

Advantages of Mixing Rhenium in Tungsten Wire

Rhenium significantly reduces the brittle characteristics of tungsten at room temperature. What is more, the addition of rhenium increases the recrystallization temperature, the ductility, and the ultimate tensile strength of these alloys and decreases the ductile-brittle transition temperatures of tungsten-rhenium alloys.

| Standard Sizes for Tungsten-Rhenium Wire | | | | |
|--|-------------|------------|---------|-----|
| Item | Diameter | | Content | |
| | (in.) | (mm) | W% | Re% |
| W-Re Wire | 0.005-0.090 | 0.050-2.28 | 25 | 75 |
| W-Re Wire | 0.002-0.090 | 0.050-2.28 | 26 | 74 |
| W-Re Wire | 0.003-0.060 | 0.076-1.5 | 5 | 95 |
| W-Re Wire | 0.003-0.060 | 0.076-1.5 | 3 | 97 |

Once tungsten wire used at high temperature after recrystallization, it becomes quite fragile. And it can be easily broken under the condition of shaking and vibrating. In some electric light source products require high reliability, in order to prevent fragmentation of lamp filament, and tungsten wire often doped 3 to 5% rhenium, known as the tungsten rhenium wire which can make the extension of tungsten-brittle transition temperature decreased to room temperature or below room temperature.

Tungsten rhenium wire doped with rhenium has much better ductility and stability than pure tungsten in high temperature.

Application of Tungsten Rhenium Wire:

1. Production of specific lighting filaments, thermo-sensitive elements for chromatograph
2. Making heater and grid wire for TV tube and image-pick up tube
3. Military electronic devices