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ISO

INTERNATIONAL ORGANIZATION FOR STANDARDIZATION

ISO RECOMMENDATION
R 392

ASBESTOS-CEMENT PIPE FITTINGS FOR BUILDING AND SANITARY PURPOSES

1st EDITION
November 1964

For each individual country the only valid standard is the national standard of that country.

Printed in Switzerland

Also issued in French and Russian. Copies to be obtained through the national standards organizations.

BRIEF HISTORY

The ISO Recommendation R 392, *Asbestos-cement pipe fittings for building and sanitary purposes*, was drawn up by Technical Committee ISO/TC 77, *Products in asbestos-cement*, the Secretariat of which is held by the Association Suisse de Normalisation (SNV).

Work on this question by the Technical Committee began in 1956 and led, in 1963, to the adoption of a Draft ISO Recommendation.

In December 1963, this Draft ISO Recommendation (No. 690) was circulated to all the ISO Member Bodies for enquiry. It was approved, subject to a few modifications of an editorial nature, by the following Member Bodies:

Australia	Israel	Republic of South Africa
Austria	Italy	Romania
Belgium	Japan	Spain
Colombia	Lebanon	Sweden
Denmark	Morocco	Switzerland
Finland	Netherlands	Turkey
France	New Zealand	U.A.R.
Germany	Norway	United Kingdom
Greece	Peru	U.S.A.
Hungary	Poland	U.S.S.R.
Ireland	Portugal	Venezuela
		Yugoslavia.

Two Member Bodies opposed the approval of the Draft:

Brazil, Mexico.

The Draft ISO Recommendation was then submitted by correspondence to the ISO Council, which decided, in November 1964, to accept it as an ISO RECOMMENDATION.

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ASBESTOS-CEMENT PIPE FITTINGS FOR BUILDING AND SANITARY PURPOSES

1. SCOPE

This Recommendation appiies to asbestos-cement pipe fittings used in building, such as rainwater, sanitary and sewer connections.

It defines certain conditions of manufacture, dimensions and acceptance tests for these products.

2. REQUIREMENTS

2.1 Composition

The fittings are made from a close and homogeneous mixture essentially consisting of a suitable inorganic hydraulic binder, asbestos fibre and water, excluding any materials liable to cause ultimate deterioration in the quality of the fittings. [1]

2.2 Types

The fittings may be of two types:

— A — light — for pipes not used under pressure,
— B — heavy — for pipes which may be subject to accidental pressure in service.

2.3 General appearance and finish

The interior surface of the fittings should be regular and as smooth as possible.

The fittings of type B may be coated at least on the interior with a suitable coating which should comply with the requirements of the national standards of the producing country.

2.4 Characteristics

2.4.1 *Geometrical characteristics*

2.4.1.1 NOMINAL DIAMETER

The nominal diameter of the fittings corresponds to the internal diameter (bore), tolerances not being taken into account.

[1] This Recommendation also applies to autoclaved fittings when the binder is partially replaced by ground silica.

The series of the nominal diameters is as follows:

Millimetres	Inches approximately
50	2
60	2½
80	3
100	4
125	5
150	6
200	8
250	10
300	12
400	16
500	20 or 21

When national standards provide for other diameters, these should be chosen from preferred numbers of the R 10 series. [2]

2.4.1.2 THICKNESSES

The nominal thicknesses of the fittings should conform to those in the national standards of the producing country or, failing this, should be as specified in the manufacturer's catalogues.

The actual thicknesses should however be not less than the following:

DIMENSIONS IN MILLIMETRES

Nominal diameter	Thickness
50	6
60	6
80	7
100	7
125	7
150	8
200	8
250	10
300	10
400	11
500	12

2.4.1.3 OTHER DIMENSIONS

The other nominal dimensions should conform to those in the national standards of the producing country or, failing this, should be as specified in the manufacturers' catalogues.

[2] The manufacturers' catalogues should state the dimensions which they normally keep in stock.

2.4.1.4 TOLERANCES ON THE DIMENSIONS

The tolerances on the dimensions measured in the jointing space (socket and plain end) are as follows:

(a) on the internal diameter of plain ends and sockets (tolerance of ovality)

The diametral variation O as defined by the ratio of the actual diameter Dr (maximum or minimum bore of fittings or sockets measured over a given section) and of the nominal diameter Dt (bore of fittings or sockets) expressed by the formula:

$$O = \frac{Dr}{Dt}$$

should lie within the following limits according to the nominal diameters:

for diameters under 80 mm	0.93 -1.04
for diameters from 80 to 150 mm	0.95 -1.03
for diameters from 200 to 300 mm	0.97 -1.02
for diameters from 400 to 500 mm	0.985-1.015

(b) on the nominal thicknesses

Upper deviation: free
Lower deviation: — 1 mm.

2.4.2 *Physical characteristics*

Tested as provided for in 2.5.1 (optional test, carried out only on certain fittings), the fittings should not indicate any fissure, loss or visible sweating on their outside surface.

2.5 Tests

The acceptance tests should be carried out on fittings of type B in their condition for delivery conforming to that of the order, whether coated or uncoated.

Optional test at purchaser's request

Tightness test on certain fittings of type B (method as defined in 2.5.1, number of tests as indicated in the extract of the table in Appendix B).

2.5.1 *Internal hydraulic pressure tightness test*

In view of the difficulty of this test, it should be carried out only on such fittings as agreed between the manufacturer and the purchaser at the time of placing the order. This agreement refers not only to the nature of the fittings, but also to the apparatus required for this test.

This test is, as a rule, limited to diameters not exceeding 150 mm for installations of type B.

The fittings are placed on a hydraulic press, the tightness of the ends being ensured by a device avoiding as far as possible any axial compression of the fittings. The internal hydraulic pressure is measured by a pressure gauge calibrated to give accurate readings.

The internal hydraulic pressure is raised gradually to 2.5 kgf/cm². This pressure is maintained for at least 30 seconds to check that there is no fissure, loss or visible sweating on the outside surface of the fittings.

2.6 Marking

The fittings should be marked legibly and indelibly so as to show:

— the origin of manufacture,
— the date of manufacture,
— the type (if necessary).

The method of marking should conform to that in the national standards of the producing country.

3. SAMPLING, INSPECTION AND ACCEPTANCE

Enquiries and orders should specify whether the consignment is to be delivered with or without acceptance tests. Failing this, it is presumed to be with acceptance tests if agreements on the date of the tests have been made between the manufacturer and the purchaser. Otherwise, the consignment is presumed to be without acceptance tests.

3.1 Inspection of each item of the consignment

3.1.1 The requirements concerning the general appearance and finish (2.3), the geometrical characteristics (2.4.1) and the marking (2.6) of the fittings may be verified on each item of the consignment.

3.1.2 The fittings which do not satisfy the requirements when submitted to inspection of each item of the consignment (3.1.1) may be rejected.

3.2 Inspection by sampling

3.2.1 The requirements concerning the physical characteristics (2.4.2) of the fittings should be verified, if requested, by sampling.

3.2.2 The procedure in ISO Recommendation R 390 applies for the sampling, inspection and acceptance. Each inspection lot should include only items of the same diameter and of the same type. The maximum and minimum inspection lots are agreed between the manufacturer and the purchaser; failing such an agreement these should be 200 and 100 fittings respectively.

APPENDIX A

A. TESTING

A.1 Carrying out of tests

The tests should be carried out on a date fixed by agreement.

Unless agreed otherwise, the purchaser should inform the manufacturer when ordering, or not later than two weeks before dispatch, of the tests (2.6) he wishes to have carried out.

A.2 Access to the works

The purchaser may have free access at any reasonable time to the place of testing and to the stocks for the sole purpose of inspecting and testing the materials which he has ordered.

A.3 Costs of testing

The following tests only are to be carried out at the expenses of the manufacturer:

— the compulsory tests,
— the optional tests called for when the order is placed,
— the optional tests asked for after ordering and resulting in rejection of the lot.

By agreement between the manufacturer and the purchaser when ordering, additional tests may be carried out at the purchaser's expense, at the works or in an independent laboratory designated by agreement. The manufacturer has the right to be represented.

A.4 Inspection of each item of the consignment

In order to reduce the duration and the costs of the acceptance operations in practice, the inspection of the characteristics made on each item of the consignment (3.1.1) may, at the purchaser's request, be replaced by an inspection by sampling.

In this case, if the inspection results tend toward the rejection of the lot, the manufacturer may ask a 100 per cent inspection on all items of the consignment with regard to the failing characteristic (rejection according to 3.1.2).

A.5 Period for testing

All tests should be completed before delivery of the consignment and at the latest four weeks after the date of sampling.

A.6 Manufacturer's certificate

A.6.1 *Orders with acceptance tests*

If the purchaser or his representative is not present at all or part of the tests, the manufacturer should supply the purchaser with a certificate that the fittings satisfied the tests he was unable to witness.

A.6.2 *Orders without acceptance tests*

For orders without acceptance tests the manufacturer is considered to have discharged his obligations on completion of delivery.