BUREAU OF ANALYSED SAMPLES LTD

A N A L Y S I S R E P O R T

COPPER BASE ALLOY REFERENCE MATERIAL

CURM 30.05-4

MAIN ELEMENTS IN BRASS

The material for this CURM was prepared specially for Bureau of Analysed Samples Ltd using a method of casting known to provide material of uniform composition in a form suitable for use as calibration reference materials in XRF and optical emission spectroscopic analysis. Using Optical Emission Spectrometry the samples have been shown, by statistically designed procedures, to produce reproducible results.

The chemical analysis of representative turnings was carried out independently by both Bureau of Analysed Samples Ltd., and another laboratory experienced in the analysis of non-ferrous materials. The values reported are the overall Means and Standard Deviations (s.d.) of three separate determinations made in each laboratory.

A N A L Y S I S

mass content in %

Element	Mean	s.d.	Element	Mean	s.d.
Cu	**69.48**	0.08	Mn	**<0.0005**	-
Sn	**<0.001**	-	As	**<0.001**	-
Pb	**<0.002**	-	Sb	**<0.005**	-
Zn	**30.53**	0.11	Bi	**<0.003**	-
Ni	**<0.0005**	-	Al	**<0.001**	-
Fe	**<0.003**	-			
Si	**<0.001**	-			

Using vacuum direct reading Optical Emission Spectrometers it has been established that materials of similar composition from different sources may respond differently. This CURM is primarily intended for the construction of basic response curves which should be related to the response curves obtained from an identical examination of the user's own material.

CURM 30.05-4 has been carefully analysed by both BAS Ltd and another experienced laboratory, using the methods detailed overleaf, however, in order to distinguish it from Certified Reference Materials, CURM 30.05-4 is classified as Reference Material (RM) and **NOT** a Certified Reference Material (CRM). The International Organisation for Standardisation (ISO) Guide 30 defines these as follows :-

Reference Material: Material, sufficiently homogeneous and stable with respect to one or more specified properties, which has been established to be fit for its intended use in a measurement process.

Certified Reference Material: Reference Material characterised by a metrologically valid procedure for one or more specific properties, accompanied by a Certificate that provides the value of the specified property, its associated uncertainty, and a statement of metrological traceability.

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(the current edition is available at www.basrid.co.uk

CURM 30.05-4 – MAIN ELEMENTS IN BRASS
NOTES ON METHODS USED

ELEMENT	METHODS USED
Copper	Electrolytic deposition
Tin	Flame Atomic Absorption Spectrophotometry (FAAS) & Inductively Coupled Plasma Optical Emission Spectrometry (ICP-OES)
Lead	FAAS & ICP-OES
Zinc	FAAS & Titration with Ethylenediaminetetra-acetic acid.
Nickel	FAAS & ICP-OES
Iron	FAAS & ICP-OES
Silicon	FAAS & ICP-OES
Manganese	FAAS & ICP-OES
Arsenic	FAAS & ICP-OES
Antimony	FAAS & ICP-OES
Bismuth	FAAS & ICP-OES
Aluminium	FAAS & ICP-OES

DESCRIPTION OF SAMPLE

The material for this CURM was prepared by Replicast Ltd (formerly BCIRA), Sheffield, UK, using a special method of casting known to provide material of uniform composition in a form suitable for use as a Reference Material (RM) for Optical Emission Spectrometric analysis. Discs from this cast have been shown, by statistically designed procedures, to provide reproducible results using Optical Emission Spectrometry.

CURM 30.05-4 is sold as a chill cast disc, approximately 50mm diameter x 10mm thick with a single chilled working face. Spectroscopic reproducibility has been shown to be reliable to a depth of 5mm below the original working surface of the disc. Analysis must be made on the chilled working surface (smaller diameter) and the sample should be discarded when the thickness is reduced to 5mm. This CURM is also available, if required, as turnings, supplied in bottles of 100g.

INTENDED USE

Discs of this CURM are intended for establishing and checking the calibration of Optical Emission and X-Ray Spectrometers for the analysis of similar materials, whilst the turnings are for uses such as the verification of the accuracy and repeatability of analytical methods.

STABILITY

The discs will remain stable provided that they are stored in a dry atmosphere and are not subjected to excessive heat (eg, during preparation of the working surface). The turnings will remain stable provided that the bottle remains sealed and is stored in a dry atmosphere. When the bottle has been opened the lid should be secured immediately after use.

COMMUTABILITY

It has been established that, when using Optical Emission Spectrometers, materials of similar composition from different sources may respond differently. The user should be aware that the metallurgical history of this RM may not accurately reflect the metallurgical history of the user's own materials.

Further information and advice on this or other Certified Reference Materials or Reference Materials produced by Bureau of Analysed Samples Ltd may be obtained from the address below.

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for **BUREAU OF ANALYSED SAMPLES LTD.**

R P Meeres
Managing Director

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