



CCRMP  
Canadian Certified Reference Materials Project

CANMET Mining and Mineral Sciences Laboratories  
555 Booth Street, Ottawa, Ontario, Canada K1A 0G1  
Tel.: (613) 995-4738, Fax: (613) 943-0573  
E-mail: ccrmp@nrcan.gc.ca  
www.ccrmp.ca

PCMRC  
Projet canadien de matériaux de référence certifiés

Laboratoires des mines et sciences minérales de CANMET  
555, rue Booth, Ottawa (Ontario) Canada K1A 0G1  
Tél. : (613) 995-4738, Téléc. : (613) 943-0573  
Courriel : pcmrc@nrcan.gc.ca  
www.pcmrc.ca

# Certificate of Analysis

First issued: July 1990

Last revision: November 2008

## HCC-1

### PYROMETALLURGICAL REFERENCE MATERIAL FOR SULPHUR

CERTIFIED VALUE	
Sulphur	%
Mean	33.92
Within-laboratory standard deviation	0.095
Between-laboratories standard deviation	0.14
95% confidence limits	± 0.12

INFORMATIONAL VALUES	
Constituent	wt %
Cu	26.9
Fe	29.8
Pb	1.0
SiO <sub>2</sub>	1.1
Zn	4.6

#### SOURCE

The raw material for HCC-1 was donated by Hudson Bay Mining and Smelting Limited, Flin Flon, Manitoba.

#### DESCRIPTION

HCC-1 is a typical copper concentrate mill feed. It is therefore expected to contain more than 80% chalcopyrite, 5-10% each of pyrite and sphalerite, and a trace of pyrrhotite.

#### INTENDED USE

HCC-1 is suitable for analysis of sulphur in pyrometallurgical feed materials using a barium sulphate precipitation method. Examples of intended use are: for quality control in the analysis of samples of a similar type, method development, arbitration and the calibration of equipment.

#### INSTRUCTIONS FOR USE

The assigned values pertain to the date when issued. CCRMP is not responsible for changes occurring after receipt by the user. HCC-1 should be used "as is". The contents of the bottle should be thoroughly mixed before taking samples. After opening the sealed pouch, the bottle should be kept in a dessicator or resealed under nitrogen to prevent oxidation. The contents of the bottle should be exposed to the atmosphere for the shortest possible time.

#### METHOD OF PREPARATION

The raw material was passed through a Denver roller and screened. Forty-five kg of less than 106 µm particulate was recovered. After blending for 3 hours, the material was bottled in 50-g units. This is the only size available. Each bottle was sealed under nitrogen in a mylar-aluminum foil pouch to provide long-term protection against oxidation.



## **HOMOGENEITY**

A formal assessment of homogeneity was not performed on HCC-1. It was assumed that the successful previous experience in the preparation of homogeneous lots of several hundred kilograms of similar materials, CCU-1, CCU-1 a, and CCU-1 b, without problem, was sufficient to expect homogeneity in a lot of 45 kg. This assumption is supported by the fact that the within-laboratory standard deviation obtained in the interlaboratory measurement program for HCC-1 is smaller than that obtained with similar materials.

The participants in the interlaboratory measurement program for HCC-1 used sample sizes ranging from 0.15 to 1-g. Use of a smaller sub-sample will invalidate the use of the certified value and associated parameters. Further details are available in the certification report.

## **CERTIFIED VALUES**

Ten laboratories from the smelting industry and government participated in the 1989 interlaboratory certification program. Sulphur was analysed using a barium sulphate precipitation method. A one-way analysis of variance was used to estimate the consensus value and associated statistical parameters. Full details of all of the work, including statistical analysis, the methods and the names of the participants are contained in CCRMP Report 90-4E.

## **CERTIFICATION HISTORY**

HCC-1 was released in 1990. The 2008 version of the certificate has no technical additions or revisions.

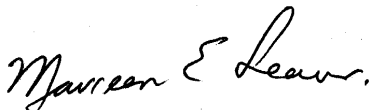
## **PERIOD OF VALIDITY**

These certified values are valid until December 31, 2030. The stability of the material will be monitored every two years. Purchasers will be notified of any significant changes.

## **LEGAL NOTICE**

The Canadian Certified Reference Materials Project has prepared this reference material and statistically evaluated the analytical data of the interlaboratory certification program to the best of its ability. The purchaser, by receipt hereof, releases and indemnifies the Canadian Certified Reference Materials Project from and against all liability and costs arising out of the use of this material and information.

## **CERTIFYING OFFICERS**



---

Maureen E. Leaver – CCRMP Coordinator



---

Joseph Salley – Data Processor

## **REFERENCE**

The preparation and certification procedures used for HCC-1, including methods and values obtained by individual laboratories, are given in CCRMP Report 90-4E. This report is available free of charge on application to:

### **CCRMP, MMSL-CANMET (NRCan)**

555 Booth Street  
Ottawa, Ontario, Canada K1A 0G1  
Telephone: (613) 995-4738  
Facsimile: (613) 943-0573  
E-mail: [ccrmp@nrcan.gc.ca](mailto:ccrmp@nrcan.gc.ca)