SSC-1 to SSC-3

Commercial-Purity Copper Rods

The copper rods were intended as reference materials for spectrographic purposes. They were prepared and tested for homogeneity in the Mines Branch, between 1964 and 1966; the starting materials were donated by Canadian Copper Refiners Limited, Montreal, Quebec, and Metals and Alloys Limited, Leaside, Ontario.

To dope the copper matrix, impurities in granulated form were mixed with high-purity anode swarf, the mixture was cold-pressed into pellets 25.4 mm (1 in.) in diameter, and then the pellets were added to molten, high-purity copper in appropriate quantities. The alloys are in the form of hot-rolled rods, 300 mm x 8 mm (12 in. x 5/6 in.).

Certified Values and Standard Deviation

µg/g

Constituent	SSC-1	SSC-2	SSC-3
Ag	18.8 ± 5.81	13.9 ± 3.38	16.1 ± 3.59
As	1.16 ± 0.483	1.18 ± 0.612	5.45 ± 1.93
Bi	1.15 ± 0.325	0.097 ± 0.044	0.59 ± 0.012
Cd	N.F.	10.0 ± 1.05	N.F.
Fe	39.2 ± 7.18	31.9 ± 7.05	40.0 ± 8.82
Ni	17.6 ± 3.36	3.17 ± 1.04	48.0 ± 7.68
O	216.0 ± 68.3	176.0 ± 59.3	176.0 ± 46.7
Pb	65.3 ± 7.02	6.12 ± 1.2	4.58 ± 1.51
S	19.6 ± 6.79	28.9 ± 8.53	16.7 ± 8.93
Sb	2.64 ± 0.543	5.80 ± 0.662	1.63 ± 0.989
Se	7.28 ± 1.61	2.58 ± 0.821	3.87 ± 0.744
Sn	54.9 ± 6.70	10.0 ± 1.93	12.0 ± 1.68
Te	4.57 ± 0.775	1.24 ± 0.514	2.53 ± 0.629
Zn	33.3 ± 7.91	16.3 ± 5.15	15.3 ± 3.6

N.F. = Not found.

For certifying the copper rods, ten laboratories provided analytical results for one or more elements. The results are based on a minimum of 4 and a maximum of 11 laboratories. The minimum number of

determinations per element was 7, and the maximum was 51. The coefficient of variation ranged from 5.4% to 60.7%, with an overall mean of 25% at the 10 µg/g (ppm) level.

The rods are sold as sets of 3. SSC-1 and SSC-3 are also available individually.

A copy of Report 75-149 (TR), "Commercial purity copper rods SSC-1, SSC-2, SSC-3, SSC-4: Their generation and certification as certified reference materials", will be provided with each order of one or more of these alloys.

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