BRITISH STANDARD

BS 690-6:1976

Incorporating Amendment No. 1

Specification for

Asbestos-cement slates and sheets —

Part 6: Fittings for use with corrugated sheets

UDC 691.328.5 – 415:666.961 – 417.2.002.4

Cooperating organizations

The Asbestos and Asbestos-Cement Building Products Standards Committee under whose supervision this British Standard was prepared, consists of representatives from the following Government department and scientific and industrial organizations:

Asbestos Cement Manufacturers' Association*
Concrete Society
Department of the Environment*
Incorporated Association of Architects and Surveyors
Institution of Civil Engineers
Institution of Municipal Engineers
Institution of Structural Engineers
Modular Society*
National Federation of Builders' and Plumbers' Merchants
National Federation of Building Trades Employers
National Federation of Roofing Contractors*
Royal Institute of British Architects
Royal Institution of Chartered Surveyors
Royal Society of Health

The Government department and industrial organizations marked with an asterisk in the above list, together with the following, were directly represented on the committee entrusted with the preparation of this British Standard:

Cement and Concrete Association
Department of the Environment (Building Research Establishment)
Greater London Council
Health and Safety Executive
Institute of Building

This British Standard, having been prepared under the direction of The Asbestos and Asbestos-Cement Building Products Standards Committee was published under the authority of the Executive Board on 30 June 1976

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Third revision October 1953
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The following BSI references related to the work on this standard:
Committee reference ASB/1
Draft for comment 75/10342

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Amendments issued since publication

Amd. No.	Date of issue	Comments
5487	July 1989	Indicated by a sideline in the margin

Contents

General foreword

BS 690-1 "*Asbestos-cement slates, corrugated sheets and semi-compressed flat sheets*" and a complementary standard BS 4036 "*Asbestos-cement fully compressed flat sheets*" are both in imperial units and will only remain in existence for a limited period.

The present revision, under the general title "*Asbestos-cement slates and sheets*", incorporates these two standards in Parts with additional Parts as follows:

— *Part 2: Flat sheets semi- and fully compressed;*

— *Part 3: Corrugated sheets;*

— *Part 4: Slates;*

— *Part 5: Lining sheets and panels;*

— *Part 6: Fittings for use with corrugated sheets.*

Foreword

This Part of this British Standard has been prepared from a draft submitted by the Asbestos Cement Manufacturers' Association to give general requirements for fittings for use with corrugated sheets. For recommendations regarding the use of asbestos-cement corrugated sheets and fittings, users and designers are recommended to consult BS 5247-14.

Certain operations entailed in the manufacturing process, notably the handling of raw asbestos and the mechanical sawing of finished fittings, will attract the provision of the Asbestos Regulations 1969. Adequate methods exist to control levels of dust during such operations and these are detailed in the Control and Safety Guides issued by the Asbestosis Research Council.

The manufacture of all asbestos based products is covered by the requirements of the Control of Asbestos at Work Regulations 1987, introduced on 1 March 1988. These set out comprehensive provisions covering work activities involving exposure to asbestos. Advice on how to comply with these regulations can be obtained from the manufacturers of the material, from the Asbestos Information Centre, St. Andrew's House, 22-28 High Street, Epsom, Surrey KT19 8AH, from the local area office of the Health and Safety Executive or from the Environmental Health Department of the Local Authority.

WARNING

Breathing asbestos dust is dangerous to health and precautions have to be taken during the manufacture and use of these products.

Particular note has to be taken of the Asbestos Products (Safety) Regulations 1985, made under the Consumer Safety Act 1978 and of the Asbestos (Prohibitions) Regulations 1985[1)] made under the Health and Safety at Work etc. Act 1974, which prohibit the supply of products containing amosite or crocidolite and set out requirements for the labelling of all products containing asbestos.

All the above legislation implements EEC Directives.

Certification. It is strongly recommended that in view of the nature of this specification manufacturers and purchasers should make use of the certification facilities described on the inside back cover of this standard.

[1)] Parallel regulations for Northern Ireland came into force on 6 March 1986.

A British Standard does not purport to include all the necessary provisions of a contract. Users of British Standards are responsible for their correct application.

Compliance with a British Standard does not of itself confer immunity from legal obligations.

Summary of pages

This document comprises a front cover, an inside front cover, pages i to iv, pages 1 to 14, an inside back cover and a back cover.

This standard has been updated (see copyright date) and may have had amendments incorporated. This will be indicated in the amendment table on the inside front cover.

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1 Scope

This Part of this British Standard specifies requirements for fittings for use with symmetrical and asymmetrical corrugated sheets and lining sheets and panels[2)].

2 References

The titles of the publications referred to in this standard are listed on page 14.

3 Requirements

3.1 Composition. The fittings shall be made from a close and homogeneous mixture consisting essentially of a suitable inorganic hydraulic binder[3)], asbestos fibre (except fibres of crocidolite and amosite, which are not permitted) and water, and shall exclude any materials liable to cause ultimate deterioration in the quality of the components.

3.2 Classification. Fittings shall be classified both by description (see Table 1 to Table 6) and by the profile class number indicating the type of sheet it will complement (see BS 690-3).

3.3 General appearance and finish. The surface of the fittings intended to be exposed to the weather shall be generally of smooth finish and the finish should permit any minor variation of the surface appearance due to the method of manufacture, which does not impair the strength or performance of the fittings. The fittings shall be clean with straight and regular edges.

3.4 Characteristics

3.4.1 ***Geometrical characteristics***

3.4.1.1 *Length.* The length, or cover, of standard fittings shall be in accordance with Table 1 to Table 6.

3.4.1.2 *Thickness.* The thickness of fittings, when measured as described in clause **5** of BS 4624:1981 shall be 6 mm or 9 mm.

3.4.1.3 *Tolerance on dimensions*

a) On the length — Upper deviation + 5 mm, Lower deviation – 10 mm

when measured as described in clause **4** of BS 4624:1981.

b) On the cover width — Upper deviation + 5 mm, Lower deviation – 5 mm

when measured as in **6.1** of BS 4624:1981.

3.4.2 *Range.* The range of standard fittings shall be in accordance with Table 1 to Table 6, available where indicated by ●, or pitch, under each profile class.

3.4.3 ***Physical characteristics***

3.4.3.1 *Impermeability.* When tested as described in **1.6** of BS 4624:1970 traces of moisture may appear on the lower surfaces of the fittings but in no instance shall there be any formation of drops of water.

3.4.3.2 *Frost resistance.* When tested as described in **1.7** of BS 4624:1970 the fittings shall not show signs of cracking or surface alteration after subjection to 25 cycles of alternate freezing and defreezing.

3.5 Marking. Fittings are not normally marked but at the specific request of the purchaser, they may be marked so as to show the date of manufacture and the number of this British Standard.

3.6 Manufacturer's certificate. If requested to do so by the purchaser, the manufacturer should provide a certificate of compliance with this standard.

4 Sampling and testing

4.1 Requirements for compliance. All fittings in a consignment purporting to comply with the requirements of this standard shall meet the requirements of **3.1**, **3.3** and **3.4**.

4.2 Number of tests

4.2.1 If the purchaser requires the manufacturer to test the fittings in a particular consignment for compliance with the requirements of **3.4.3**, this shall be stated in the enquiry or order and, in addition, whether the tests are to be made in the presence of the purchaser or his representative. Sampling for these tests shall be carried out in accordance with the procedure described in Appendix A and the number of specimens tested shall be as laid down in Table 7.

4.2.2 Smaller inspection lots can be tested by agreement between the purchaser and the manufacturer.

Independent tests may be carried out by arrangement with the manufacturer and attention is drawn to the note on certification in the foreword.

[2)] Sheets produced in accordance with BS 690-3 and lining sheets and panels to BS 690-5.
[3)] A suitable binder is Portland cement complying with the requirements of BS 12.

5 Notes to Table 1 to Table 6

In Table 1 to Table 6 associated fittings have been detailed under specific headings.

Table 1 Eaves fittings
Table 2 Apex fittings
Table 3 Verge fittings
Table 4 Movement joint fittings
Table 5 Fittings for corner and openings
Table 6 Miscellaneous fittings

A typical illustration of each fitting is included for identification, but manufacturers' catalogues should be consulted for exact details.

Key to symbols:

- ● indicates that the fitting is available under the profile class heading;
- — indicates that the fitting is not available under the profile class heading;
- ϕ^0 indicates pitches in which fittings are available, generally manufactured in 2½° increments.

Table 1 — Eaves fittings

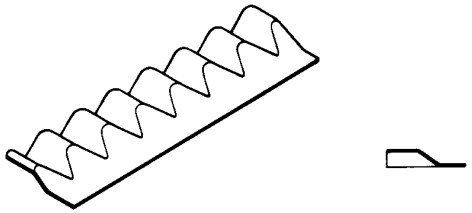
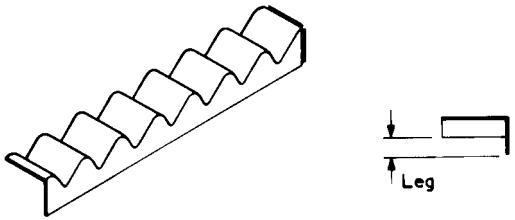
Description	Profile class					Typical illustration (profile to suit corrugated sheet)
	1	2	3	4	5	
Eaves filler piece	●	●	●	●	—	 Cover width as for sheet
Corrugation closure piece	●	●	●	●	●	 Cover width as for sheet

Table 2 — Apex fittings

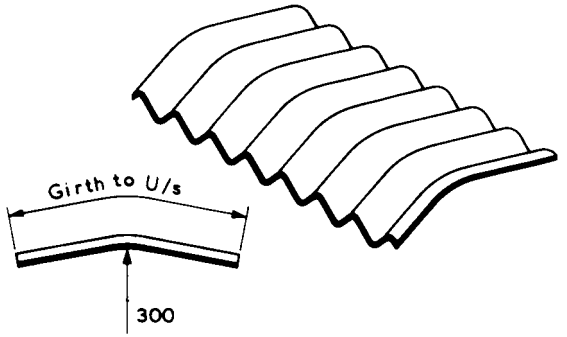
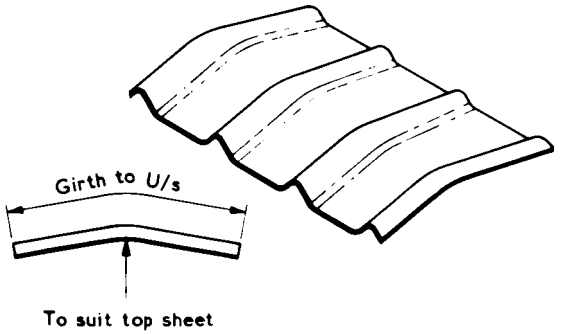
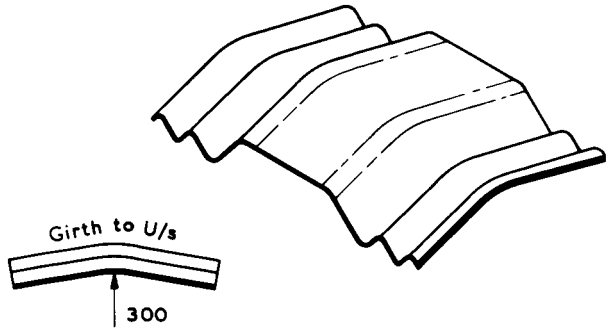
Description	Profile class					Typical illustration (profile to suit corrugated sheet)
	1	2	3	4	5	
Cranked ridge piece 900 mm girth in 2½° increments	—	10° to 22½°	5° to 22½°	5° to 22½°	—	 Radius 300 mm
Cranked ridge sheet 1 800 mm girth in 2½° increments	—	10° to 22½°	5° to 22½°	—	—	Cover width as for sheet
Cranked ridge lining piece 900 mm girth in 2½° increments	—	10° to 22½°	5° to 22½°	5° to 22½°	—	 Radius to suit top sheet
Cranked ridge lining panel/sheet 1 800 mm girth in 2½° increments	—	10° to 22½°	5° to 22½°	—	—	Cover width as for sheet
Cranked ridge vent piece 900 mm girth in 2½° increments	—	10° to 22½°	5° to 22½°	5° to 22½°	—	 Radius 300 mm
Cranked ridge vent sheet 1 800 mm girth in 2½° increments	—	10° to 22½°	5° to 22½°	—	—	Cover width as for sheet

Table 2 — Apex fittings

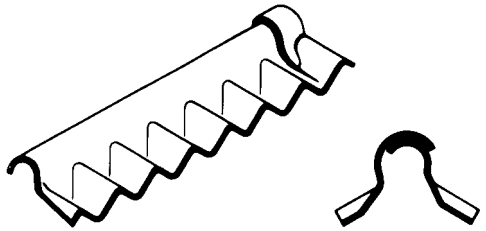
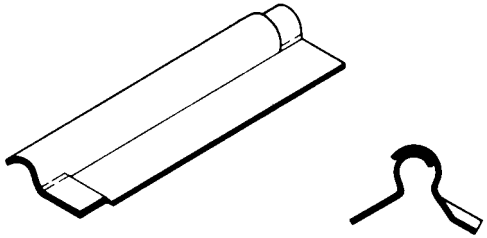
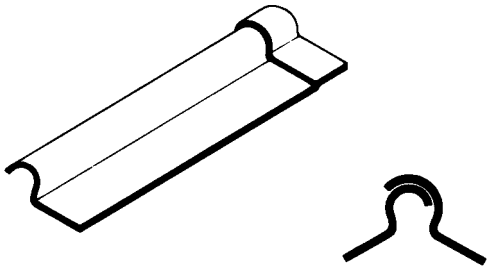
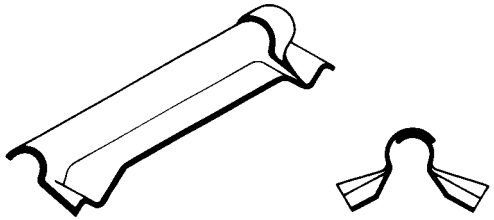
Description	Profile class					Typical illustration (profile to suit corrugated sheet)
	1	2	3	4	5	
Close fitting ridge two-piece adjustable	●	●	—	—	—	 Cover width as for sheet
Northlight ridge two-piece adjustable	—	●	—	—	—	 Cover width as for sheet
Plain wing ridge two-piece adjustable	●	●	—	—	—	 Cover width 1 016 mm and 1 120 mm
Vent ridge two-piece adjustable	—	●	—	—	—	 Cover width as for sheet

Table 2 — Apex fittings

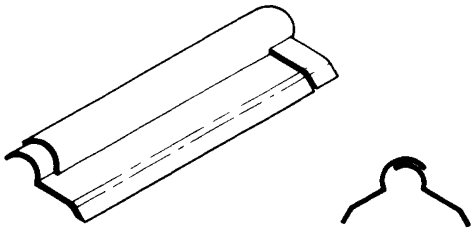
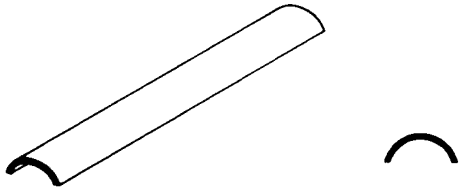
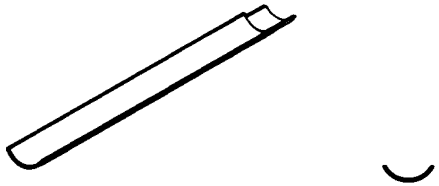
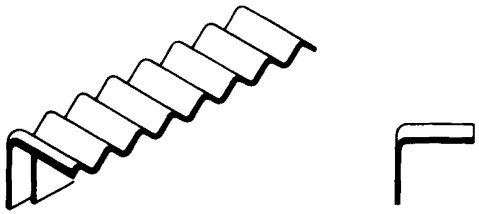
Description	Profile class					Typical illustration (profile to suit corrugated sheet)
	1	2	3	4	5	
Hip ridge two-piece adjustable	●	●	●	●	—	 Cover width 1 120 mm
Hip ridge one piece 1 220 mm	●	●	●	●	—	
Apex lining piece	—	●	●	●	—	 Cover width 1 220 mm or 2 032 mm
Northlight ridge one piece	—	—	●	●	—	 Cover width as sheet

Table 3 — Verge fitting

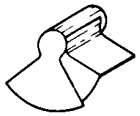
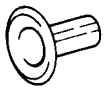
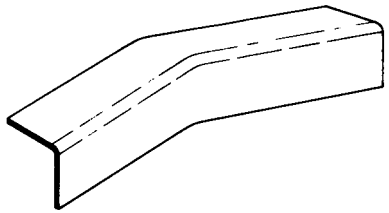
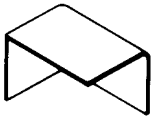
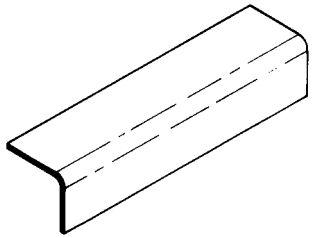
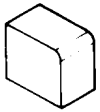
Description	Profile class					Typical illustration (profile to suit corrugated sheet)
	1	2	3	4	5	
Ridge finial two-piece adjustable	—	●	—	—	—	
Ridge finial one-piece	●	●	—	—	—	
Cranked ridge bargeboard 1 300 mm nominal girth	—	10° to 22½°	5° to 22½°	5° to 22½°	—	 Radius to suit
Northlight ridge finial one-piece	—	—	●	●	—	 Handed
Bargeboard 3 000 mm 2 400 mm 1 800 mm	●	●	●	●	—	
Bargeboard stopend	—	●	●	●	—	 Handed to suit Bargeboard profile

Table 3 — Verge fittings

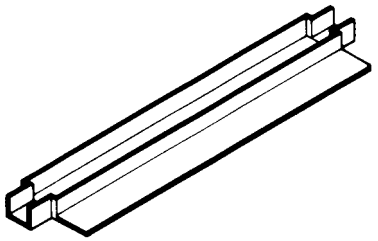
Description	Profile class					Typical illustration (profile to suit corrugated sheet)
	1	2	3	4	5	
Secret gutter 3 000 mm double socketed	●	●	—	—	—	 Overall length includes 2 sockets

Table 4 — Movement joint fittings

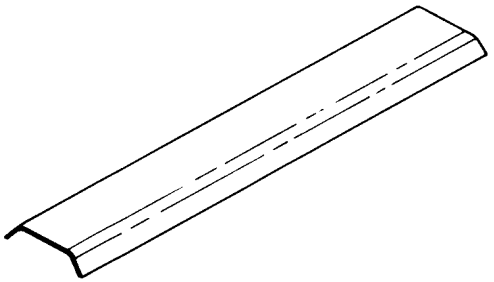
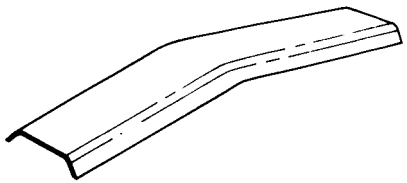
Description	Profile class					Typical illustration (profile to suit corrugated sheet)
	1	2	3	4	5	
Movement joint 3 000 mm 2 400 mm 1 800 mm	●	●	●	●	●	
Cranked movement joints 1 300 mm nominal girth	—	10° to 22½°	5° to 22½°	5° to 22½°	—	 Radius to suit

Table 4 — Movement joint fittings

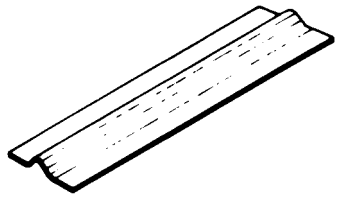
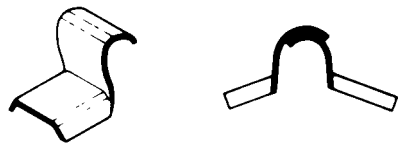
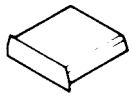
Description	Profile class					Typical illustration (profile to suit corrugated sheet)
	1	2	3	4	5	
Straight lining movement joint 3 000 mm 2 400 mm 1 800 mm	●	●	●	●	●	
Cranked lining movement joint 900 mm nominal girth	—	10° to 22½°	5° to 22½°	5° to 22½°	—	
Movement joint close fitting ridge two-piece adjustable	●	●	—	—	—	
Movement joint Northlight ridge two-piece adjustable	—	●	—	—	—	
Movement joint Northlight ridge one-piece	—	—	●	●	—	
Movement joint stopend	●	●	●	●	●	

Table 5 — Fittings for corners and openings

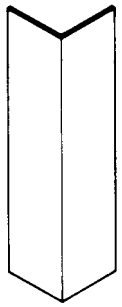
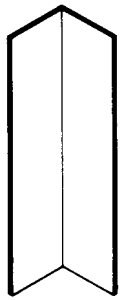
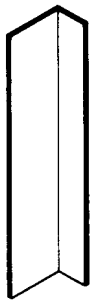
Description	Profile class					Typical illustration (profile to suit corrugated sheet)
	1	2	3	4	5	
External corner piece 3 000 mm 2 400 mm 1 800 mm	●	●	●	—	●	 Weathering face
Internal corner piece 3 000 mm 2 400 mm 1 800 mm	●	●	●	—	●	 Weathering face
Jamb filler piece 3 000 mm 2 400 mm 1 800 mm	●	●	●	—	●	

Table 5 — Fittings for corners and openings

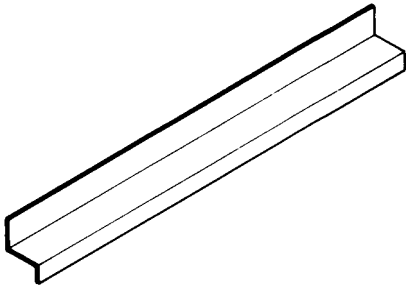
Description	Profile class					Typical illustration (profile to suit corrugated sheet)
	1	2	3	4	5	
Horizontal flashing piece 3 000 mm 2 080 mm	●	●	●	—	●	

Table 6 — Miscellaneous fittings

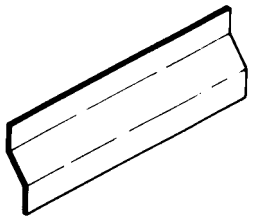
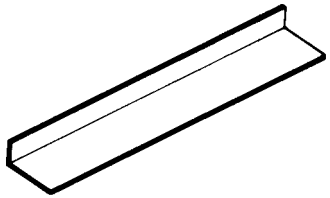
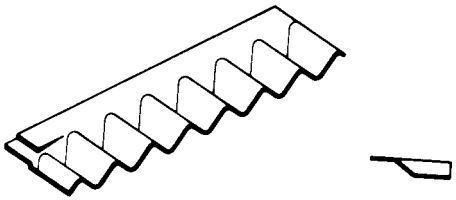
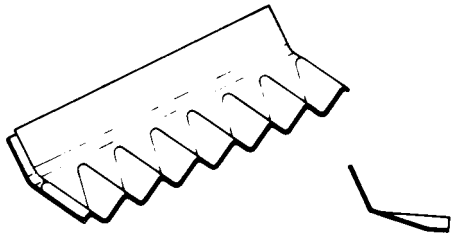
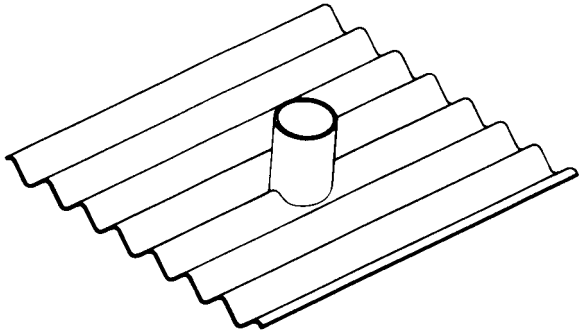
Description	Profile class					Typical illustration (profile to suit corrugated sheet)
	1	2	3	4	5	
Louvre 1 220 mm	●	●	●	—	●	
Side closure piece 1 375 mm 1 975 mm	●	●	●	●	●	
Underglazing flashing piece	●	●	●	●	●	 Cover width as for sheet

Table 6 — Miscellaneous fittings

Description	Profile class					Typical illustration (profile to suit corrugated sheet)
	1	2	3	4	5	
Apron flashing piece	●	●	●	●	—	 Cover width as for sheet
Soaker flange sheet	●	●	●	●	—	 Made in standard sheets or patch type

Appendix A Sampling and inspection of asbestos-cement corrugated sheets (based on ISO/R 390)

A.1 Division of a consignment into inspection lots

A.1.1 *Homogeneous consignments*

A.1.1.1 Any homogeneous consignment (or subconsignment, see **A.1.2**) should be divided by the manufacturer into inspection lots, the maximum size of which is given in Table 7.

A.1.1.2 Any fraction of a consignment remaining after taking out the highest possible number of maximum inspection lots and any homogeneous consignment (or sub-consignment) smaller than the maximum lot size, forms an inspection lot if larger than the minimum lot size given in Table 7.

A.1.1.3 Consignments or fractions of consignments smaller than the minimum lot size given in Table 7 are not submitted to sampling and testing.

A.1.2 *Non-homogeneous consignments.* Any consignment which is known to be or is expected to be non-homogeneous as regards any of the properties to be tested by sampling should be divided by the manufacturer into assumed homogeneous sub-consignments prior to the division into inspection lots as in **A.1.1**.

A.2 Sampling

A.2.1 From each inspection lot (see **A.1.1.1** and **A.1.1.2**) the purchaser may draw a sample, the size of which is indicated in Table 7 (see **A.2.2** and **A.2.3**).

A.2.2 The entry to Table 7 is the number of units of product in the inspection lot (column 1), the sample size being indicated in column 2.

A.2.3 For products where all units undergo a compulsory non-destructive test during the manufacture, the reduced sample size obtained by entering Table 7 at column 7 may be applied.

A.2.4 The possibility mentioned in **A.2.3** is also available when the manufacturer guarantees his production or has it guaranteed by an independent control organization.

A.2.5 When test pieces are cut from the units of the sample, the cutting is carried out by the manufacturer in the presence of the purchaser.

A.2.6 When more than one property is to be tested, the sample size should be appropriately multiplied so as to secure for each test a number of test pieces equal to the sample size (see **A.2.2** and **A.2.3**). From one unit of a sample one test piece only should be cut for a particular test, but for different tests the necessary test pieces may be cut from the same unit of the sample.

A.3 Determination of acceptability of inspection lots

A.3.1 *Inspection of attributes*

A.3.1.1 When the number of non-conforming units found in the sample is in accordance with the acceptance number Ac_1, indicated in column 3 of Table 7, the inspection lot from which the sample was drawn should be considered acceptable.

A.3.1.2 When the number of non-conforming units found in the sample is equal to or greater than the rejection number Re_1 indicated in column 4 of Table 7, this may justify rejection of the inspection lot.

A.3.1.3 When the number of non-conforming units found in the sample lies between the acceptance number and the rejection number (columns 3 and 4 of Table 7), a second sample of the same size as the initial sample (see **A.2.2**, **A.2.3** and **A.2.4**) should be drawn and examined.

A.3.1.4 The second sample should be inspected as indicated in **A.2.5** and **A.2.6**.

A.3.1.5 The number of non-conforming units found in the initial and in the second samples should be totalled.

A.3.1.6 If the total number of non-conforming units is equal to or less than the acceptance number Ac_2 indicated in column 5 of Table 7, the inspection lot should be considered acceptable.

A.3.1.7 If the total number of non-conforming units is equal to or greater than the second rejection number Re_2 indicated in column 6 of Table 7, this may justify rejection of the inspection lot.

A.3.1.8 When more than one property is to be tested, the second sample taken (see **A.3.1.3**) should only be inspected in accordance with those tests which at the inspection of the initial sample gave numbers of non-conforming units between the acceptance number Ac_1 and the rejection number Re_1.

Table 7 — Extract from Table 1 of ISO/R 390

1	2	3	4	5	6	7
Size of inspection lot	**Sample size**	**Initial sample**		**Initial + second samples**		**Size of inspection lot for products tested during manufacture**
		Acceptance number Ac_1	**Rejection number** Re_1	**Acceptance number** Ac_2	**Rejection number** Re_2	
	4	0	2	1	2	up to 400
up to 400	5	0	2	1	2	401 to 800
401 to 800	7	0	2	1	2	801 to 1 500
801 to 1 500	10	0	2	2	3	1 501 to 3 000
1 501 to 3 000	15	0	3	3	4	

Publications referred to

BS 12, *Portland cement (ordinary and rapid-hardening).*
BS 690, *Asbestos-cement slates and sheets.*
BS 690-3, *Corrugated sheets.*
BS 690-5, *Lining sheets and panels.*
BS 1014, *Pigments for Portland cement and Portland cement products.*
BS 4624, *Methods of test for asbestos-cement building products.*
BS 5247, *Code of practice for sheet roof and wall coverings.*
BS 5247-14, *Corrugated asbestos-cement.*
ISO/R 390, *Sampling and inspection of asbestos-cement products.*

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