
**Extenders — Specifications and
methods of test —**

**Part 5:
Natural crystalline calcium carbonate**

*Matières de charge — Specifications et méthodes d'essai —
Partie 5: Carbonate de calcium cristallin naturel*

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Foreword

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The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of ISO document should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

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This document was prepared by Technical Committee ISO/TC 256, *Pigments, dyestuffs and extenders*, in collaboration with the European Committee for Standardization (CEN) Technical Committee CEN/TC 298, *Pigments and extenders*, in accordance with the Agreement on technical cooperation between ISO and CEN (Vienna Agreement).

This second edition cancels and replaces the first edition (ISO 3262-5:1998), which has been technically revised.

The main changes are as follows:

- the title has been changed to “Extenders”;
- the test method for particle size distribution in [Table 2](#) has been changed to ISO 8130-13;
- the normative references have been updated.

A list of all parts in the ISO 3262 series can be found on the ISO website.

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.

Extenders — Specifications and methods of test —

Part 5: Natural crystalline calcium carbonate

1 Scope

This document specifies requirements and corresponding methods of test for natural crystalline calcium carbonate.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 787-2, *General methods of test for pigments and extenders — Part 2: Determination of matter volatile at 105 °C*

ISO 787-3, *General methods of test for pigments and extenders — Part 3: Determination of matter soluble in water — Hot extraction method*

ISO 787-7, *General methods of test for pigments and extenders — Part 7: Determination of residue on sieve — Water method — Manual procedure*

ISO 787-8, *General methods of test for pigments and extenders — Part 8: Determination of matter soluble in water — Cold extraction method*

ISO 787-9, *General methods of test for pigments and extenders — Part 9: Determination of pH value of an aqueous suspension*

ISO 787-14, *General methods of test for pigments and extenders — Part 14: Determination of resistivity of aqueous extract*

ISO 3262-1, *Extenders — Specifications and methods of test — Part 1: Introduction and general test methods*

ISO 3696, *Water for analytical laboratory use — Specification and test methods*

ISO 8130-13, *Coating powders — Part 13: Particle size analysis by laser diffraction*

ISO 15528, *Paints, varnishes and raw materials for paints and varnishes — Sampling*

ISO 18451-1, *Pigments, dyestuffs and extenders — Terminology — Part 1: General terms*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 18451-1 and the following apply.

ISO and IEC maintain terminology databases for use in standardization at the following addresses:

- ISO Online browsing platform: available at <https://www.iso.org/obp>
- IEC Electropedia: available at <https://www.electropedia.org/>

3.1

natural crystalline calcium carbonate

calcium carbonate derived from limestone and marble

Note 1 to entry: The trigonal rhombic crystals tend to be larger than those of chalk.

Note 2 to entry: Limestone is a consolidated sedimentary rock whereas marble is a metamorphic carbonate rock.

4 Requirements and test methods

For natural crystalline calcium carbonate complying with this document, the essential requirements are specified in [Table 1](#) and the conditional requirements are listed in [Table 2](#). The test methods listed in [Tables 1](#) and [2](#) shall apply.

Table 1 — Essential requirements

Characteristic	Unit	Requirement				Test method
		Grade A	Grade B	Grade C	Grade D	
CaCO ₃ content, min.	% mass fraction	99	98	95	90	ISO 3262-1
Matter volatile at 105 °C, max.	% mass fraction	0,4				ISO 787-2
Loss on ignition, max.	% mass fraction	4,6 ^a				ISO 3262-1
Matter soluble in water, max.	% mass fraction	0,5				ISO 787-3 or ISO 787-8 ^b
pH value of aqueous suspension		8 to 10 ^a				ISO 787-9
Matter insoluble in hydrochloric acid, max.	% mass fraction	1	2		8	See Clause 6
^a These values do not take account of the effect on the result of any surface treatment.						
^b Method to be agreed between the interested parties.						

Table 2 — Conditional requirements

Characteristic	Unit	Requirement	Test method
Residue on 45 µm	% mass fraction	To be agreed between the interested parties	ISO 787-7
Particle size distribution (instrumental method)	% mass fraction	To be agreed between the interested parties	ISO 8130-13
Colour		To be agreed between the interested parties	ISO 3262-1
Lightness			To be agreed between the interested parties
Resistivity of aqueous extract	Ω·m		ISO 787-14

5 Sampling

Take a representative sample of the product to be tested, in accordance with ISO 15528.

6 Determination of matter insoluble in hydrochloric acid

6.1 Reagents

During the analysis, use only reagents of recognized analytical grade and only water of at least grade 3 purity as specified in ISO 3696.

6.1.1 Hydrochloric acid, CAS Registry Number^{®1)} 7647-01-0, approximately 25 % mass fraction, $\rho \approx 1,125$ g/ml.

6.2 Apparatus

Use ordinary laboratory apparatus and glassware, together with the following.

6.2.1 Membrane filter, pore size 0,8 μm .

6.2.2 Air oven, capable of being maintained at (105 ± 2) °C.

6.2.3 Balance, with an accuracy of 0,000 1 g.

6.2.4 Desiccator, containing a suitable desiccant, for example dried silica gel.

6.3 Procedure

Weigh, to the nearest 0,1 mg, approximately 10 g (m_0) of the test sample into a 600 ml beaker. Add 50 ml of water and, carefully, approximately 50 ml of hydrochloric acid (6.1.1). Cover the beaker with a watch glass and boil the solution for 15 min.

Dry the membrane filter (6.2.1) in the air oven (6.2.2) at (105 ± 2) °C to a constant mass, cool in a desiccator (6.2.4) to room temperature and weigh it to the nearest 0,1 mg (m_1). Then filter the solution through it. Wash the residue on the filter eight times with hot distilled water. Dry the residue on the filter in the air oven at (105 ± 2) °C for about 1 h. Allow to cool in a desiccator to room temperature and weigh to the nearest 0,1 mg (m_2).

6.4 Expression of results

Calculate the matter insoluble in hydrochloric acid, expressed as a percentage by mass, using [Formula \(1\)](#):

$$\frac{m_2 - m_1}{m_0} \times 100 \quad (1)$$

where

m_0 is the mass, in grams, of the test portion;

m_1 is the mass, in grams, of the dried membrane filter;

m_2 is the mass, in grams, of the dried membrane filter plus the residue.

7 Test report

The test report shall contain at least the following information:

- all details necessary to identify the product tested;
- a reference to this document, i.e. ISO 3262-5:2023;
- the results of the test, the method used, and whether or not the product complies with the relevant specification limits;

1) Chemical Abstracts Service (CAS) Registry Number[®] is a trademark of the American Chemical Society (ACS). This information is given for the convenience of users of this document and does not constitute an endorsement by ISO of the product named. Equivalent products may be used if they can be shown to lead to the same results.

- d) any deviation from the method of test specified;
- e) any unusual features (anomalies) observed during the test;
- f) the date of the test.

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