
**Coated abrasives — Grain size
analysis —**

**Part 3:
Determination of grain size distribution
of microgrits P240 to P2500**

Abrasifs appliqués — Granulométrie —

*Partie 3: Détermination de la distribution granulométrique des
micrograins P240 à P2500*



This document is a preview generated by EBS



COPYRIGHT PROTECTED DOCUMENT

© ISO 2013

All rights reserved. Unless otherwise specified, no part of this publication may be reproduced or utilized otherwise in any form or by any means, electronic or mechanical, including photocopying, or posting on the internet or an intranet, without prior written permission. Permission can be requested from either ISO at the address below or ISO's member body in the country of the requester.

ISO copyright office
Case postale 56 • CH-1211 Geneva 20
Tel. + 41 22 749 01 11
Fax + 41 22 749 09 47
E-mail copyright@iso.org
Web www.iso.org

Published in Switzerland

Contents

Page

Foreword	iv
1 Scope	1
2 Normative references	1
3 Terms and definitions	1
4 Testing of microgrits P240 to P1200	1
4.1 General.....	1
4.2 Designation of the test method.....	2
4.3 Test procedure using the US sedimentation tube.....	2
5 Testing of microgrits P1500 to P2500	17
5.1 General.....	17
5.2 Designation of the test method.....	18
5.3 Test procedure.....	18
6 Designation	20
7 Marking	20
Annex A (informative) Form for recording results of a sedimentation analysis of microgrits of the P series using the US sedimentometer	21
Annex B (informative) Example of the presentation of the test data for the grain size distribution of fused aluminium oxide	23
Bibliography	25

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.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

ISO 6344-3 was prepared by Technical Committee ISO/TC 29, *Small tools*, Subcommittee SC 5, *Grinding wheels and abrasives*.

This second edition cancels and replaces the first edition (ISO 6344-3:1998). It also incorporates the Technical Corrigendum ISO 6344-3:1998/Corr.1:1999. The significant changes against ISO 6344-3:1998 are the following:

- a) new definitions have been included in [Clause 3](#);
- b) the test procedure in [4.3](#) has been completely updated; requirements for the use of the US sedimentation tube have replaced the reference to ISO 8486-2, in order to facilitate the use of this part of ISO 6344;
- c) Bibliography has been added.

ISO 6344 consists of the following parts, under the general title *Coated abrasives — Grain size analysis*:

- *Part 1: Grain size distribution test*
- *Part 2: Determination of grain size distribution of macrogrits P12 to P220*
- *Part 3: Determination of grain size distribution of microgrits P240 to P2500*

Coated abrasives — Grain size analysis —

Part 3:

Determination of grain size distribution of microgrits P240 to P2500

1 Scope

This part of ISO 6344 specifies a method for determining or testing the grain size distribution of electro-fused aluminium oxide and silicon carbide microgrits P240 to P2500 for coated abrasives as defined in ISO 6344-1.

It applies both to those grits used in the manufacture of coated abrasive products and to those grits taken from products for testing purposes.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 6344-1:1998, *Coated abrasives — Grain size analysis — Part 1: Grain size distribution test*

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

3.1

microgrit

abrasive grit having a median equivalent diameter of 58,5 µm to 8,4 µm, whose grain size distribution is determined by sedimentation

3.2

grain size distribution

percentage of grains of different sizes composing the macrogrit or microgrit

4 Testing of microgrits P240 to P1200

4.1 General

The testing of microgrits P240 to P1200 by sedimentation shall be carried out using the US sedimentometer whereby the grain size distribution is determined; see [4.3.1](#).

The limits are specified in ISO 6344-1:1998, Table 2, which is reproduced as (the following) [Table 1](#).

Table 1 — Grain size distribution of microgrits P240 to P1200 d_s -values for testing with the US sedimentometer

Grit designation	d_{s0} value max. μm	d_{s3} value max. μm	Median grain size d_{s50} values μm		d_{s95} value min. μm
P240	110	81,7	58,5	$\pm 2,0$	44,5
P280	101	74,0	52,2	$\pm 2,0$	39,2
P320	94	66,8	46,2	$\pm 1,5$	34,2
P360	87	60,3	40,5	$\pm 1,5$	29,6
P400	81	53,9	35,0	$\pm 1,5$	25,2
P500	77	48,3	30,2	$\pm 1,5$	21,5
P600	72	43,0	25,8	$\pm 1,0$	18,0
P800	67	38,1	21,8	$\pm 1,0$	15,1
P1000	63	33,7	18,3	$\pm 1,0$	12,4
P1200	58	29,7	15,3	$\pm 1,0$	10,2

The permissible deviations are given in [Table 2](#).

Table 2 — Permissible deviations resulting from the variations due to the measuring technique (US sedimentometer)

Grit designation	Permissible deviation for		
	d_{s3} μm	d_{s50} μm	d_{s95} μm
P240	+1,5	$\pm 1,5$	-1,5
P280			
P320			
P360	+1,5	$\pm 1,0$	-1,5
P400			
P500			
P600	+1,5	$\pm 0,8$	-1,5
P800			
P1000			
P1200			

4.2 Designation of the test method

The designation of the test method by means of the US sedimentometer for microgrits P240 to P1200 is as follows: **Test method – Micro P**

4.3 Test procedure using the US sedimentation tube

4.3.1 Testing by sedimentation

The testing of microgrits P240 to P1200 by sedimentation shall be carried out using the US sedimentation tube whereby the grain size distribution is determined.

The principle of measurement is to determine the volumes of a suspension of the grit sample settled in the collecting tube as a function of time, and to calculate the equivalent grain diameter using Stokes' law.

The grain size distribution of microgrits P240 to P1200 is determined using the following criteria:

- a) the maximum grains diameter (theoretical grain diameter) of the first sedimented grain (d_{s0} value) shall not exceed the maximum permissible d_{s0} value;
- b) the grain diameter (theoretical grain diameter) shall not exceed the maximum permissible d_{s3} value at the 3 % point of the grain size distribution curve;
- c) the median grain diameter (theoretical grain diameter) shall be within the specified tolerances of the d_{s50} value at the 50 % point of the grain size distribution curve;
- d) the grain diameter (theoretical grain diameter) shall at least attain the d_{s95} value at the 95 % point of the grain size distribution curve.

The four criteria shall be met at the same time. The values are specified in [Table 1](#).

The permissible deviations are given in [Table 2](#).

4.3.2 Test apparatus

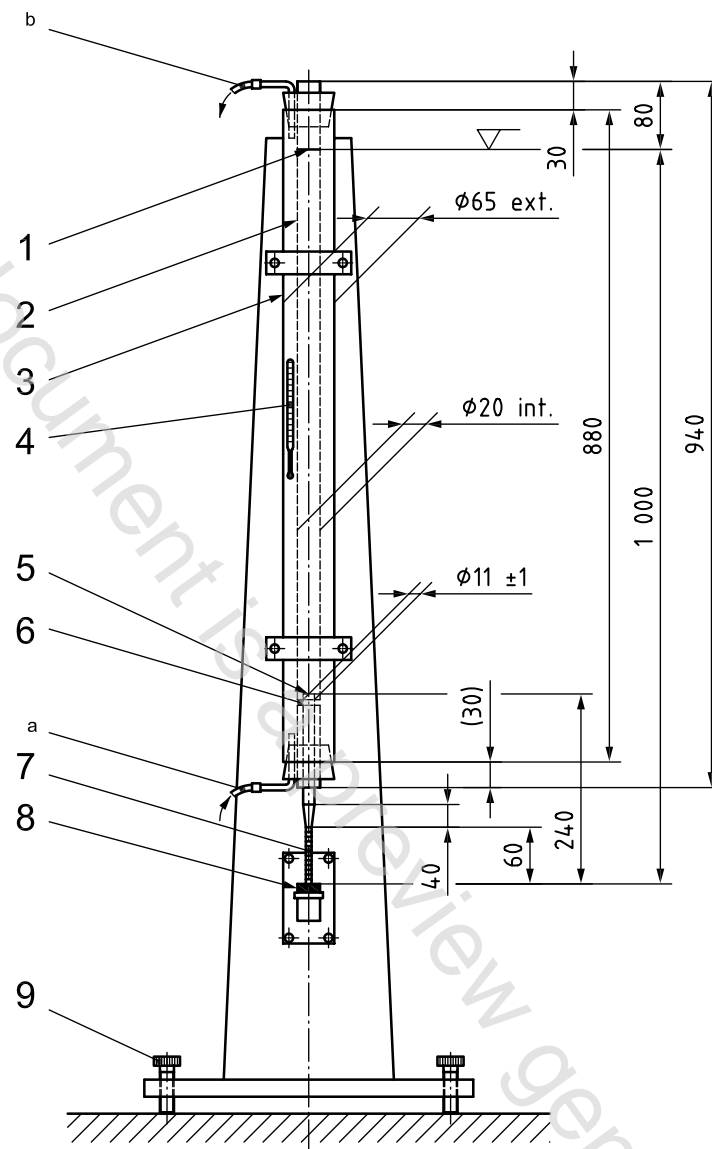
The US sedimentation tube consists of a vertical sedimentation tube of 940 mm in length and of 20 mm inside diameter. It is surrounded by a water jacket in which the water temperature is maintained at a constant level.

A graduated collecting tube is fixed at the bottom of the sedimentation tube. The whole assembly is mounted on a frame, the base plate of which is fitted with level adjusting screws for keeping the tube vertical (see [Figure 1](#)).

For the design and dimensions of the collecting tube, see [Figure 2](#).

To improve the accuracy of sedimentation volume readings, it is recommended that a horizontal beam light source and a magnifying glass be used. A time printer renders the recording of the sedimentation times easier.

Dimensions in millimetres



Key

- 1 methyl alcohol level (initial)
- 2 sedimentation tube
- 3 water jacket
- 4 thermometer
- 5 collecting tube (see [Figure 5](#))
- 6 rubber centring spacer
- 7 scale for height of sedimentation
- 8 rubber gasket
- 9 vertical adjusting screws
- a Water inlet.
- b Water outlet.

Figure 1 — US sedimentation tube