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# Hard coal — Determination of abrasiveness

*Houille — Détermination de l'abrasivité*



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# Foreword

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This document was prepared by Technical Committee ISO/TC 27, *Solid mineral fuels*, Subcommittee SC 5, *Methods of analysis*.

This third edition cancels and replaces the second edition (ISO 12900:2015), of which it constitutes a minor revision to provide clarification on how to operate the abrasion test machine in Clause 7.



Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

# Introduction

The abrasiveness of coal is recognized as a factor in coal operations, from mining to utilization, requiring a standard method of measurement and evaluation, as some coals are more abrasive than others.

The interaction between coal and conveying, storage, and crushing equipment results in component wear. In particular, higher contact pressures in some coal pulverizers result in significant wear.

For the ranking or relative comparison of the abrasiveness of coals, a test was developed[1] which standardized the following equipment variables:

a) test equipment dimensions and tolerances;

b) speed of rotation of wearing components;

c) properties of the wearing components;

d) mass of the test portion;

e) top particle size of the test portion;

f) duration of the test.

The abrasiveness of coal is generally a function of two factors: the physical properties of the coal, in particular, moisture content, mineral content, and mineral characteristics[1][2][3][4][5][6]; the mechanics of the operations to which the coal is subjected.

NOTE Moisture contents over 10 % in the test sample after air-drying and laboratory equilibration might give anomalous results; the reason for this has not been established.

Wear on coal-pulverizing elements in industrial mills is influenced by the physical characteristics of the coal and its mineral constituents, the mechanical characteristics of the mill, including the milling pressures, alloy material properties and coal feed flow, and the operation of the mill. Abrasiveness as determined by this document has been demonstrated to provide initial empirical estimates of specific wear rates in certain types of industrial tube-ball mills, vertical spindle mills, and high-speed hammer mills[3][6], with different coefficients for each mill type.

Abrasiveness as determined by this document might be of value in providing an initial estimate of the likely wear in other applications, giving the relative effect of different coals.