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PHLOGOPITE MICA
BLOCKS, THINS AND SPLITTINGS
METHOD FOR GRADING BY SIZE

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BRIEF HISTORY

The ISO Recommendation R 444, *Phlogopite Mica Blocks, Thins and Splittings. Method for Grading by Size*, was drawn up by Technical Committee ISO/TC 56, *Mica*, the Secretariat of which is held by the Indian Standards Institution (ISI).

Work on this question by the Technical Committee began in 1950 and led, in 1961, to the adoption of a Draft ISO Recommendation.

In August 1963, this Draft ISO Recommendation (No. 598) was circulated to all the ISO Member Bodies for enquiry. It was approved by the following Member Bodies:

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

No Member Body opposed the approval of the Draft.

The Draft ISO Recommendation was then submitted by correspondence to the ISO Council, which decided, in September 1965, to accept it as an ISO RECOMMENDATION.

CONTENTS

FOREWORD

I. This ISO Recommendation deals with size grading of phlogopite mica and does not cover classification according to behaviour under heat, which will be the subject matter of a separate ISO Recommendation.

II. In one important respect, there is similarity between this ISO Recommendation and that for grading of muscovite mica. The grading scale prescribed hereafter is the same as that which applies to muscovite blocks and thins.* The designations proposed for grading are based on preferred numbers of series R 20, in accordance with ISO Recommendation R 3, *Preferred Numbers – Series of Preferred Numbers.*

III. The commercial forms of phlogopite mica, namely, blocks, thins and splittings, are cut or trimmed (fully or partially, depending on the purpose of use) with knife or sickle before sale.

* See ISO Recommendation R 67, *Muscovite Mica Blocks, Thins and Films. Methods for grading by size.*

ISO Recommendation R 444 September 1965

PHLOGOPITE MICA
BLOCKS, THINS AND SPLITTINGS
METHOD FOR GRADING BY SIZE

1. SCOPE

This ISO Recommendation describes a standard method for grading phlogopite mica blocks, thins and splittings, according to size, and includes trimming requirements and definitions of relevant terms used in the trade.

2. TERMINOLOGY

For the purposes of this ISO Recommendation, the following definitions apply:

2.1 *Crude mica.* Crude crystals or books, as extracted from the mine.

2.2 *Cobbing.* The Process of removing dirt and rock from crude mica.

2.3 *Rifting.* The Process of splitting cobbed mica into sheets of suitable thicknesses.

2.4 *Trimming or dressing.* The Process of removing major flaws from rifted mica. Trimming may be accomplished with sickle or knife and the mica is then named after the implement used, sickle-trimmed mica or knife-trimmed mica.

2.5 *Sickle-trimmed mica.* Crude mica cobbed, rifted and trimmed with a sickle to eliminate major flaws, and left with irregular outline and bevelled edge.

2.6 *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.

2.7 *Commercial forms of mica.* Mica known as blocks, thins and splittings.

2.8 *Blocks.* Knife-trimmed mica of a specified minimum thickness, which may be, with a maximum tolerance of 5 per cent (by mass),

either 0.20 mm (0.008 in) with a tolerance limit at 0.18 mm (0.007 in),
or 0.18 mm (0.007 in) with a tolerance limit at 0.15 mm (0.006 in),
as agreed between the buyer and the seller.

2.9 *Thins.* Knife-trimmed mica in any specified thickness between 0.05 mm (0.002 in) and 0.18 mm (0.007 in).

2.10 *Splittings**. Laminae split from blocks or thins, the thickness of ten of which taken together does not exceed 0.28 mm (0.011 in). 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 should not be less than 8, and all such books should contain only sound splittings. A maximum tolerance of 10 per cent 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.

2.11 *"V" cuts or figure cuts.* Edge cuts converging towards the central area of the mica piece.

3. GRADING METHOD

3.1 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.

3.2 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 (page 5) and shown in the Chart (page 7).

3.3 Sequence of operations

All samples to be graded should be trimmed prior to grading. The trimmed samples should be graded according to the procedure laid down in section 5.

4. TRIMMING

4.1 Full-trimmed mica

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

4.2 Partially-trimmed mica

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

4.3 "V" cuts

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

5. GRADING PROCEDURE AND MEASUREMENT OF THICKNESS

5.1 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 (page 5), applies for the grading of all phlogopite mica blocks, thins and splittings. A grading chart, based on this table and shown on page 7, or templates prepared in accordance with it, are used for grading in accordance with the procedure described in clause 5.2.

* 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 ISO Recommendation.

TABLE. – **Standard grading for phlogopite mica blocks, thins and splittings***

Grade designation		Forms	Area of usable rectangle				Minimum dimension of shorter side of usable rectangle		Thickness of 10 splittings	
new	old		from (incl.)	to (excl.)	from (incl.)	to (excl.)				
(Size)	(Grade or number)		cm^2		in^2		cm	in	mm	in
630	OOEE special	Block and thin	645 and above		100 and above		10.2	4		
500	OEE special	Block and thin	516	645	80	100	10.2	4		
400	EE special	Block and thin	387	516	60	80	10.2	4		
315	E special	Block and thin	310	387	48	60	10.2	4		
250	special	Block and thin	232	310	36	48	8.9	3.5		
160	1	Block and thin	155	232	24	36	7.6	3		
100	2	Block and thin	97	155	15	24	5.1	2		
63	3	Block and thin	64	97	10	15	5.1	2		
40	4	Block and thin	39	64	6	10	3.8	1.5		
		Book form	39	64	6	10	3.8	1.5	0.15 to 0.25	0.006 to 0.010
		Loose with powder	39	64	6	10	3.8	1.5	0.15 to 0.25	0.006 to 0.010
20	5	Block and thin	19.4	39	3	6	2.5	1		
		Book form	19.4	39	3	6	2.5	1	0.15 to 0.25	0.006 to 0.010
		Loose with powder	19.4	39	3	6	2.5	1	0.15 to 0.25	0.006 to 0.010
		Loose packed	19.4	39	3	6	2.5	1	0.15 to 0.25	0.006 to 0.010
16	5½	Block and thin	14.5	19.4	2.25	3	2.0	0.8		
		Book form	14.5	19.4	2.25	3	2.0	0.8	0.18 to 0.25	0.007 to 0.010
		Loose packed	14.5	19.4	2.25	3	2.0	0.8	0.18 to 0.25	0.007 to 0.010
06	6	Block and thin	6.4	14.5	1	2.25	1.9	0.75		
		Loose packed	6.4	14.5	1	2.25	1.9	0.75	0.18 to 0.28	0.007 to 0.011
05	7	Block and thin	4.8	6.4	0.75	1	1.5	0.6		
		Loose packed	4.8	6.4	0.75	1	1.5	0.6	0.18 to 0.28	0.007 to 0.011

* 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 ISO Recommendation.

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.