



EUROPEAN COMMISSION  
JOINT RESEARCH CENTRE

Institute for Reference Materials and Measurements (Geel)

# CERTIFIED REFERENCE MATERIAL BCR<sup>®</sup> – 425

## CERTIFICATE OF ANALYSIS

Nickel based alloy		
	Uniaxial tensile creep properties <sup>1)</sup>	
	Certified value <sup>2)</sup>	Uncertainty <sup>3)</sup>
Creep rate at 400 h	$72 \times 10^{-6} \text{ h}^{-1}$	$5 \times 10^{-6} \text{ h}^{-1}$
Time to 2 % strain	278 h	16 h
Time to 4 % strain	557 h	30 h
<p>1) Testing conditions: T = 600 °C, <math>\sigma</math> = 160 MPa. 2) These values are the unweighted means of the results from 9 laboratories, using 6 different standard creep test methods. The certified values are traceable to the SI. 3) The uncertainty is taken as the half-width of the 95 % confidence interval of the mean given in <sup>2)</sup></p>		

This certificate is valid for five years after purchase.

Sales date:

The minimum size of the gauge section of the machined sample must be 5 mm in diameter and 25 mm long.

### DESCRIPTION OF THE SAMPLE

A sample consists of a 14 mm diameter bar of the nickel based alloy Nimonic 75. The bar has to be machined into a shape suitable for the testing machine of the user.

### NOTE

This material has been certified by BCR (Community Bureau of Reference, the former reference materials programme of the European Commission). The certificate has been revised under the responsibility of IRMM.

Brussels, March 1990  
Revised: February 2013

Signed: \_\_\_\_\_

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Joint Research Centre  
Institute for Reference Materials and Measurements  
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## **ANALYTICAL METHOD USED FOR CERTIFICATION**

Uniaxial tensile creep tests according to:

- BS 3500
- DIN 50 118 (1982)
- ISO R203/R204
- NF A03-352
- NF A03-353
- NF A03-355

## **PARTICIPANTS**

- British Steel plc, Rotherham (GB)
- Bundesanstalt für Materialforschung und –prüfung, Berlin (DE)
- Central Electricity Research Lab., Leatherhead (GB)
- Centre d'Etudes Nucléaires, Saclay (FR)
- Centre de Recherches Métallurgiques, Liège (BE)
- Electricité de France, Moret-sur-Loing (FR)
- Metaalinstituut, Apeldoorn (NL)
- Materialprüfungsanstalt, Stuttgart (DE)
- National Physical Laboratory, Teddington (GB)
- Siemens AG, UB KWU, Mulheim (GB)
- Technische Hochschule, Darmstadt (DE)
- Trinity College, Dublin (IE)

## **SAFETY INFORMATION**

The usual laboratory safety precautions apply.

## **INSTRUCTIONS FOR USE**

The BCR-425 samples may be used for the validation of uniaxial tensile creep testing equipments. The test pieces should be machined following the normal procedure used by the testing organization and the tests undertaken in accordance with the normal testing practice. Care must be taken to comply with the following additional testing constraints: a) the test piece shall be held at the test temperature in the creep testing machine for 20 hours prior to applying the load; b) the test temperature shall not be allowed to deviate by more than 2 °C from the set temperature during the creep test.

## **STORAGE**

The samples should be stored dry and 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**

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## **NOTE**

A technical report on the production of BCR-425 is supplied on Internet (<http://www.irmm.jrc.be>). A paper copy can be obtained from IRMM on explicit request.