INTERNATIONAL STANDARD

ISO 3262-13

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Extenders for paints — Specifications and methods of test —

Part 13:
Natural quartz (ground)

Matières de charge pour peintures — Spécifications et méthodes d'essai —

Partie 13: Quartz naturel broyé

Reference number
ISO 3262-13:1997(E)

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 voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

International Standard ISO 3262-13 was prepared by Technical Committee ISO/TC 35, *Paints and varnishes*, Subcommittee SC 2, *Pigments and extenders*.

Together with the subsequent parts, this International Standard cancels and replaces ISO 3262: 1975 which has been technically revised and divided into parts. Part 1 comprises the definition for the term extender and a number of test methods that are applicable to most extenders, whilst parts 2 and the following specify requirements and, where appropriate, particular test methods for individual extenders.

At present, the following parts of ISO 3262 are in preparation, under the general title

Extenders for paints - Specifications and methods of test

- Part 1: Introduction and general test methods

- Part 2: Baryte (natural barium sulfate)

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- *Part 3: Blanc fixe*
- *Part 4: Whiting*
- *Part 5: Natural crystalline calcium carbonate*
- *Part 6: Precipitated calcium carbonate*
- *Part 7: Dolomite*
- *Part 8: Natural clay*
- *Part 9: Calcined clay*
- *Part 10: Natural talc/chlorite in lamellar form*
- *Part 11: Natural talc, in lamellar form, containing carbonates*
- *Part 12: Muscovite-type mica*
- *Part 13: Natural quartz (ground)*
- *Part 14: Cristobalite*
- *Part 15: Vitreous silica*
- *Part 16: Aluminium hydroxides*
- *Part 17: Precipitated calcium silicate*
- *Part 18: Precipitated sodium aluminium silicate*
- *Part 19: Precipitated silica*
- *Part 20: Fumed silica*
- *Part 21: Silica sand (unground natural quartz)*
- *Part 22: Diatomaceous earth (kieselguhr)*

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Extenders for paints — Specifications and methods of test —

Part 13:
Natural quartz (ground)

1 Scope

This part of ISO 3262 specifies the requirements and the corresponding methods of test for natural quartz (ground).

2 Normative references

The following standards contain provisions which, through reference in this text, constitute provisions of this part of ISO 3262. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this part of ISO 3262 are encouraged to investigate the possibility of applying the most recent editions of the standards indicated below. Members of IEC and ISO maintain registers of currently valid International Standards.

ISO 787-2: 1981, *General methods of test for pigments and extenders - Part 2: Determination of matter volatile at 105 °C.*

ISO 787-3: 1979, *General methods of test for pigments and extenders - Part 3: Determination of matter soluble in water - Hot extraction method.*

ISO 787-5: 1980, *General methods of test for pigments and extenders - Part 5: Determination of oil absorption value*

ISO 787-9: 1981, *General methods of test for pigments and extenders - Part 9: Determination of pH value of an aqueous suspension.*

ISO 787-14: 1973, *General methods of test for pigments - Part 14: Determination of resistivity of aqueous extract.*

ISO 787-18: 1983, *General methods of test for pigments and extenders - Part 18: Determination of residue on sieve - Mechanical flushing procedure.*

ISO 3262-1: 1997 , *Extenders for paints - Part 1: Introduction and general test methods.*

3 Definition

For the purposes of this part of ISO 3262, the following definition applies:

3.1 natural quartz: Material, consisting of the low-temperature modification of quartz with a theoretical density of 2,65 g/cm^3, ground to a powder.

4 Requirements and test methods

For ground natural quartz complying with this part of ISO 3262, the essential requirements are specified in table 1 and the conditional requirements are listed in table 2.

Table 1 - Essential requirements

Characteristic	Unit	Requirement Grade		Test method
		A	B	
Quartz content	% (*m*/m) min.	97	80	X-ray diffraction
Silica content, SiO_2	% (*m*/*m*) min.	97	80	X-ray fluorescence or clause 6
Residue on sieve 63 µm 45 µm	% (*m*/*m*)	To be agreed between the interested parties	max. 0,1 1	ISO 787-18
Matter volatile at 105 °C	% (*m*/*m*) max.	0,3		ISO 787-2[1])
Loss on ignition	% (*m*/m) max.	0,5[2])		ISO 3262-1
Matter soluble in water (hot extraction)	% (*m*/*m*) max.	0,2		ISO 787-3
pH value of aqueous suspension		5,5 to 9[2])		ISO 787-9

[1]) By agreement between the interested parties, test portions other than 10 g may be used.
[2]) These values exclude a possible surface treatment.

Table 2 - Conditional requirements

Characteristic	Unit	Requirement	Test method
Particle size distribution (instrumental method)	% (*m*/*m*)	To be agreed between the interested parties	To be agreed between the interested parties[1])
Oil absorption	g/100 g		ISO 787-5
Colour			ISO 3262-1
Lightness			To be agreed between the interested parties[2])
Resistivity of aqueous extract	Ω · m		ISO 787-14

[1]) A general description of the sedimentation method, with the detection of X-ray absorption, is given in EN 725-5, *Advanced technical ceramics - Methods of test for ceramic powders - Part 5: Determination of particle size distribution.*

[2]) Test method in preparation.

5 Sampling

Take a representative sample of the product to be tested, as described in ISO 842.

6 Determination of silica content

6.1 Reagents

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

6.1.1 Sulfuric acid, diluted 1 + 1.

Add 1 part of sulfuric acid, 96 % (*m*/*m*), $\rho \approx 1{,}84$ g/ml, slowly to 1 part of water.

6.1.2 Hydrofluoric acid, 40 % (*m*/*m*), $\rho \approx 1{,}13$ g/ml.

6.2 Apparatus

Ordinary laboratory apparatus and glassware, together with the following.

6.2.1 Platinum dish.

6.2.2 Muffle furnace.

6.3 Procedure

Weigh, to the nearest 1 mg, approximately 2 g of the test sample (clause 5), previously dried at 105 °C in accordance with ISO 787-2, into the tared platinum dish (6.2.1), ignite in the muffle furnace (6.2.2) at 1000 °C ± 25 °C to constant mass (m_1) and allow to cool in a desiccator containing phosphorus pentoxide.

Add approximately 1 ml of the sulfuric acid (6.1.1). Heat the platinum dish gently until fuming ceases and then continue the heating at 900 °C for 15 min in the muffle furnace. Remove from the furnace, allow to cool in the desiccator and weigh (m_2).

Add to the residue in the platinum dish 15 ml of the hydrofluoric acid (6.1.2) and 1 ml of the sulfuric acid (6.1.1) and evaporate to a syrup, taking care to avoid loss by spitting. Cool the dish and wash the sides down with small quantities of water. Then add a further 10 ml of hydrofluoric acid and evaporate to dryness. Heat the residue on a hot-plate until white fumes are no longer evolved, then ignite in the muffle furnace at 900 °C for 15 min. Remove the dish from the furnace, cool in the desiccator and weigh (m_3).

6.4 Expression of results

Calculate the silica content $w(SiO_2)$, expressed as a percentage by mass, using the equation:

$$w(SiO_2) \frac{m_2 - m_3}{m_1} \times 100$$

where

m_1 is the mass, in grams, of the ignited residue;

m_2 is the mass, in grams, after treatment with sulfuric acid and igniting;

m_3 is the mass, in grams, after treatment with hydrofluoric acid and igniting.

7 Test report

The test report shall contain at least the following information:

a) all details necessary to identify the product tested;

b) a reference to this part of ISO 3262 (ISO 3262-13);

c) the results of the tests and whether or not the product complies with the relevant specification limits;

d) any deviation from the test methods specified;

e) the date of the test.