



**International  
Standard**

**ISO 20427**

**Pigments and extenders —  
Dispersion procedure for  
sedimentation-based particle sizing  
of suspended pigment or extender  
with liquid sedimentation methods**

*Pigments et matières de charge — Mode opératoire de  
dispersion pour la détermination granulométrique basée sur la  
sédimentation des pigments ou matières de charge en suspension  
par des méthodes de sédimentation dans un liquide*

**Second edition  
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# Contents

	Page
<b>Foreword</b> .....	<b>iv</b>
<b>1 Scope</b> .....	<b>1</b>
<b>2 Normative references</b> .....	<b>1</b>
<b>3 Terms and definitions</b> .....	<b>2</b>
<b>4 Principles of dispersion</b> .....	<b>3</b>
4.1 Principles of ultrasonic dispersion.....	3
4.2 Principles of wet jet mill dispersion.....	3
4.3 Principles of shaker-based dispersion.....	3
<b>5 Principles of sedimentation-based techniques for particle size analysis</b> .....	<b>4</b>
5.1 Stokesian sedimentation analysis.....	4
5.2 Disc-type centrifuges.....	4
5.3 Cuvette-type centrifuges.....	4
5.4 Gravitation-based sedimentation methods.....	4
5.5 Centrifugal field-flow fractionation method.....	5
<b>6 Apparatus</b> .....	<b>5</b>
<b>7 Settings for dispersion</b> .....	<b>9</b>
7.1 Procedure of ultrasonic dispersion using a probe-type sonicator.....	9
7.2 Procedure of ultrasonic dispersion using a bath-type sonicator.....	9
7.3 Procedure of shaker-based dispersion.....	10
<b>8 Dispersion procedure</b> .....	<b>10</b>
8.1 General.....	10
8.2 Sampling for dispersion.....	10
8.3 Reagents.....	10
8.4 Recommendations for sample preparation.....	11
<b>9 Sampling</b> .....	<b>11</b>
<b>10 Measurement and expression of results</b> .....	<b>11</b>
<b>11 Test report</b> .....	<b>11</b>
<b>Annex A (normative) Protocol for the determination of energy input</b> .....	<b>13</b>
<b>Annex B (informative) Limits for ultrasonic dispersion procedure</b> .....	<b>16</b>
<b>Annex C (informative) Procedures for dispersion of TiO<sub>2</sub> pigments</b> .....	<b>17</b>
<b>Annex D (informative) Procedure for dispersion of CaCO<sub>3</sub> with wet jet milling</b> .....	<b>18</b>
<b>Annex E (informative) Procedure for the dispersion of Fe<sub>2</sub>O<sub>3</sub> with an ultrasonic probe</b> .....	<b>19</b>
<b>Annex F (informative) General procedure for dispersion of pigment or extender</b> .....	<b>20</b>
<b>Bibliography</b> .....	<b>23</b>

## 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.

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](http://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 20427:2023), which has been technically revised.

The main changes are as follows:

- in [5.5](#), a note has been added with additional information on the effective particle density;
- in [6.9](#) the original Tables 1 and Table 2 have been combined in one single table;
- in [6.9, Table 1](#), row 7, columns 6 to 8, a table footnote has been added explaining the density dependency of these values;
- in [6.9, Table 1](#), row 10, column 7, “class cylinder beaker” has been changed to “sedimentation bath”;
- in [Clause 10](#), a note has been added with a mathematical definition of precision;
- in the second list item of [C.1](#) and [Annex E](#), the distance between the beaker bottom and the ultrasonic probe has been changed from 5 mm to 10 mm;
- in [F.2](#) and [F.3](#), notes have been added to explain why a temperature of 40 °C is important, and to explain the influence of the cooling bath on the sonication power;
- the normative references have been updated.

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](http://www.iso.org/members.html).

# Pigments and extenders — Dispersion procedure for sedimentation-based particle sizing of suspended pigment or extender with liquid sedimentation methods

## 1 Scope

This document specifies sample preparation methods to determine the size distribution of separate particles of a single pigment or extender, which is dispersed in a liquid by application of a standardized dispersion procedure, using an ultrasonic device, shaker device or wet jet mill.

The sample preparation methods described are optimized for measurements carried out with a particle sizing technique based on sedimentation. This technique relies on particle migration due to gravitation or centrifugal forces and requires a density contrast between the particles and the liquid phase.

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

ISO 9276-1, *Representation of results of particle size analysis — Part 1: Graphical representation*

ISO 13317-1, *Determination of particle size distribution by gravitational liquid sedimentation methods — Part 1: General principles, requirements and guidance*

ISO 13317-2, *Determination of particle size distribution by gravitational liquid sedimentation methods — Part 2: Fixed pipette method*

ISO 13317-3, *Determination of particle size distribution by gravitational liquid sedimentation methods — Part 3: X-ray gravitational technique*

ISO 13317-4, *Determination of particle size distribution by gravitational liquid sedimentation methods — Part 4: Balance method*

ISO 13317-5, *Determination of particle size distribution by gravitational liquid sedimentation methods — Part 5: Photosedimentation techniques*

ISO 13318-1, *Determination of particle size distribution by centrifugal liquid sedimentation methods — Part 1: General principles, requirements and guidance*

ISO 13318-2, *Determination of particle size distribution by centrifugal liquid sedimentation methods — Part 2: Photocentrifuge method*

ISO 13318-3, *Determination of particle size distribution by centrifugal liquid sedimentation methods — Part 3: Centrifugal X-ray method*

ISO 18451 (all parts), *Pigments, dyestuffs and extenders — Terminology*

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

ASTM D5965, *Standard Test Methods for Density of Coating Powders*