
International Standard



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Phlogopite mica blocks, thins and splittings — Grading by size

Mica phlogopite en blocs, en feuilles minces et en clivures — Classification dimensionnelle par grades

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Descriptors : mica, phlogopite, size classification, blocks, films.

Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards institutes (ISO member bodies). The work of developing International Standards is carried out through ISO technical committees. Every member body interested in a subject for which a technical committee has been set up 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.

Draft International Standards adopted by the technical committees are circulated to the member bodies for approval before their acceptance as International Standards by the ISO Council.

International Standard ISO 444 was developed by Technical Committee ISO/TC 56, *Mica*.

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This first edition was submitted directly to the ISO Council as part of the process of transforming ISO Recommendations into International Standards, in accordance with clause 5.10.1 of part 1 of the Directives for the technical work of ISO. It cancels and replaces ISO Recommendation R 444-1965, which had been approved by the member bodies of the following countries:

Argentina	France	Portugal
Australia	India	United Kingdom
Brazil	Japan	USSR
Chile	Korea, Rep. of	
Czechoslovakia	Netherlands	

No member body had expressed disapproval of the document.

Phlogopite mica blocks, thins and splittings — Grading by size

0 Introduction

Phlogopite mica constitutes one of the two principal types of mica, the other being muscovite mica the grading of which is dealt with by ISO 67.

1 Scope and field of application

This International Standard specifies a standard method for grading phlogopite mica blocks, thins and splittings, according to size. It also specifies trimming requirements and defines relevant terms used in the trade.

2 Reference

ISO 67, *Muscovite mica blocks, thins and splittings — Grading by size*.

3 Definitions

For the purposes of this International Standard, the following definitions apply.

3.1 crude mica: Crude crystals or books, as extracted from the mine.

3.2 cobbing: The process of removing dirt and rock from crude mica.

3.3 rifting: The process of splitting cobbled mica into sheets of suitable thicknesses.

3.4 trimming; dressing: The process of removing major flaws from rifted mica. Trimming may be accomplished with sickle or knife. Mica is then named after the implement used, sickle-trimmed mica or knife-trimmed mica.

3.5 sickle-trimmed mica: Crude mica cobbled, rifted and trimmed with a sickle to eliminate major flaws, and left with irregular outline and bevelled edge.

3.6 knife-trimmed mica: Sickle-trimmed mica, further refined with a knife to eliminate interior defects and also such defects as may have been overlooked by the sickle-cutter.

3.7 commercial forms of mica: Mica known as blocks, thins and splittings.

3.8 blocks: Knife-trimmed mica of a specified minimum thickness, which may be, with a maximum tolerance of 5 % (*m/m*),

either 0,20 mm with a tolerance limit at 0,18 mm,

or 0,18 mm with a tolerance limit at 0,15 mm,

as agreed between the buyer and the seller.

3.9 thins: Knife-trimmed mica in any specified thickness between 0,05 mm and 0,18 mm.

3.10 splitting¹⁾: Laminae split from blocks or thins the thickness of ten of which taken together does not exceed 0,28 mm. Splittings may be presented in two forms:

a) **book-form splittings:** Splittings arranged and supplied in the form of individual books, each book comprising splittings obtained from the same piece of block mica or thins. Book-form splittings are generally dusted with fine mica powder. The minimum number of splittings in a book shall not be less than 8, and all such books shall contain only sound splittings. A maximum tolerance of 10 % of books, by mass, containing not less than 6 splittings, should be permitted.

b) **loose-pack splittings:** Splittings of heterogeneous shape, not arranged in any regular order but packed loosely in bulk form. Loose-pack splittings may or may not be dusted.

3.11 "V" cuts; figure cuts: Edge cuts converging towards the central area of the mica piece.

1) The question of specifying both maximum and minimum limits for the thickness of ten splittings as well as for the thickness of a single splitting is under consideration by Technical Committee ISO/TC 56, *Mica*. These limits will be the same for phlogopite and muscovite mica and, when a final decision is taken, the limits will be incorporated in this International Standard.

4 Grading method

4.1 Principle

The standard grading method for phlogopite mica (blocks, thins and splittings) is based on the maximum usable rectangle that may be cut from the specimen, and not on its total area.

4.2 Grade designations

The grade designations and the corresponding areas of the usable rectangles, with minimum dimensions of the shorter side, are given in the table and shown in the figure.

4.3 Sequence of operations

All samples to be graded shall be trimmed prior to grading. The trimmed samples shall be graded according to the procedure laid down in clause 6.

5 Trimming

5.1 Full-trimmed mica

5.1.1 Usable rectangle

The total area of each piece of full-trimmed mica for sizes 40 (grade 4) and above shall not exceed 1.54 times the area of the largest usable rectangle or, in other words, the total area shall have a rectangular yield of at least 65 %, with the tolerance that no more than 5 % of blocks, by mass, may have a yield less than 65 %. For full-trimmed mica up to size 20 (grade 5), the total area of each piece shall not exceed twice the area of the largest usable rectangle or, in other words, the total area shall have a rectangular yield of at least 50 %, with the tolerance that no more than 5 % of blocks, by mass, may have a yield of less than 50 %.

5.2 Partially-trimmed mica

5.2.1 Usable rectangle

The usable rectangle is the total area within the rectangle of acceptable size and quality, which shall be not less than 40 % of the total area based on the total inspection sample; that is, its cutting shall not involve a mass loss exceeding 60 % of the mass of the total inspection sample.

5.3 "V" cuts

No "V" cut shall remain in any piece of full-trimmed phlogopite block, thins or book-form splittings.

6 Grading procedure and measurement of thickness

6.1 Grading chart

The range of the areas and the minimum dimensions of the shorter side of the usable rectangle for the various grades, given in the table, applies for the grading of all phlogopite mica blocks, thins and splittings. A grading chart, based on this table and shown in the figure, or templates prepared in accordance with it, are used for grading in accordance with the procedure specified in 6.2.

6.2 Grading procedure

6.2.1 The sample to be graded is laid upon the chart or the corresponding template so that it covers point O and has its maximum and minimum dimensions extending along and covering lines OA and OB respectively. It is shifted until the usable area completely covers the largest rectangle, determined by a diagonal extending from O to a point lying in one of the regions designated as follows:

05 (No. 7)
06 (No. 6)
16 (No. 5 1/2)
20 (No. 5)
40 (No. 4)
⋮
500 (OEE special)
630 (OOEE special)

The number of the region in which the diagonal of the rectangle terminates, designates the size (grade or number) of the sample.

6.2.2 In the case of blocks, all dimensions apply to the smaller surface measured from the foot of the bevel-trimmed edge.

6.2.3 In no case shall a crack extend into the usable area.

6.3 Measurement of thickness

Thickness shall be measured with a bezel-type dial gauge exercising a maximum pressure of 20 Pa. The measurement shall be taken at not less than four different points on the sample and not nearer than 2 mm from the edge. The average of these measurements shall be taken as the thickness.

7 Tolerance

In any one batch or shipment, a tolerance of 5 % by mass of the next lower grade is permitted. This tolerance is extended to 10 % in the case of loose-pack splittings.

Table — Standard grading for phlogopite mica blocks, thins and splittings¹⁾

Grade designation		Forms	Area of usable rectangle		Minimum dimension of shorter side of usable rectangle	Thickness of 10 splittings
new (Size)	old (Grade or number)		cm ²			
			from (incl.)	to (excl.)	cm	mm
630	OEEE special	Block and thin	645	and above	10,2	
500	OEE special	Block and thin	516	645	10,2	
400	EE special	Block and thin	387	516	10,2	
315	E special	Block and thin	310	387	10,2	
250	special	Block and thin	232	310	8,9	
160	1	Block and thin	155	232	7,6	
100	2	Block and thin	97	155	5,1	
63	3	Block and thin	64	97	5,1	
40	4	Block and thin	39	64	3,8	
		Book form	39	64	3,8	0,15 to 0,25
		Loose with powder	39	64	3,8	0,15 to 0,25
20	5	Block and thin	19,4	39	2,5	
		Book form	19,4	39	2,5	0,15 to 0,25
		Loose with powder	19,4	39	2,5	0,15 to 0,25
		Loose packed	19,4	39	2,5	0,15 to 0,25
16	5 1/2	Block and thin	14,5	19,4	2,0	
		Book form	14,5	19,4	2,0	0,18 to 0,25
		Loose packed	14,5	19,4	2,0	0,18 to 0,25
06	6	Block and thin	6,4	14,5	1,9	
		Loose packed	6,4	14,5	1,9	0,18 to 0,28
05	7	Block and thin	4,8	6,4	1,5	
		Loose packed	4,8	6,4	1,5	0,18 to 0,28

1) The secretariat of Technical Committee ISO/TC 56, *Mica*, is preparing a report for rationalizing the grading table on the basis of the metric system, which will apply to both muscovite and phlogopite mica. Any decision taken on this report will be incorporated in this International Standard.

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NOTES

- 1 Book-form splittings should be sound, clean, free from mineral spots, evenly split to specified thickness without thick edges and clean cut. Undusted loose-packed splittings may have edges slightly uneven.
- 2 Each grade of mica in a consignment should contain a natural distribution of sizes from the minimum to the maximum area specified for the grade.
- 3 During packing, care should be taken to avoid inclusion of foreign matter among splittings.

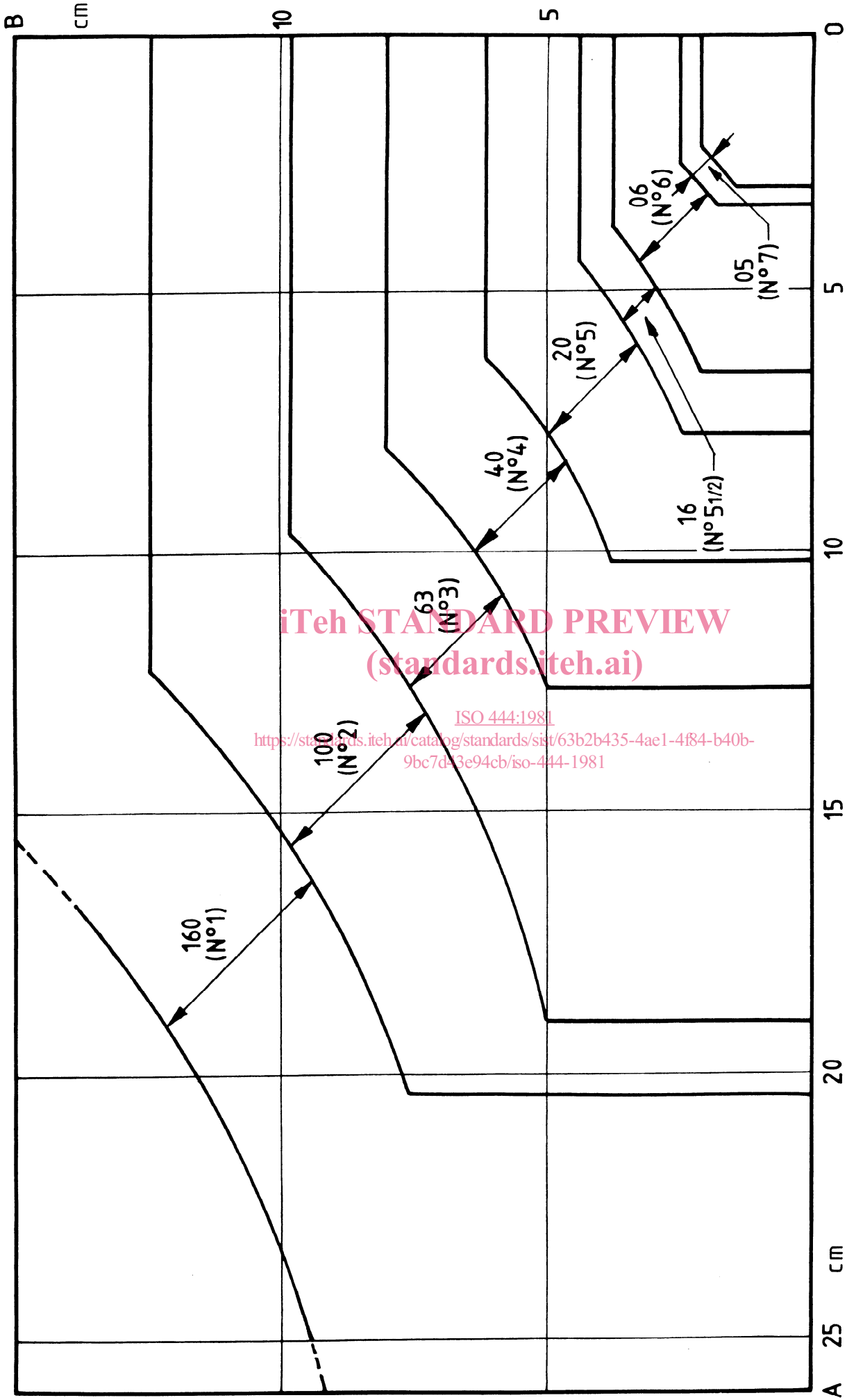


Figure — Grading chart for phlogopite mica blocks, thins and splittings

[For sizes larger than 100 (No. 2), the chart may be extended in a similar manner on the basis of the table.]

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