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# International Standard



# 6386

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INTERNATIONAL ORGANIZATION FOR STANDARDIZATION • МЕЖДУНАРОДНАЯ ОРГАНИЗАЦИЯ ПО СТАНДАРТИЗАЦИИ • ORGANISATION INTERNATIONALE DE NORMALISATION

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## Muscovite mica splittings — Grading and visual classification

*Mica muscovite en clivures — Classification dimensionnelle et visuelle*

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## Foreword

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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 6386 was developed by Technical Committee ISO/TC 56, *Mica*, and was circulated to the member bodies in January 1980.

It has been approved by the member bodies of the following countries :

Brazil	Germany, F.R.	United Kingdom
China	India	USSR
Czechoslovakia	Romania	
Egypt, Arab Rep. of	South Africa, Rep. of	

The member body of the following country expressed disapproval of the document on technical grounds :

France

# Muscovite mica splittings — Grading and visual classification

## 0 Introduction

For many years Indian mica producers have been using a uniform system of size grading for muscovite mica. The Indian system has been adopted by various other countries, such as USA, Canada, Brazil, South Africa, and has been generally used in international trade.

This International Standard, though based on the Indian system, has been prepared after taking due account of the requirements of users of muscovite mica splittings all over the world. It is complementary to ISO 67<sup>1)</sup> which deals with the methods for grading muscovite mica blocks, thins and films.

In the preparation of this International Standard, considerable assistance has been derived from the following :

- 1) ASTM Designation : D 2131-71 *Specifications for National Muscovite Mica Splittings*. American Society for Testing and Materials.
- 2) Pub : MEI-1952 *Standards for Manufactured Electrical Mica*. National Electrical Manufacturers Association, USA.

## 1 Scope and field of application

This International Standard establishes a size classification of muscovite mica splittings by standard commercial grades and specifies the maximum allowable physical defects for each grade. It is applicable to commercially available natural muscovite mica splittings, irrespective of the basic colour of the mica or its source.

## 2 Definitions

For the purpose of this International Standard, the following definitions shall apply :

**2.1 rough or burred edge** : A frayed or serrated edge usually 0,8 mm deep or greater, or an edge turned up or down as caused by trimming with scissors, etc., or by rubbing the edge against sandpaper, stone, etc.

**2.2 stains** : Discoloration arising from foreign materials, resulting in a partial or total loss of transparency, and which may be in the form of specks or patches of appreciable area, for

example, slight stain, "vegetable" stain, clay stain, black stain, red stain, black speckled, light dot or spot, black, red or green dot or spot, etc.

### NOTES

- 1 The so-called "vegetable" stains are of pale yellow, brown, green or clay colour when viewed by transmitted light.
- 2 Mineral stains are distinctly black, red, brown or green when viewed by transmitted light.
- 3 No data are available to support the impression that the "vegetable" stains are organic in nature. Tests conducted indicate that they are finely dispersed particles of the various iron oxides. The difference between these stains and the so-called mineral stains is probably only in their concentration or type of oxide.

**2.3 stained splitting** : A splitting that contains a single mineral dot or when the cumulative area of vegetable and clay stains exceeds 6,4 mm<sup>2</sup>.

**2.4 tear, fracture and hole** : A tear or fracture or a hole extending from the periphery more than the following distances :

Grade designation		Distance
New grade No.	Old grade No.	mm
63	3	15,9
40	4	12,7
20	5	9,5
16-06	5 1/2-6	6,4

**2.5 thick edge** : Splittings shall be considered to have a thick edge if the edge or end in question is more than 1,5 times the minimum thickness measured at any point on the splitting or if the thickness of the edge or end exceeds the maximum average thickness allowed for the grade of splittings. This defect may be due to the nature of the mica used for the effect of splitting.

**2.6 thick splitting** : A "bookform" splitting whose thickness in the major section of its area or over the entire area exceeds the maximum average thickness for the grade of splitting. "Loose with powder" splittings shall be considered thick only if such thickness exceeds 0,025 mm. "Loose" splittings shall be considered thick only if such thickness exceeds 0,030 mm.

1) At present ISO/R 67.

**2.7 thin splitting** : A splitting whose thickness in the major section of its area is less than the minimum average for the grade of splittings.

**2.8 V cut** : A cut or trim into the splitting roughly shaped as a "V". A splitting shall be considered V cut if it contains an indentation having an included angle of 120° or less extending from the periphery more than the following distances.

Grade designation		Distance
New grade No.	Old grade No.	mm
63	3	15,9
40	4	12,7
20	5	9,5
16-06	5 1/2-6	6,4

**2.9 waviness** : One or a series of elevations or depressions or both, which are readily noticeable and which include defects such as buckles, ridges, etc.

### 3 Physical requirements

#### 3.1 Size

Natural muscovite mica splittings shall meet the size requirement specified in table 1.

#### 3.2 Total defects

They shall not have more than the maximum allowable total defects specified in table 2 based on percentage mass. Such defects shall not lie predominantly in any one category.

#### 3.3 Individual defects

They shall not have more than any single defect than the percentage specified where a specific percentage is allowed for such defect.

### 4 Sampling

#### 4.1 Bookform

Fifty books shall be drawn at random from each case sampled. At least 10 % of the cases in the lot shall be sampled.

#### 4.2 Dust loose and loose

A minimum of a 28 g sample from each case sampled shall be taken. At least 10 % of the cases in the lot shall be sampled.

#### 4.3 Method of calculation

Splittings shall be examined for defects in the order of separate values listed and counted defective for the first defective characteristics noted. Defects for which separate values are not given may be aggregated. Each group shall be weighed to determine the percentage it represents of the total sample mass less undersizes (see footnote "a" under table 2). In computing percentages, 0,5 % or more shall be considered 1 %, less than 0,5 % shall be considered 0.

Table 1 — Requirements for size and average thickness of splittings

Grade designation		Form	Size	Minimum dimension of usable rectangle	Average thickness of ten splittings
New grade No.	Old grade No.				
cm <sup>2</sup>					
63	3	Bookform	64,5 to 96,8 excl.	5,1	0,15 to 0,23*
40	4	Bookform	38,7 to 64,5 excl.	3,8	0,15 to 0,23*
20	5	Bookform	19,4 to 38,7 excl.	2,5	0,15 to 0,23*
16	5 1/2	Bookform	12,9 <sup>+</sup> to 19,4 excl.	2,2	0,15 to 0,23*
06	6	Bookform	6,5 to 12,9 excl.	1,9	0,15 to 0,25*
63	3	Loose with powder	64,5 to 96,8	5,1	0,15 to 0,23*
40	4	Loose with powder	38,7 to 64,5 excl.	3,8	0,15 to 0,23
20	5	Loose with powder	19,4 to 38,7 excl.	2,5	0,15 to 0,23
16	5 1/2	Loose with powder	9,7 to 19,4 excl.	2,2	0,18 to 0,25
06	6	Loose with powder	At least 80 % shall be 6,5 to 9,7 excl.	1,9	0,18 to 0,25
06-1	6-1st	Loose	At least 70 % shall be 6,5 to 9,7 excl. Not more than 3 % shall pass through a screen having 19,05 mm square openings	—	0,18 to 0,25
06-i	6-intermediate	Loose	At least 60 % shall be 6,5 to 9,7 excl. and at least 25 % shall be 4,5 to 6,5 Not more than 3 % shall pass through a screen having 15,9 mm square openings	—	0,18 to 0,25
06-2	6-2nd	Loose	At least 50 % shall be 6,5 to 9,7 excl. Not more than 5 % shall pass through a screen having 15,9 mm square openings	—	0,18 to 0,28
06-3	6-3rd	Loose	At least 65 % shall have a minimum area of 4,8 cm <sup>2</sup> Not more than 8 % shall pass through a screen having 15,9 mm square openings	—	0,18 to 0,28
06-4	6-4th	Loose	At least 30 % shall have a usable area of 3,2 cm <sup>2</sup> and nothing shall pass through a screen having 6,35 mm square openings	—	0,18 to 0,31

+ Upon agreement between the interested parties, the minimum area may be 9,7 cm<sup>2</sup>.

\* Minimum and maximum thickness of a single splitting in case of bookform splittings shall be as agreed between the interested parties.

#### NOTES

- 1 Splittings should not be of minimum area specified but should contain a fair proportion of sizes throughout the range specified.
- 2 The area specified does not refer to the total area of the splittings but to the rectangular size which each grade will produce. For example grade 20 (old grade 5) splittings should be large enough to provide rectangular pieces measuring 3,8 cm × 5,1 cm, 5,1 cm × 5,1 cm, 5,1 cm × 5,9 cm, etc.
- 3 The old grade designations are based on the practice in vogue in trade. These are given along with the new grades in order to allow familiarization with the new designations. The new designations have been chosen to represent the surface area of the minimum usable rectangle in each grade.

Table 2 — Defects

Grade designation		Form	Undersize, a		Stain, b	Waviness	Tears, fractures and holes	Thick splittings		Thin splittings	V cuts	Rough or burred edges	Other defects	Total allowable defects		Maximum allowable individual defects	
New grade No.	Old grade No.		%	%				%	%					%	%		
63	3	Bookform	5	d	d	d, e	d	d	d	d	d	d, f	d	15	4	4	
40	4	Bookform	5	d	d	d, e	d	d	d	d	d	d, f	d	15	4	4	
20	5	Bookform	5	d	d	d, e	d	d	d	d	d	d, f	d	15	4	4	
16	5	Bookform	5	d	d	d, e	d	d	d	d	d	d, f	d	15	4	4	
06	6	Bookform	5	d	d	d, e	d	d	d	d	d	d, f	d	15	5	5	
63	3	Loose with powder	15	d	d	d	d	d	d	d	d	d, g	d	25	7	7	
40	4	Loose with powder	15	d	d	d	d	d	d	d	d	d, g	d	25	7	7	
20	5	Loose with powder	15	d	d	d	d	d	d	d	d	d, g	d	25	7	7	
16	5 1/2	Loose with powder	15	d	d	d	d	d	d	d	d	d, g	d	25	7	7	
06	6	Loose with powder	j	d	d	d	d	d	d	h	h	d, g	d	20	7	7	
06-1	6	1st loose	j	12	12		3	3						20			
06-i	6	Intermediate loose	j	16	16		3	3						20			
06-2	6	2nd loose	j	20	20		4	4						20			
06-3	6-3rd	Loose	j	20	20		5	5						20			
06-4	6-4th	Loose	j	16	16		8	8						20			

- a) This percentage not to be included with total allowable defects.
- b) Lots that contain more than 2 % of stained splittings in which the sum of the major dimensions of the stains exceeds 6,4 mm shall not be regarded as meeting these standards. No mineral stain shall be permitted in bookform splittings. Not more than 30 % of the stain in grade 40, 20 and 16 (old grades 4, 5, 5 1/2) loose with powder shall be mineral stain. Not more than 40 % of the stain in grade 06, 06-1, 06-2, 06-3 and 06-4 (old grade 6 loose with powder, 6-1st, 6-intermediate, 6-2nd, 6-3rd and 6-4th loose) shall be mineral stain.
- c) To include an evaluation of undersize splittings for other defects.
  - d) Examine for the defect listed.
  - e) No hole shall be permitted.
  - f) Count as a defect if more than 20 % of the periphery is rough or burred.
  - g) Same as footnote f), except that limit is 35 %.
  - h) Do not examine for the defect listed.
  - i) Determine undersize in accordance with table 1.