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**SANS 8833:1989**

Edition 1 and nat. amdt 1

**ISO 8833:1989**

Edition 1

Any reference to SABS ISO 8833 is deemed  
to be a reference to this standard  
(Government Notice No. 1373 of 8 November 2002)

## **SOUTH AFRICAN NATIONAL STANDARD**

# **Magnetite for use in coal preparation — Test methods**

This national standard is the identical implementation of ISO 8833:1989, and is adopted with the permission of the International Organization for Standardization.

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**Table of changes**

<b>Change No.</b>	<b>Date</b>	<b>Scope</b>
Nat. amdt 1	2007	Amended to change the designation from SABS to SANS, with no technical changes.

**National foreword**

This South African standard was approved by National Committee SABS/TC 027/SC 05, *Solid mineral fuels – Coal – Methods of analysis*, in accordance with procedures of the SABS Standards Division, in compliance with annex 3 of the WTO/TBT agreement.

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# INTERNATIONAL STANDARD

**ISO  
8833**

First edition  
1989-11-15

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## **Magnetite for use in coal preparation — Test methods**

*Magnétite à utiliser dans la préparation des charbons — Méthodes d'essai*



Reference number  
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## Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

Draft International Standards adopted by the technical committees are circulated to the member bodies for approval before their acceptance as International Standards by the ISO Council. They are approved in accordance with ISO procedures requiring at least 75 % approval by the member bodies voting.

International Standard ISO 8833 was prepared by Technical Committee ISO/TC 27, *Solid mineral fuels*.

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## Introduction

The basic requirements for a material to be used in dense medium suspension are that it should be inert, have a high relative density and be easy to recover. In coal preparation, the mineral magnetite ( $\text{FeO}$ ,  $\text{Fe}_2\text{O}_3$ ) has become the most commonly used material, not only because it fulfils all the above criteria, but also because of its worldwide occurrence either as an iron ore or as a by-product of mining operations for other minerals. Like any mineral, magnetite rarely occurs in the pure state and the presence of gangue minerals may lower the relative density and affect the ferromagnetic properties. In addition, like other minerals in the spinel group, there may be substitution of either or both the divalent and/or trivalent ions by ions of other metals (e.g.  $\text{Mg}^{2+}$ ,  $\text{Mn}^{2+}$ ,  $\text{Al}^{3+}$ ,  $\text{Cr}^{3+}$ ,  $\text{Mn}^{3+}$ ). These variations may seriously affect the efficiency of recovery operations and it is important when designing a coal preparation plant that the manufacturer of the magnetic separators be informed of the source of magnetite to be used and if possible be provided with a sample.

The purpose of this International Standard is to provide a basis for the testing of magnetite for use in coal preparation. It is intended for use by contracting parties in the sale and purchase of magnetite and for coal preparation engineers engaged in the design and quality control fields.

The tests specified in this International Standard will assist the user in the selection of magnetite for use in dense medium suspension and provide a basis for quality control testing. No attempt is made to formulate the requirements for particular plant applications.

The specified tests should ensure that the properties which make magnetite suitable for coal preparation purposes are simply and adequately tested.

These properties are

- a) moisture content;
- b) particle size distribution;
- c) total magnetics content;
- d) relative density;
- e) total iron content;
- f) iron(II) content;
- g) fundamental magnetic properties.

All the above tests may be required for the assessment of magnetite from a new source, but for routine checking of regular supplies, moisture, particle size distribution, total magnetics content and relative density should be sufficient.

Tests for fundamental magnetic properties are not described because the determination of suitable parameters requires very specialized apparatus and techniques and is probably best undertaken by a University or Research Institute whose staff are experienced in making such measurements. There is a lack of consensus as to which