

BUREAU OF INDIAN STANDARDS

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**भारतीय मानक प्रारूप
कठोर धातुओं के अपघर्षक घिसाव प्रतिरोध के निर्धारण - पद्धति
(आई एस 12286 का पहला पुनरीक्षण)**

Draft Indian Standard

**DETERMINATION OF ABRASIVE WEAR RESISTANCE OF
HARDMETALS - METHODS
(First Revision of IS 12286)**

ICS No. 77.160

Powder Metallurgical Materials and
Products Sectional Committee, MTD 25

Last date of comment: 26 March 2024

NATIONAL FOREWORD

(Formal Clauses will be added later)

This standard was published in 1988 and The first revision of this standard has been undertaken to align with the latest version of ISO 28080 : 2021 under dual numbering system to harmonize it with the latest developments that have taken place at international level.

Former title of the Indian Standard IS 12286 : 1988 was “Method for Determination of Abrasive Wear Resistance of Hardmetals” which is change to “Hardmetals Abrasion tests for hardmetals” as per the title of ISO 28080 : 2021

This document provides new and improved methods for testing the abrasion characteristics of hardmetals using rotating-wheel systems. There are a number of abrasion test methods that have been developed that use this type of geometry, including the dry sand/rubber wheel test, the wet sand/rubber wheel test and the steel wheel test. All of these tests use a rotating wheel pressed against a test piece, with abrasive material introduced between the wheel and the test piece. Because of this fundamental commonality, much of the methodology is the same for the different tests. However, they do differ in the details of how the abrasive is fed to the interface between the wheel and the test piece, if the test can be carried out in the presence of fluids, and if the abrasive is only used once and passes through the test system, or is reused many times.

The text of ISO standard has been approved as suitable for publication as in Indian Standard without deviations. Certain terminologies and conventions are, however, not identical with those used in Indian Standard. Attention is especially drawn to the following:

- a) Wherever the words ‘International Standard’ appear referring to this standard, it should be read as ‘Indian Standard’

- b) Comma (,) has been used as a decimal marker while in Indian Standards the current practice is to use a point (.) as the decimal marker.

In this adopted standard, reference appears to certain International Standards for which Indian Standards also exists. The corresponding Indian Standards which are to be substituted in their place are listed below along with their degree of equivalence for the edition indicated:

<i>International Standard</i>	<i>Corresponding Standard</i>	<i>Indian Standard</i>	<i>Degree of Equivalence</i>
ISO 3369 : 2006 Impermeable sintered metal materials and hardmetals	IS 4841 : 2022 Impermeable sintered metal materials and hardmetals Determination of density		Identical under dual numbering

The technical committee has reviewed the provisions of the following International Standard, referred in this adopted standard and has decided that it is acceptable for use in conjunction with this standard:

<i>International Standard</i>	<i>Title</i>
ASTM B611 : 2021	Standard Test Method for Determining the High Stress Abrasion Resistance of Hard Materials
ASTM G65 : 2021	Standard Test Method for Measuring Abrasion Using the Dry Sand/Rubber Wheel Apparatus
ASTM G105 : 2020	Standard Test Method for Conducting Wet Sand/Rubber Wheel Abrasion Tests

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 (*second revision*)'. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

The Scope of the standard is as follows:

SCOPE

This document specifies a generic test method to determine the abrasion wear characteristics of hardmetals.

The test is appropriate for use in situations where test laboratories have a need to simulate abrasive damage. The procedure includes information which enables the test to be used in a variety of different conditions:

- a) with counterface wheels of different stiffness (for example steel and rubber);
- b) wet and dry;
- c) different abrasive sizes;
- d) different chemical environments.

The complete document/text of ISO 28080 : 2021 'Hardmetals — Abrasion tests for hardmetals' may be made available, on request to:
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