**Сплав Э635**

Состав сплава (в % от веса):

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Элемент | Nb | Sn | Fe | O | Si | Zr |
| min, % | 0.90 | 1.10 | 0.30 | 0.05 | 0.0050 | - |
| max, % | 1.10 | 1.40 | 0.47 | 0.12 | 0.0200 | остальное |

Содержание примесей, не более (в ppm\*\*)):

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Элемент | Al | B | Be | C | Ca | Cd | Cl |
| max, ppm | 75 | 0.5 | 30 | 200 | 100 | 0.3 | 20 |
| Элемент | Cu | Cr | F | H | Hf \*) | K | Li |
| max, ppm | 50 | 200 | 30 | 15 | 500 | 40 | 8 |
| Элемент | Mn | Mo | N | Ni | Pb | Ti |  |
| max, ppm | 20 | 50 | 60 | 70 | 50 | 50 |  |

\*) содержание гафния по требованию заказчика может быть не более 100 ppm

\*\*) ppm означает количество частей на один миллион

**Сплав Э110**

Состав сплава (в % от веса):

|  |  |  |
| --- | --- | --- |
| Элемент | Nb | Zr |
| min, % | 0.90 | - |
| max, % | 1.10 | остальное |

Содержание примесей, не более (в ppm):

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Элемент | Al | B | Be | C | Ca | Cd | Cl |  |
| max, ppm | 80 | 0.5 | 30 | 200 | 100 | 0.3 | 20 |  |
| Элемент | Cu | Cr | F | Hf \*) | K | Li | Mn |  |
| max, ppm | 50 | 200 | 30 | 500 | 40 | 8 | 20 |  |
| Элемент | Mo | N | Ni | O | Pb | Ti | Fe | Si |
| max, ppm | 50 | 60 | 70 | 1000 | 50 | 50 | 500 | 200 |

\*) содержание гафния по требованию заказчика может быть не более 100 ppm

**Сплав Э125**

Состав сплава (в % от веса):

|  |  |  |
| --- | --- | --- |
| Элемент | Nb | Zr |
| min, % | 2.40 | - |
| max, % | 2.70 | остальное |

Содержание примесей, не более (в ppm):

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Элемент | Al | B | Be | C | Ca | Cd | Cl |  |
| max, ppm | 80 | 0.5 | 30 | 200 | 100 | 0.3 | 20 |  |
| Элемент | Cu | Cr | F | Hf \*) | K | Li | Mn |  |
| max, ppm | 50 | 200 | 30 | 500 | 40 | 8 | 20 |  |
| Элемент | Mo | N | Ni | O | Pb | Ti | Fe | Si |
| max, ppm | 50 | 60 | 70 | 1000 | 50 | 50 | 500 | 200 |

\*) содержание гафния по требованию заказчика может быть не более 100 ppm

**Коммерческий цирконий (R60702) и коммерческие сплавы циркония**

Состав - по ASTM B495:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Элементы | R60702 (% ppm) | R60703 % | R60705 % | R60706 % |
| Сумма Zr+Hf | 99.2 | 98.0 | 95.5 | 95.5 |
| Hf максимум | 4.5 | 4.5 | 4.5 | 4.5 |
| Сумма Fe+Cr | 0.2 (200 ppm) max | - | 0.2 max | 0.2 max |
| Sn (олово) | ... | - | - | - |
| Н, максимум | 0.004 (4 ppm) | - | 0.005 | 0.005 |
| N, максимум | 0.020 (20 ppm) | - | 0.025 | 0.025 |
| C, максимум | 0.05 (50 ppm) | - | 0.050 | 0.050 |
| Nb | ... | - | 2.0-3.0 | 2.0-3.0 |
| O, максимум | 0.16 (1600 ppm) | - | 0.18 | 0.16 |

Остальные примеси не регламентируются

**Э635 alloy**

Alloy composition (in % by weight):

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Element | Nb | Sn | Fe | O | Si | Zr |
| min, % | 0.90 | 1.10 | 0.30 | 0.05 | 0.0050 | - |
| max, % | 1.10 | 1.40 | 0.47 | 0.12 | 0.0200 | balance |

Impurities content, not more than (in ppm\*\*)):

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Element | Al | B | Be | C | Ca | Cd | Cl |
| max, ppm | 75 | 0.5 | 30 | 200 | 100 | 0.3 | 20 |
| Element | Cu | Cr | F | H | Hf \*) | K | Li |
| max, ppm | 50 | 200 | 30 | 15 | 500 | 40 | 8 |
| Element | Mn | Mo | N | Ni | Pb | Ti |  |
| max, ppm | 20 | 50 | 60 | 70 | 50 | 50 |  |

\*) hafnium content on customer's request can be not more than 100 ppm

\*\*) ppm means "parts per million"

**Э110 alloy**

Alloy composition (in % by weight):

|  |  |  |
| --- | --- | --- |
| Element | Nb | Zr |
| min, % | 0.90 | - |
| max, % | 1.10 | balance |

Impurities content, not more than (in ppm):

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Element | Al | B | Be | C | Ca | Cd | Cl |  |
| max, ppm | 80 | 0.5 | 30 | 200 | 100 | 0.3 | 20 |  |
| Element | Cu | Cr | F | Hf \*) | K | Li | Mn |  |
| max, ppm | 50 | 200 | 30 | 500 | 40 | 8 | 20 |  |
| Element | Mo | N | Ni | O | Pb | Ti | Fe | Si |
| max, ppm | 50 | 60 | 70 | 1000 | 50 | 50 | 500 | 200 |

\*) hafnium content on customer's request cannot be more than 100 ppm

**Э125 alloy**

Alloy composition (in % by weight):

|  |  |  |
| --- | --- | --- |
| Element | Nb | Zr |
| min, % | 2.40 | - |
| max, % | 2.70 | balance |

Impurities content, not more than (in ppm):

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Element | Al | B | Be | C | Ca | Cd | Cl |  |
| max, ppm | 80 | 0.5 | 30 | 200 | 100 | 0.3 | 20 |  |
| Element | Cu | Cr | F | Hf \*) | K | Li | Mn |  |
| max, ppm | 50 | 200 | 30 | 500 | 40 | 8 | 20 |  |
| Element | Mo | N | Ni | O | Pb | Ti | Fe | Si |
| max, ppm | 50 | 60 | 70 | 1000 | 50 | 50 | 500 | 200 |

\*) hafnium content on customer's request cannot be more than 100 ppm

**Commercial zirconium (R60702) and commercial zirconium alloys**

Composition – as per ASTM B495:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Elements | R60702 (% ppm) | R60703 % | R60705 % | R60706 % |
| Zr+Hf summation | 99.2 | 98.0 | 95.5 | 95.5 |
| Hf maximum | 4.5 | 4.5 | 4.5 | 4.5 |
| Fe+Cr summation | 0.2 (200 ppm) max | - | 0.2 max | 0.2 max |
| Sn (tin) | ... | - | - | - |
| Н, maximum | 0.004 (4 ppm) | - | 0.005 | 0.005 |
| N, maximum | 0.020 (20 ppm) | - | 0.025 | 0.025 |
| C, maximum | 0.05 (50 ppm) | - | 0.050 | 0.050 |
| Nb | ... | - | 2.0-3.0 | 2.0-3.0 |
| O, maximum | 0.16 (1600 ppm) | - | 0.18 | 0.16 |

The remaining impurities are not brought under regulation