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## Abrasive grains — Test-sieving machines

*Grains abrasifs — Machine à tamiser de contrôle*

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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.

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 9284 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 9284:1992), of which it constitutes a minor revision. In particular, the normative references have been updated.

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# Abrasive grains — Test-sieving machines

## 1 Scope

This International Standard specifies the operational and technical requirements of, and gives guidance on, the installation, checking and maintenance of test-sieving machines.

Test-sieving machines are used for determining the size distribution of bonded and coated abrasive macrograins.

## 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 2591-1:1988, *Test sieving — Part 1: Methods using test sieves of woven wire cloth and perforated metal plate*

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

ISO 6344-2, *Coated abrasives — Grain size analysis — Part 2: Determination of grain size distribution of macrogrits P12 to P220*

ISO 8486-1, *Bonded abrasives — Determination and designation of grain size distribution — Part 1: Macrogrits F4 to F220*

## 3 Operational requirements

Under defined operating conditions, mechanical test sieving can produce results comparable with those obtained by manual sieving.

The results obtained by using test-sieving machines shall be reproducible and shall comply with the requirements specified in ISO 2591-1, ISO 6344-1, ISO 6344-2 and ISO 8486-1.

The reproducibility of the determination of the grain size distribution of abrasive grains by means of sieving is ensured only when the appropriate test-sieving machines, test sieves and operating instructions are used.

## 4 Technical description

Examples of test-sieving machines are given in [Figure 1](#).

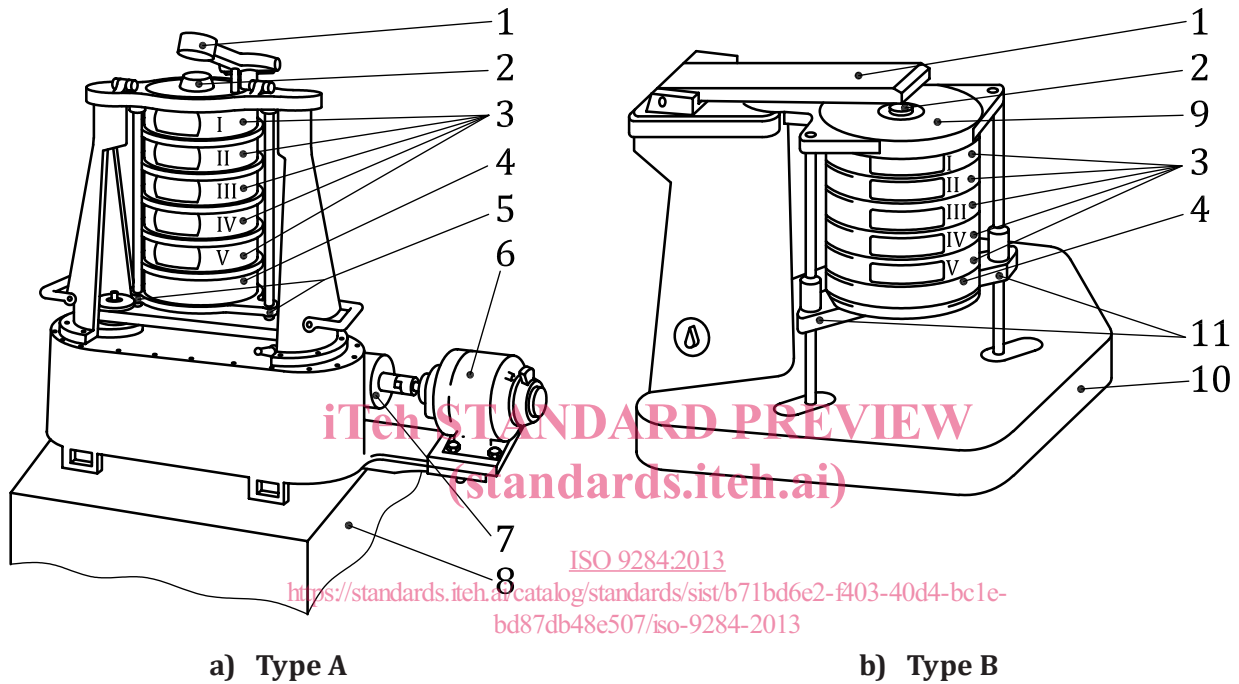
Test-sieving machines usually consist of the following basic components:

- a) support and frame;
- b) electric motor;
- c) gear drive for the conversion of the rotary motion of the motor into the specified eccentric rotary motion of the nest of sieves and into the tapping action;
- d) switch, which is actuated by means of a time switch;
- e) tapper for the execution of the vertical strokes (which are specified for a given unit of time on the cover of the nest of sieves);

- f) retainer for the bottom pan and nest of sieves, which allows them to move in the specified manner;
- g) cover for the sieves, fitted with a funnel-shaped insert with a plug (usually made of cork), on which the tapper strikes.

In addition, the following are necessary for the operation of test-sieving machines:

- base plate;
- a nest of five test sieves;
- bottom pan.



**Key**

- |                                  |                  |
|----------------------------------|------------------|
| 1 tapper                         | 1 tapper         |
| 2 cork plug                      | 2 cork plug      |
| 3 test sieves                    | 3 test sieves    |
| 4 bottom pan                     | 4 bottom pan     |
| 5 fixing screws for bottom plate | 9 cover          |
| 6 electric motor block           | 10 bottom plate  |
| 7 gear drive                     | 11 fixing screws |
| 8 base plate                     |                  |

NOTE This figure illustrates typical commercially available test-sieving machines, type A and type B.

**Figure 1 — Examples of test-sieving machines**

## 5 Technical requirements

### 5.1 Nest of test sieves and sieve frames

The nest of test sieves shall be mounted in the sieving machine in such a way that the prescribed movements are possible without any obstruction. Attention shall be paid to the manufacturer's recommendations.

The sieve frames of the test sieves shall have the following dimensions:

- a) diameter, 200 mm;
- b) height, 50 mm.

The nest of test sieves to be used for a particular type of macrograin shall be as specified in the applicable standard.

### 5.2 Sieving time

The test-sieving machines shall be provided with a time switch to guarantee that sieving is carried out for the prescribed time period.

## 6 Installation of test-sieving machines

The test-sieving machine shall be fixed on to a suitable baseplate of sufficient mass in such a way that external vibrations cannot reach the machine.

The test-sieving machine shall be installed so that it is horizontal.

As an example, the type A test-sieving machine (see [Figure 1](#)) shall be fixed on a concrete baseplate having a width of at least 625 mm, a depth of 500 mm and a height of 550 mm. For the design of the concrete baseplate, as well as for the arrangement of the assembly bolts, see [Figure 2](#).

The concrete base-plate should be placed on a vibration-absorbing board, made, for example, of hard felt, which serves also to compensate for unevenness of the ground.

The ground shall be free from vibrations, i.e. it should be natural soil. Where it is not possible to meet this requirement, the test-sieving machine should be installed in such a way that the forces and moments, which occur during the operation of the machine, are transmitted via the load-bearing structure to the foundations.

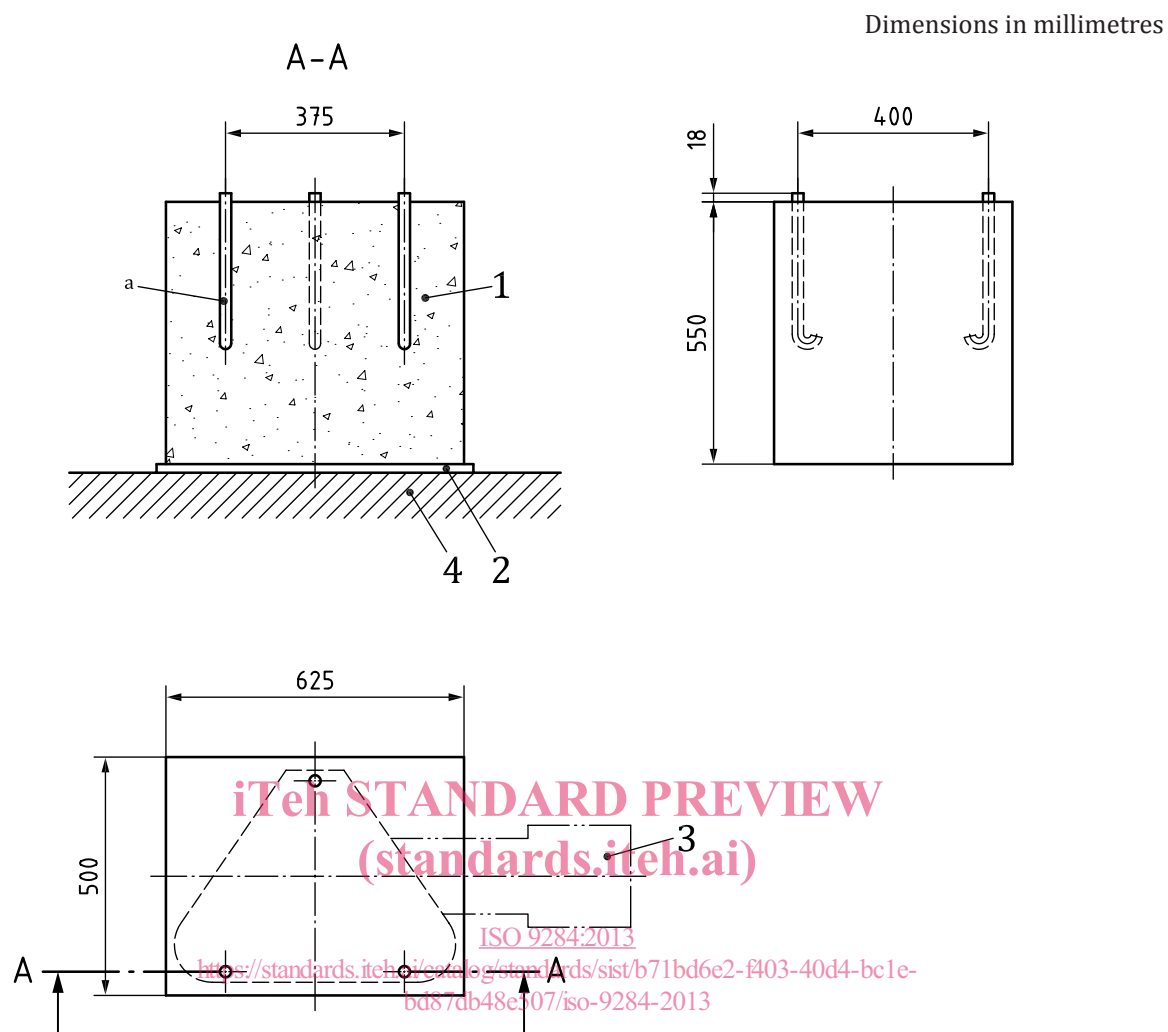
If an acoustic cabinet is used, it shall not be attached to either the sieving machine or the concrete block.

## 7 Checking of test-sieving machines

The efficiency of test-sieving machines shall be checked at appropriate intervals; in particular, the performance of the tapper and the precision of the time switch shall be checked.

## 8 Maintenance of test-sieving machines

In order to maintain the efficiency and operational reliability of test-sieving machines, it is recommended that the manufacturer's instructions concerning maintenance are followed.



**Key**

- 1 concrete
- 2 vibration-absorbing board (e.g. hard felt)
- 3 outline of test sieving machine
- 4 ground
- a Three assembly bolts, thread M10.

**Figure 2 — Baseplate and mating dimensions for the assembly of test-sieving machines, type A**



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