

Number	Title
EPE-000046	# 11 ALLOY WIRES AND BARS, ANNEALED, SINGLE CONDUCTOR, SOLID BARE, FOR COMPENSATION WIRE TYPES R AND S

Revision: 14	Issued: Luciane Martins	Approved: Rodrigo Vieira	Page: 1/3
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## 1 - SUBJECT:

To identify and specify # 11 Alloy wires and bars.

## 2 - VENDOR SPECIFICATION:

# 11 single conductor Alloy wire and # 11 Alloy bar.

## 3 - VESUVIUS PART NUMBER:

See table on item 4.2.

## 4 - TECHNICAL FEATURES:

### 4.1 - Physical Properties:

Tensile Strength, psi (typical)	30000
Elongation, % between	25 - 35
Appearance:	Wires: Smooth, uniform, bright, free from cracks or slivers. Bars: Smooth, uniform, free from cracks or slivers.

### 4.2 - Size Tolerance:

Wires:				
Code	Gauge	Diameter Size (mm)	Tolerance ± (mm)	Treatment
10.1383-0	(Wire 0 AWG - 8,25 mm)	8,252	0,025 -	Annealed
10.1392-0	(Wire 8 AWG - 3,26 mm)	3,264	0,025	Hardened
10.1370-9	(Wire 16 AWG - 1,29 mm)	1,291	0,018	Annealed
10.1391-1	(Wire 18 AWG - 1,02 mm)	1,024	0,025	Annealed
10.5441-3	(Wire 24 AWG - 0,51 mm)	0,510	0,016	Annealed
10.5255-0	(Wire 28 AWG - 0,32 mm)	0,321	0,010	Annealed
10.1393-8	(Wire 32 AWG - 0,20 mm)	0,202	0,008	Annealed
11.1893-4	(Wire 30 AWG - (0.25mm)	0,255	0,008	Annealed

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Bars:				
Code	Gauge	Diameter Size (mm)	Tolerance $\pm$ (mm)	Treatment
10.0109-3	---	19,5	$\pm 0,3$	Medium hard
10.0108-5	---	3,2	+ 0,03/ -0	Hardened
10.0077-1	---	3,9	+0,2/ -0	Medium hard
10.4945-2	---	3,95	$\pm 0,025$	Hardened

#### 4.3 – Electrical Properties:

The EMF characteristics of #11 alloy wire shall be such that a thermocouple made from the wire and NBS Pt 27 standard wire, will produce an EMF of 113 microvolts  $\pm 28$  microvolts at 100 °C, reference junction at 0 °C (For above values, there is no significant difference between international and absolute microvolts, nor is there any effect of the change from 1968 temperature scale to the 1948 scale).

#### 5 – IDENTIFICATION AND PACKING:

##### 5.1 – Packing:

Wires:

The # 16 AWG wire (10.1370-9) must to be packed in plastic spool standard IEC/ DIN 200, with a maximum of 13 Kg.

For others sizes supply in adequate wood, plastic or metal reels, wrapped in waterproof paper tape applied spirally and overlapped.

NOTE: The single lengths shall have no brazed joints. Outer ends for #16 AWG wire and smaller, shall extend one meter beyond wrapping for checking purposes.

Bars: Supply in rolled coils (50kg).

The bars shall be supplied in wood boxes, and all the attention is necessary to permit perfect conditions to the final use.

##### 5.2 – Identification:

Mark each package with the supplier's name, the net weight, batch, the gross and tare (to wires).

#### 6 – STORAGE:

Wires: Dry and aired place.

Bars: The bars must be identify and storage inside rack.

#### 7 – GENERAL NOTES:

##### 7.1 – Inspection:

A Quality Certificate will be issued for each batch.

The inspection shall be realized by IT-000009, IT-000377 and IT-000080.

##### 7.2 – Engineering:

The standard limits of error for compensation wire made of copper per EPE-000047 (Domestic market copper), and this wire is  $0.6460 \pm 0.04\text{mV}$  at 100 °C.

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The standard limits of error for compensation wire made of standard copper (ASTM-E230), and this wire is  $0.660 \pm 0.04\text{mV}$  at  $100^{\circ}\text{C}$ .

This specification has a version in Portuguese (EPE-000045) with the same revision.