

| Alloy grade | Average coefficient of thermal expansion (20-100°C) E-6/°C | Approximate melting temperature °C | Status | Thermal conductivity (25°C) W/m·K | Remark | | | | | |
|----------------|---|--|-------------|---|------------------|--|---|---|--|--|
| 1060 | 22.6 | 645 655 | 0 | 234 | | Alumin | um alloy hea | t treatment basic quality mark | | |
| 1000 | 23.0 | 043~033 | H18 | 230 | Basic notation | Definition | Implication | | | |
| <u>1100</u> | 23.6 | 643~655 | 0 | 222 | F | Extrusion condition | The state i | The state in which a material is extruded without any cold working or heat treatment | | |
| | | | H18 | 218 | О | Annealed condition | The material is annealed to its softest state | | | |
| 1350 | 23.75 | 645~655 | All | 234 | Н | Work hardening condition | The | The material is cold processed to obtain a harder material state | | |
| 2011 | 22.0 | 540~643 | Т3 | 151 | W | Solid solution state | The state in which a material has not been fully natural aged after solution treatment | | | |
| 2011 | 22.9 | | Т8 | 172 | Т | Heat treatment condition | The combination state of machining hardening through different solution treatment and aging treatment | | | |
| | | | Ο | 193 | | Aluminum | | num alloy heat treatment quality mark | | |
| 2014 | 23.0 | 507~638 | T4 | 134 | Subdivision mark | Implication | Detailed quality mark | Detailed qualitative description | | |
| | | | T6 | 154 | | After extrusion, it is | | | | |
| 2017 | 23.6 | 513~640 | 0 | 193 | 193 T1 134 | cooled rapidly by air | | | | |
| 2017 | 23.0 | | T4 | 134 | | natural aging | | | | |
| 2018 | 22.3 | 507~638 | T61 | 154 | | After extrusion, it is | | | | |
| | 23.2 | 500~638 | 0 | 193 | T2 | cooled rapidly by air but processed by cold | | | | |
| 2024 | | | T3,T4,T361 | 121 | | and then treated by natural aging | | | | |
| | | | T6,T81,T861 | 151 | | | T31 | In order to increase the strength after the solid solution treatment, the section reduction rate is about 1% of cold processing, and then natural aging treatment | | |
| 2025 | 22.7 | 520~640 | T6 | 154 | | | | For cold working to increase the phase after solid solution | | |
| 2036 | 23.4 | 555~650 | T4 | 159 | | | T351 | treatment, TX51 is applied to permanent deformation stretching to remove the participating stress and then subjected to natural aging, but little deformation is allowed after stretching | | |

| 2117 | 23.75 | 555~650 | T4 | 154 | Т3 | After solid solution treatment, cold processing and natural aging treatment | T3511 | After solid solution treatment, TX511 is permanently deformed and stretched to remove residual stress and then subjected to natural aging for cold working to increase strength. However, little deformation is allowed after stretching |
|-------------|-------|---------|------------|------------|----|--|-------|--|
| 2121 | 22.9 | 500 050 | 1501 | 152 | | | | |
| 2218 | 22.3 | 505~635 | T72 | 154 | | | T361 | In order to increase the strength after solid solution treatment, cold processing with a section reduction rate of about 6%, and then natural aging treatment |
| | | | О | 172 | | | T37 | After solid solution treatment, the strength of the tail is increased, and the section reduction rate is about 7%, and then the natural aging treatment |
| 2219 | 22.3 | 543~643 | T31,T37 | 112 | | Natural aging treatment after solid solution treatment | T42 | After solid solution treatment, it reaches a very stable state through sufficient natural aging |
| | | | T6,T81,T87 | 121 | | | T451 | After solid solution treatment, the residual stress is removed by stretching with permanent deformation of TX51 and then subjected to natural aging |
| 2618 | 22.3 | 550~638 | T6 | 147 | T4 | | T4511 | After the solid solution treatment, the permanent deformation of more than 1% and less than 3% is applied to the tensile processing to remove the residual stress, and then through natural aging, but the slight processing deformation is allowed after the tensile processing |
| | 22.2 | | 0 | 193 163 | | | | |
| | | | H12 | | | After extrusion, it is | | |
| <u>3003</u> | 22.3 | 643~655 | H14 | 159 | T5 | cooled by air rapidly | | |
| | | | H18 | 154 | | and then treated by artificial aging | | |
| 30034 | 23.9 | 630~655 | All | 163 | | | T61 | In order to prevent the deformation of quenched water, water is blown under warm water and then artificially aged |
| 3105 | 23.6 | 635~655 | All | 172 | | After solid solution treatment, artificial aging treatment was performed | T62 | After solid solution treatment, it is artificially aged |
| | | 532~570 | 0 | 154 | T6 | | T651 | After solid solution treatment, TX51 is permanently deformed by tensile processing to remove residual stress, and then artificially aged |
| 4032 | 19.4 | | Т6 | 138 | | | T6511 | After solid solution treatment, TX511 is permanently deformed by stretch processing to remove residual stress, and then subjected to artificial aging |
| 4043 | 22.1 | 575~632 | О | 163 | | | T652 | After solid solution treatment, TX52 was permanently deformed under compression to remove residual stress, and then artificially aged |
| <u>4045</u> | 21.5 | 575~600 | All | 172 | | | T73 | After solid solution treatment, the best stress corrosion cracking resistance and aging treatment are carried out |
| 4343 | 21.6 | 577~613 | All | 180 | | | T7352 | After solid solution treatment, TX52 was compressed with permanent deformation to remove residual stress, and then overaged with T73 |
| 5005 | 23.75 | 632~655 | All | 200 | Τ7 | After solid solution treatment, it is stabilized | T74 | After solid solution treatment, the stress corrosion cracking resistance is adjusted to make the over-aging treatment between T73 and T76 |

| 3952 23.75 607-650 All 138 3952 23.75 607-650 All 138 5856 24.1 568-638 0 117 78 increase for section brainage of about 1% an thrainage of about 1% an thrain a section was upplied to increase for section brainage of about 1% an thrain a section was upplied to increase for section was upplied to increase for section was upplied to increase for section 1% and the section in section was upplied to increase for section 1% and the section in section was upplied to increase for section 1% and the section in section was upplied to increase for section 1% and the section in section was upplied to increase for section 1% and the section in section was upplied to increase for section 1% and the section in section was upplied to increase for section 1% and the section in section was upplied to increase for section 1% and the section in section was upplied to antificial aging treatment and the section in section was upplied to antificial aging treatment in a section was upplied to antificial aging treatment in a section was upplied to antificial aging treatment in a section was upplied to antificial aging treatment in a section was upplied to antificial aging treatment in a section was upplied to antificial aging treatment in a section was upplied to antificial aging treatment in a section was upplied to antificial aging treatment in a section was upplied to antificial aging treatment antificial aging treatment isectin aging in the section shift | 5050 | 23.75 | 625~650 | All | 193 | | | T76 | The best stripping corrosion resistance is obtained after solid solution treatment, and the aging treatment is carried out | | | | | |
|---|-------------|----------|---------|--------------|----------|---|---|---|--|------|---|--|--|--|
| 905 24.1 $\frac{0}{110}$ $\frac{1}{110}$ $\frac{0}{110}$ $\frac{1}{110}$ $\frac{1}{100}$ $\frac{1}{100}$ $\frac{1}{100}$ $\frac{1}{1$ | 5052 | 23.75 | 607~650 | All | 138 | - | | T81 | After solid solution treatment, cold working was applied to increase the strength of the section shrinkage of about 1%, and then artificial aging | | | | | |
| 3005 $2^{A.1}$ 588-6381138108108After solid solution resume large of the solid solution treatment, the permanent deformance of stress, and then subject to artificial aging508623.75590-638 0 117 780 781 | 5056 | 24.1 | 568~638 | О | 117 | | | T83 | After solid solution treatment, a cold working process with 3% reduction in section was applied to increase the strength, and then artificial aging was performed | | | | | |
| 568 23.75 590-638 0 117 T8 After solid solution treatment, the tensile process is applied to increase the tensponent of FX52 to remove the solution treatment, the tensile process is applied to increase the tensponent of FX52 to remove the solution treatment, cold working was applied to increase the tensponent of the solid solution treatment, the tensile process is applied to increase the tensponent of FX52 to remove the increase the tensponent of FX52 to remove the increase the tensponent of the solid solution treatment, and solution treatment and field aging resumment 5154 23.9 593-643 0 125 5252 23.75 607-650 0 138 7336 24.1 570-643 0 125 5453 23.9 593-643 0 117 5454 23.9 600-645 113 116 5455 23.9 600-645 111 138 5456 23.9 638-657 Alle 116 5657 23.75 638-657 Alle 138 6005 23.4 610-655 11 1800 6005 23.4 610-655 138 <td>24.1</td> <td>H38</td> <td>108</td> <td></td> <td></td> <td>T851</td> <td>After solid solution treatment, the permanent deformation of TX51 is stretched to increase the strength to remove the residual stress, and then subjected to artificial aging</td> | | 24.1 | | H38 | 108 | | | T851 | After solid solution treatment, the permanent deformation of TX51 is stretched to increase the strength to remove the residual stress, and then subjected to artificial aging | | | | | |
| 5086 23.75 585-640 All 125 5154 23.9 593-643 0 125 186 187 186 186 186 186 186 186 187 186 < | <u>5083</u> | 23.75 | 590~638 | О | 117 | T8 T8 T8 After solid solution treatment, cold processing and artificial aging treatment | | T8 After solid so treatment, processing and | After solid solution treatment, cold processing and artificial | T852 | After the solid solution treatment, the tensile process is applied to increase the permanent deformation of TX52 to remove the residual stress, and then artificial aging | | | |
| 5154 23.9 593-643 0 125 In order to increase the steright of the solid solution treatment cold processing is applied to reduce the section shrinkage of about 7%, and then artificial aging treatment and inclusion treatment, artificial aging treatment, artificial aging treatment and inclusion treatment, artificial aging treatment, arting treatment, arting treatment | 5086 | 23.75 | 585~640 | All | 125 | | | T861 | After solid solution treatment, cold working was applied to increase the strength of the section shrinkage of about 6%, and then artificial aging | | | | | |
| $ \begin{array}{c ccccccccccccccccccccccccccccccccccc$ | 5154 | 23.9 | 593~643 | О | 125 | | | T87 | In order to increase the strength of the solid solution treatment, cold processing is applied to reduce the section shrinkage of about 7%, and then artificial aging treatment | | | | | |
| $ \begin{array}{ c c c c c c c c c c c c c c c c c c c$ | 5252 | 23.75 | 607~650 | 0 | 138 | | After solid solution | | | | | | | |
| $ \begin{array}{c c c c c c c c c c c c c c c c c c c $ | 5254 | 23.9 | 593~643 | 0 | 125 | Т9 | treatment, artificial aging treatment and cold processing | | | | | | | |
| $ \begin{array}{c c c c c c c c c c c c c c c c c c c $ | 5356 | 24.1 | 570~645 | All | 117 | - | | | | | | | | |
| $ \begin{array}{c ccccccccccccccccccccccccccccccccccc$ | | | 600~645 | | | | | 0 | O 134 | | After extrusion, it is | | | |
| 5456 23.9 568-638 0 117 5457 23.75 630-655 All 176 5652 23.75 607-650 All 138 5657 23.75 638-657 All 205 6005 23.4 610-655 T1 180 6005 23.4 610-655 T5 190 6053 23 575-650 T4 154 76 163 0 180 6061 23.6 580-650 T4 154 76 163 0 180 75 209 T6 167 75 209 T5 209 75 209 T6,T83 200 6066 23.2 565-645 0 154 | 5454 | 23.6 | | H38 | 134 | T10 | and then processed by cold and then treated by | | | | | | | |
| | 5456 | 23.9 | 568~638 | 0 | 117 | | artificial aging | | | | | | | |
| | 5457 | 23.75 | 630~655 | All | 176 | | 1 | | | | | | | |
| $ \begin{array}{c ccccccccccccccccccccccccccccccccccc$ | 5652 | 23.75 | 607~650 | All | 138 | | | | | | | | | |
| $ \begin{array}{c ccccccccccccccccccccccccccccccccccc$ | 5657 | 23.75 | 638~657 | All | 205 | | | | | | | | | |
| 0003 23.4 010-633 T5 190 6053 23 575-650 T4 154 6061 23.6 575-650 T4 154 6063 23.6 580-650 T4 154 6063 23.4 615-655 T4 154 6063 23.4 615-655 T4 154 75 209 75 209 6066 23.2 565-645 0 154 | 6005 | 22.4 610 | 23.4 | 22.4 | (10, (55 | T1 | 180 | | | | | | | |
| 6053 23 575~650 I 180 6053 23 575~650 I 154 6061 23.6 580~650 I 163 6063 23.4 580~650 I 154 I 154 154 154 I 160 167 167 I 165 167 167 I 11 193 154 I 15 209 16,783 I 0 114 6066 23.2 565~645 I | 6003 | 23.4 | 010~033 | T5 | 190 | | | | | | | | | |
| 6053 23 575~650 T4 154 T6 163 6061 23.6 580~650 T4 154 T6 167 C0 218 T1 193 T5 209 T6,T83 200 6066 23.2 565~645 T6 | 6053 | 23 | 575~650 | | | | | | 0 | 180 | | | | |
| 0061 23.6 T6 163 0061 23.6 580~650 T4 154 0 167 167 167 0 218 11 193 6063 23.2 615~655 T5 209 6066 23.2 565~645 T6 154 | | | | T4 | 154 | | | | | | | | | |
| 0061 23.6 $580-650$ $\overline{14}$ 154 $\overline{16}$ $\overline{167}$ $\overline{16}$ 167 0063 23.4 $615-655$ $\overline{11}$ 193 $\overline{15}$ 209 $\overline{16,183}$ 200 6066 23.2 $565-645$ $\overline{16}$ 147 | | | | T6 | 163 | - | | | | | | | | |
| $ \begin{array}{c ccccccccccccccccccccccccccccccccccc$ | <u>6061</u> | 23.6 | 580~650 | 0 | 180 | 4 | | | | | | | | |
| 6063 23.4 T6 167 6066 23.2 565~645 O 218 6066 23.2 565~645 T6 147 | | | | T4 | 154 | | | | | | | | | |
| 0063 23.4 0 218 $615 \sim 655$ $\overline{T1}$ 193 $\overline{T5}$ 209 $\overline{T6}, \overline{T83}$ 200 6066 23.2 $565 \sim 645$ $\overline{T6}$ 147 | | | | Т6 | 167 | - | | | | | | | | |
| $ \begin{array}{c ccccccccccccccccccccccccccccccccccc$ | <u>6063</u> | 23.4 | 615~655 | <u> </u> | 218 | - | | | | | | | | |
| IS 209 T6,T83 200 6066 23.2 565~645 T6 T6 | | | | 11 T5 | 193 | - | | | | | | | | |
| $\begin{array}{c ccccccccccccccccccccccccccccccccccc$ | | | | 15 T6 T02 | 209 | - | | | | | | | | |
| 6066 23.2 $565 \sim 645$ $T6$ 147 | | | | 10,183 | 200 | - | | | | | | | | |
| | 6066 | 23.2 | 565~645 | <u> </u> | 134 | - | | | | | | | | |

| 6070 | | 565~650 | Т6 | 172 |
|------|------|---------|----------|-----|
| | | | T6 | 218 |
| | | | T61 | 222 |
| 6101 | 23.4 | 620~655 | T63 | 218 |
| | | | T64 | 226 |
| | | | T65 | 218 |
| (105 | 22.4 | (00.(50 | T1 | 176 |
| 6105 | 23.4 | 600~650 | T5 | 193 |
| | | | 0 | 205 |
| 6151 | 23.2 | 590~650 | T4 | 163 |
| | | | T6 | 172 |
| 6201 | 23.4 | 607~655 | T81 | 205 |
| 6262 | 23.4 | 580~650 | T9 | 172 |
| 6351 | 23.4 | 555~650 | T6 | 176 |
| | 23.4 | | T1 | 193 |
| 6463 | | 615~655 | T5 | 209 |
| | | | T6 | 200 |
| (051 | 22.4 | (15 (55 | 0 | 213 |
| 0931 | 23.4 | 015~055 | T6 | 198 |
| 7049 | 23.4 | 475~635 | T73 | 154 |
| 7050 | 24.1 | 490~630 | T74 | 157 |
| 7072 | 23.6 | 640~655 | 0 | 22 |
| 7075 | 23.6 | 475~635 | T6 | 130 |
| 7175 | 23.4 | 475~635 | T74 | 156 |
| 7178 | 23.4 | 475~630 | T6 | 125 |
| | | | T6,T651 | 138 |
| 7475 | 23.2 | 475~635 | T76,T761 | 147 |
| | | | T7351 | 163 |
| 8030 | 23.6 | 645~655 | H221 | 230 |
| 8176 | 23.6 | 645~655 | H24 | 230 |

