |          |         |      |      |      |                  | H34 | 15 | 305 | 350 | 220 | 11 |  |  |  |  |  |  |  |  |
|              |                 |      |      |      |          |         |      |      |      |                  | H38 | 10 | 360 | -   | 320 | 4  |  |  |  |  |  |  |  |  |
|              |                 |      |      |      |          |         |      |      |      |                  | H39 | 8  | 380 | -   | 350 | 2  |  |  |  |  |  |  |  |  |



## Aluminium Wire

| Condition) <sup>1</sup> | Sense   |
|-------------------------|---|
| 0                       | soft annealed   |
| H12                     | cold worked – 1/4 hardened  |
| H14/H13                 | cold worked – 1/2 hardened  |
| H16                     | cold worked – 3/4 hardened  |
| H18                     | cold worked -fully hardened   |
| H19                     | cold worked - superior strength   |
| H111                    | annealed, slightly hardened by cold working   |
| H22                     | strain hardened and partially aged - 1/4 hardened   |
| H24                     | strain hardened and partially aged – 1/2 hardened   |
| H32                     | strain hardened and stabilized – 1/4 hardened   |
| H34                     | strain hardened and stabilized – 1/2 hardened   |
| H38                     | strain hardened and stabilized – fully hardened   |
| T39                     | solution heat treated, quenched, naturally aged and cold worked to achieve a certain mechanical strength    |
| T4                      | solution heat treated, quenched and naturally aged  |
| T6                      | solution heat treated, quenched and artificially aged to maximum strength                                   |
| T7                      | solution heat treated, quenched and (artificially) over-aged  |
| T8                      | solution heat treated, quenched , cold worked and artificially aged   |
| T89                     | solution heat treated, quenched ,cold worked to achieve a certain mechanical strength and artificially aged |

<sup>1)</sup> also other intermediate conditions resp. non standardized conditions supplyable as per customers' requirements



... for mechanical joining technology



... as filler wire



... for packaging purposes



... for bending and shaping



... for vacuum metallisation



... for machining purposes

Products made out of aluminium wires can be found in almost all industrial sector.

An almost unlimited range of applications is based on permanent developments of the material and new alloys.



... for metal spraying



... as Aluminium bars



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