EUROPEAN COMMISSION
JOINT RESEARCH CENTRE

Institute for Reference Materials and Measurements (Geel)

CERTIFIED REFERENCE MATERIAL
BCR® – 022

CERTIFICATE OF ANALYSIS

ELECTROLYTIC TOUGH PITCH (ETP) COPPER		
	Mass fraction	
	Certified value [1] [mg/kg]	Uncertainty [2] [mg/kg]
Oxygen	138	7

1) This value is the unweighted mean of 378 accepted individual measurements obtained by different laboratories and independent methods. The certified value is traceable to the International System of Units (SI).

2) This value takes into account the precisions of the methods used and the differences between the results which may be due to systematic errors or heterogeneity of the metal. It may be used as standard deviation.

This certificate is valid for five years after purchase.

Sales date:

The minimum amount of sample to be used is 1 g.

DESCRIPTION OF THE SAMPLE

The material is wrought copper according to ISO-RECOMMENDATION No. 1337.
The samples are available as:
- BCR-022A: discs of 26 mm in diameter and 9 mm thick
- BCR-022B: rods of 9 mm in diameter and 50 mm long

NOTE

This reference material has been certified under a Community programme on the improvement of gas analysis techniques used on non-ferrous metals, drawn up by the Eurisotop Office, Commission of the European Communities, Brussels, Belgium. The certificate has been revised under the responsibility of IRMM.

Brussels, May 1977
Latest revision: August 2015

INFORMATION ONLY

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ANALYTICAL METHODS USED FOR CERTIFICATION

- 14 MeV Neutron activation analysis
- Reducing fusion
- Hydrogen reduction
- Surface analysis by measurement of charged particles from nuclear reactions

PARTICIPANTS

- BNF, Metal Technology Centre, Grove Laboratories, Wantage (GB)
- Bundesanstalt für Materialprüfung, Berlin (DE)
- CEA, Centre d'Études Nucléaires de Fontenay-aux-Roses, DRA-SEA, Fontenay-aux-Roses (FR)
- SCK/CEN, Studiecentrum voor Kernenergie/Centre d'Étude de l'Énergie Nucléaire, Mol (BE)
- Centre de Recherches Aluminium Pechiney, Voreppe (FR)
- Gesellschaft für Kernforschung mbH, Laboratorium für Isotopentechnik, Karlsruhe (DE)
- Groupe de Physique des Solides de l'Ecole Normale Supérieure, Paris (FR)
- Hüttenwerke Kayser A.G., Lünen (DE)
- Imperial Metal Industries Refiners Ltd., James Bridge Copper Works, Walsall (GB)
- European Commission, Joint Research Centre, Central Bureau for Nuclear Measurement, Geel (BE)
- European Commission, Joint Research Centre, CETIS and Chemistry Division, Ispra (IT)
- Metallgesellschaft A.G., Frankfurt/Main (DE)
- Métallurgie Hoboken-Overpelt, Hoboken (BE)
- National Physics Laboratory, Teddington (GB)
- Rijksuniversiteit Gent, Instituut voor Nucleaire Wetenschappen, Gent (BE)
- Staatliches Materialprüfungsamt Nordrhein-Westfalen, Dortmund-Aplerbeck (DE)
- Université de Liège, Institut de Physique Nucléaire, Liège (BE)

SAFETY INFORMATION

The usual laboratory safety precautions apply.

INSTRUCTIONS FOR USE

The material is intended to assess method performance. Samples have to be prepared by dry machining on a lathe. Recommended conditions are set out in Eurisotop Technical Information No. 86 (ITE-86). Surface oxygen on freshly prepared samples is evaluated at 0.2 - 0.4 µg/cm^2 (cf ITE-90). The analysis should be performed as soon as possible after mechanical preparation of the sample. Although chemical etching is possible (cf ITE-90) it is not recommended to etch freshly prepared samples.

STORAGE

The material should be stored at room temperature. However, the European Commission cannot be held responsible for changes that happen during storage of the material at the customer's premises, especially of opened samples.

LEGAL NOTICE

NOTE

A technical report on the production of BCR-022 is available on the internet (http://www.irmm.jrc.be). A paper copy can be obtained from IRMM on request.

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