



**International
Standard**

ISO 6893

**Jewellery and precious metals —
Inspection of batches of small
diamonds — Terminology,
classification and test methods**

*Joaillerie, bijouterie et métaux précieux — Contrôle des lots
de petits diamants — Terminologie, classification et méthodes
d'examen*

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ISO copyright office
CP 401 • Ch. de Blandonnet 8
CH-1214 Vernier, Geneva
Phone: +41 22 749 01 11
Email: copyright@iso.org
Website: www.iso.org

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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.

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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For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT), see www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 174, *Jewellery and precious metals*.

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.

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Introduction

ISO 24016 describes the terminology, the classification and test methods that apply for the grading of polished diamonds over 0,25 ct (carat). This category is commonly named “large diamonds” as opposed to the category of “small diamonds”.

From an economic perspective, on the jewellery and watchmaking industries, the low price of each single small diamond – compared to that of a large diamond - is widely compensated by the enormous quantity of small diamonds used.

As for a large diamond, the quality of a small diamond is mainly defined by its carat mass, its colour, its clarity and its cut. But, specifically the inspection of small diamonds faces one main challenge. They are sold by batches, sometimes as large as 10 000 units. When these batches are homogeneous, an inspection per sampling is possible.

This document is proposed to companies involved in the small diamond trade and willing, in the frame of their commercial relationship, to agree on both a defined quality and its inspection methodology.

It is agreed by both parties that the batches that are supplied for inspection by sampling are on a level of the supply chain that provides the necessary homogeneity. Small diamonds are already controlled in different countries and today there is a need for harmonizing the technical principles of inspection of small diamonds. This harmonization will benefit the jewellery and watchmaking industries in large, because their reputations are inextricably linked to a stringent compliance with their product quality specifications.

This document aims to clarify and ease the relationship between diamantaires and companies decorating their products with small diamonds, which consequently strengthens the end consumer confidence in the jewellery, watchmaking and all other luxury industries.

This document completes ISO 18323 and ISO 24016.

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Jewellery and precious metals — Inspection of batches of small diamonds — Terminology, classification and test methods

1 Scope

This document specifies the terminology, classification and test methods that are used for the inspection of batches of unmounted polished colourless diamonds with single mass smaller than or equal to 0,25 ct (carat).

While the inspection of a batch is made one diamond at a time, the use of this document is not to be claimed for one single diamond only nor for fancy coloured diamonds, nor for synthetic diamonds, nor for treated diamonds, neither for assembled stones.

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 2859-1:1999, *Sampling procedures for inspection by attributes — Part 1: Sampling schemes indexed by acceptance quality limit (AQL) for lot-by-lot inspection*

ISO 18323, *Jewellery — Consumer confidence in the diamond industry*

ISO 24016, *Jewellery and precious metals — Grading polished diamonds — Terminology, classification and test methods*

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3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 18323, ISO 24016 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 diamond

mineral consisting essentially of carbon crystallised in the isometric (cubic) crystal system, with a hardness on the Mohs' scale of 10, a specific gravity of approximately 3,52 and a refractive index of approximately 2,42, created by nature

Note 1 to entry: The denomination "diamond" without further specification always implies "natural diamond". These two terms are equivalent and carry the same meaning.

[SOURCE: ISO 24016:2020, 3.1.1]

3.2 small diamonds

diamonds (3.1) of individual mass smaller than or equal to 0,25 ct

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3.3

batch

series of *small diamonds* (3.2) conforming to the *batch specification* (3.4)

3.4

batch specification

written or verbal description of a *batch* (3.3) of *small diamonds* (3.2) comprising authenticity, *cut* (3.6), *batch size* (3.5), and/or dimension, and/or colour grade, and/or clarity grade, and/or *cut grade* (3.12) and/or *proportion grade* (3.11) and/or *symmetry grade* (3.9), and/or *polish grade* (3.8)

3.5

batch size

quantity of *small diamonds* (3.2) in a *batch* (3.3)

3.6

cut

shape, proportions, polish and symmetry of a *diamond* (3.1)

Note 1 to entry: The term finish encompasses polish and symmetry.

[SOURCE: ISO 24016:2020, 3.5]

3.7

cutting style

facets arrangement of a polished *diamond* (3.1)

EXAMPLE brilliant, step cut

3.8

polish grade

grade taking into consideration the surface condition of a *diamond* (3.1)

3.9

symmetry grade

grade taking into consideration the exactness of the shape of a *diamond* (3.1), the arrangement of its facets and in some circumstances its girdle regularity

3.10 <https://standards.iteh.ai/catalog/standards/iso/cb6ecf4c-648c-4dc2-9841-5ee8cb949a56/iso-prf-6893>

finish grade

grade combining the *symmetry grade* (3.9) and the *polish grade* (3.8)

3.11

proportion grade

grade combining table size, crown height and/or crown angle, pavilion depth and/or pavilion angle, star length, pavilion half facet length, girdle thickness, total depth and in some circumstances culet size

3.12

cut grade

grade combining the *proportion grade* (3.11) and the *finish grade* (3.10)

3.13

inspection

examination of the specifications of *small diamonds* (3.2) and determination of its conformity with detailed requirements or, on the basis of professional judgement, with general requirements

Note 1 to entry: Examination can include direct or indirect observations, which can include measurements or the output of instruments.

[SOURCE: ISO 17000:2020, 6.3, modified — The original text “an object of conformity assessment” has been replaced by “the specifications of small diamonds”, Note 2 and Note 3 to entry have been removed]

3.14 sieving

process of separating round *small diamonds* (3.2) according to their diameter, by means of one or more sieves

[SOURCE: ISO 2395:1990, 3.3.1, modified — the original text “a mixture of particules” is replaced by “round small diamonds” and the original word “size” is replaced by “diameter”, note 1 has been removed.]

4 General

4.1 Batch specifications and characteristics

Single diamonds shall be tested only as part of a batch.

For keeping a consistent quality management on a long-term basis, after its clear definition, the same specification for the same characteristics should be maintained as long as possible.

At least the following characteristics shall specify a batch of small diamonds:

- the total carat mass;
- dimension class/sieve number;
- colour grade;
- clarity grade;
- cutting style;
- shape.

The following characteristics may be specified:

- batch size;
- finish grade;
- proportion grade;
- cut grade;
- crown height;
- girdle thickness;
- nature of the girdle;
- degree of fluorescence;
- tightened dimensions tolerance for roundness, for maximum total depth or any other customized dimensions tolerance.

4.2 Inspection

To ensure impartiality during inspection, the inspection plan that will apply to the inspected batch shall not be communicated to the inspector.

For the inspection of a batch by sampling, the inspector shall know the sample size to apply.

NOTE [Figure B.1](#) shows a flow, chart which describes the preparation of a batch for sampling.

Batch size:	200
Code letter:	G (General inspection level II)
Sample size:	32

When multiple criteria (e.g. colour and clarity) are inspected, one diamond that would be defective for several criteria is only counted once as a defective diamond only if the inspector considers that the defective criteria are linked together (e.g. a very bad clarity grade affects the colour). This case is also considered in ISO 2859-1:1999, 4.1.

EXAMPLE 1 Assuming that a batch contains one diamond with a colour grade J and a clarity grade P2, the inspector can count the defective diamond only once because he considers that presence of numerous large inclusions is linked to the J colour grade.

EXAMPLE 2 Assuming that a batch contains one diamond with a colour grade J and a clarity VVS, the inspector can count the defective diamond twice because he can consider that the clarity grade is not linked to the colour grade.

5 Authentication

The nomenclature used for describing the authenticity of a diamond batch shall conform to the rules specified in ISO 18323.

Prior to any inspection, the authentication of all diamonds in a batch shall be ensured by appropriate diamond verification means.

The method and devices that were used for authenticating a diamond batch shall always be available.

Non-destructive methods for authenticating small diamonds may include and are not limited to infrared absorption spectroscopy, photoluminescence spectroscopy, luminescence imaging.

6 Sieving

6.1 General

Sieving is commonly used in the small diamond industry to group round polished small diamonds of similar diameters. A sieve is composed of a series of sieve plates and sieve bowls, generally metallic. Each plate is drilled with multiple holes of same diameters. The sieve number is usually inscribed on the sieve plate and indicates the corresponding diameter of the sieve holes. For example, a sieve plate numbered -0000 will keep stones of a diameter of 0,80 mm and larger (see [Table 1](#)).

6.2 Estimating the total mass of a small diamond batch by sieving and counting

The mass of a batch can be estimated by sieving and counting (see [Table A.1](#)), but its exact mass shall be determined by weighing on a scale.

6.3 Estimating a batch size by sieving and weighing

The batch size can be estimated by sieving and weighing (see [Table A.1](#)), but its exact size shall be counted.

6.4 Sieving small diamonds

6.4.1 Method

Small diamonds of different sizes shall be poured onto a sieve plate in a sieve bowl. A wooden or plastic stick shall be used for knocking the bowl surface so that small diamonds jiggle onto the sieve plate, so that any diamond passing through the drilled hole of the sieve will be smaller than the diameter corresponding to the sieve number (see [Table 1](#)) and any diamond remaining on the sieve plate will be equal or larger than the diameter corresponding to the sieve number (see [Table 1](#)).