भारतीय मानक

Indian Standard

IS 7505 : 2024

कठोर धातु के लिए कोबाल्ट पाउडर — विशिष्टि

(दूसरा पुनरीक्षण)

Cobalt Powder for Hardmetals — Specification

(Second Revision)

ICS 77.160

भारतीय मानक ब्यूरो
BUREAU OF INDIAN STANDARDS
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July 2024 **Price Group 3**

Powder Metallurgical Materials and Products Sectional Committee, MTD 25

FOREWORD

This Indian Standard (Second Revision) was adopted by the Bureau of Indian Standards, after the draft finalized by the Powder Metallurgical Material and Product Sectional Committee had been approved by the Metallurgical Engineering Division Council.

This standard was first published in 1974 and subsequently revised in 1985. This revision has been brought out to bring the standard in the latest style and format of the Indian Standards. The standard had been drafted to homogenize its structure and wording with other Indian Standard.

Cobalt powder is used in the manufacture of hard metals, which find applications in cutting tool tips, rock drilling bits, wear parts, and dies.

This standard contains clauses **5** and **8** which call for agreement between the purchaser and the manufacture.

The composition of the Committee responsible for the formulation of this standard is given in Annex A.

For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test or analysis, shall be rounded off in accordance with IS 2 : 2022 ‘Rules for rounding off numerical values’. The number of significant places retained in the rounded off value should be same as that of the specified value in this standard.

Indian Standard

COBALT POWDER FOR HARDMETALS — SPECIFICATION

(Second Revision)

1 SCOPE

This standard covers the requirements of cobalt powder used in the manufacture of hardmetals.

2 REFERENCES

The standards given below contain provisions, which through reference in this text, constitute provisions of this standard. At the time of publication the editions indicated were valid. All standards are subject to revision and parties to agreements based on this standard are encouraged to investigate the possibility of applying the most recent edition of these standards:

IS No.	*Title*
IS 1387 : 1993	General requirements for the supply of metallurgical materials (*second revision*)
IS 5644 (Part 3) : 2005/ ISO 4491-3 : 1997	Metallic powders — Determination of oxygen content by reduction methods: Part 3 Hydrogen-reducible oxygen (*fourth revision*)
IS 6492 : 2020/ ISO 3954 : 2007	Powders for powder metallurgical purposes — Sampling (*first revision*)
IS 7512 : 2006	Method for the determination of average particle size of metal powders by fisher sub-sieve sizer (*first revision*)

3 SUPPLY OF MATERIAL

General requirements relating to the supply of material shall be as laid down in IS 1387.

4 PROCESS OF MANUFACTURE

The cobalt powder shall be manufactured by hydrogen reduction process.

5 CHEMICAL COMPOSITION

The chemical composition of the powder shall be as given below:

Sl No.	*Element*	*Percent* (*Max*)
(1)	(2)	(3)
i)	Co	98.1 (*Min*)
ii)	Ni	0.5
iii)	Si	0.02
iv)	Fe	0.05
v)	Al	0.01
vi)	Cu	0.02
vii)	Mn	0.02
viii)	Zn	0.03
ix)	Mg	0.02
x)	Na	0.03
xi)	Ca	0.03
xii)	S	0.02
xiii)	Hydrogen loss	0.60

NOTES

1 The methods of chemical analysis shall be as agreed to between the purchaser and the manufacturer.

2 The hydrogen loss shall be determined by the method given in IS 5644 (Part 3).

6 AVERAGE PARTICLE SIZE

The average particle size shall be determined in accordance with IS 7512 and shall be within 1 µm to 3 µm.

7 SAMPLING

The sampling of powders for conducting all the tests shall be done in accordance with IS 6492.

8 PACKING

The powder shall be supplied packed in suitable containers in quantities mutually agreed between the purchaser and the manufacturer.

9 MARKING

9.1 Each container of cobalt powder shall be suitably marked with the following information's:

a) Hydrogen reduced cobalt powder;

b) Manufacturer's name;
c) Batch number;
d) Manufacturer date of powder; and
e) Net mass of the powder.

9.2 BIS Certification Marking

The product(s) conforming to the requirements of this standard may be certified as per the conformity assessment schemes under the provision of the *Bureau of Indian Standards Act*, 2016 and the Rules and Regulations framed thereunder, and the product may be marked with the Standard Mark.

ANNEX A

(*Foreword*)

COMMITTEE COMPOSITION

Powder Metallurgical Materials and Products Sectional Committee, MTD 25

Organization	*Representative(s)*
Indian Institute of Technology Kanpur, Kanpur	DR ANISH UPADHYAY **(*Chairperson*)**
Bhabha Atomic Research Centre, Mumbai	PROF AMIT SINHA
Bharat Heavy Electrical Limited, New Delhi	SHRI VIVEK ARYA SHRI BHARAT KUMAR PANT (*Alternate*)
Controllerate of Quality Assurance, Ichapur	SHRI A. MITRA SHRI T. K. PRUSTY (*Alternate*)
CSIR - Central Electrochemical Research Institute, Karaikudi	DR DEEPAK KUMAR PATTANAYAK
CSIR - Institute of Minerals & Materials Technology, Bhubaneswar	DR MAYADHAR DEBATA DR PRADYUT SENGUPTA (*Alternate*)
CSIR - National Metallurgical Laboratory, Jamshedpur	DR V. C. SRIVASTAVA
Defence Institute of Quality Assurance, Bengaluru	DR N. KRISHNA MURTHY
Defence Metallurgical Research Laboratory, Ministry of Defence, Hyderabad	DR MITHUN PALIT DR G. PRABHU (*Alternate*)
Electronica Tungsten Limited, Malegaon	SHRI BHALCHANDRA V. PATHAK SHRI A. N. CHASKAR (*Alternate*)
Innomet Advanced Materials Private Limited, Hyderabad	SHRI VINAY CHILAKAPATI SHRI UDAY BENDRE
International Advanced Research Centre for Powder Metallurgy & New Materials (ARCI), Hyderabad	DR GURURAJ TELASANG
Kennametal India Limited, Bengaluru	SHRI ALOK BHASKAR SHRI K. CHANDRASHEKAR SHENOY (*Alternate* I) SHRI SHASHIKUMAR S. (*Alternate* II)
Mishra Dhatu Nigam Limited, Hyderabad	SHRIMATI U. SAVITHA SHRI BADRI VISHAL PANDEY (*Alternate*)
Society of Indian Automobile Manufacturers (SIAM), Delhi	SHRI P. K. BANERJEE SHRI AMIT KUMAR (*Alternate*)
The Metal Powder Company Limited, Madurai	SHRI P. SUNDARAPANDIAN SHRI R. KRISHNA MOORTHY (*Alternate* I) SHRI N. CHANDRASEKARAN (*Alternate* II)
BIS Directorate General	SHRI SANJIV MAINI, SCIENTIST 'F'/SENIOR DIRECTOR AND HEAD (METALLURGICAL ENGINEERING) [REPRESENTING DIRECTOR GENERAL (*Ex-officio*)]

Member Secretary
SHRI G. RAM SAI KUMAR
SCIENTIST 'B'/ASSISTANT DIRECTOR
(METALLURGICAL ENGINEERING), BIS

Bureau of Indian Standards

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Amendments are issued to standards as the need arises on the basis of comments. Standards are also reviewed periodically; a standard along with amendments is reaffirmed when such review indicates that no changes are needed; if the review indicates that changes are needed, it is taken up for revision. Users of Indian Standards should ascertain that they are in possession of the latest amendments or edition by referring to the website-www.bis.gov.in or www.standardsbis.in.

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Amendments Issued Since Publication

Amend No.	Date of Issue	Text Affected

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