BRITISH STANDARD

BS EN ISO 1886:1995
BS 2782-10: Method 1007:1995

Reinforcement fibres — Sampling plans applicable to received batches

The European Standard BS EN ISO 1886:1994 has the status of a British Standard

Cooperating organizations

The European Committee for Standardization (CEN), under whose supervision this European Standard was prepared, comprises the national standards organizations of the following countries:

Austria	Oesterreichisches Normungsinstitut
Belgium	Institut belge de normalisation
Denmark	Dansk Standard
Finland	Suomen Standardisoimisliito, r.y.
France	Association française de normalisation
Germany	Deutsches Institut für Normung e.V.
Greece	Hellenic Organization for Standardization
Iceland	Technological Institute of Iceland
Ireland	National Standards Authority of Ireland
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United Kingdom	British Standards Institution

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Contents

National foreword

This British Standard has been prepared under the direction of the Materials and Chemicals Sector Board and is the English language version of EN ISO 1886:1994 *Reinforcement fibres — Sampling plans applicable to received batches,* published by the European Committee for Standardization (CEN). It is identical with ISO 1886:1990 published by the International Organization for Standardization (ISO). It does not supersede any current British Standard but attention is drawn to BS 2545 *Methods of fibre sampling for testing* and BS 4784 *Methods for determination of commercial mass of consignments of textiles — Part 2 Methods for obtaining laboratory samples.*

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Summary of pages

This document comprises a front cover, an inside front cover, pages i and ii, the EN ISO title page, pages 2 to 12, 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.

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN ISO 1886

October 1994

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Descriptors: Plastics, reinforcing materials, fibres, sampling

English version

Reinforcement fibres — Sampling plans applicable to received batches

(ISO 1886:1990)

Fibres de renfort — Méthodes d'échantillonnage pour le contrôle de réception de lots
(ISO 1886:1990)

Verstärkungsfasern — Stichprobenaweisungen für die Loseingsprüfung
(ISO 1886:1990)

This European Standard was approved by CEN on 1994-08-25. CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration.

Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the Central Secretariat or to any CEN member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the Central Secretariat has the same status as the official versions.

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CEN

European Committee for Standardization
Comité Européen de Normalisation
Europäisches Komitee für Normung

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Foreword

This European Standard was taken over by the Technical Committee CEN/TC 249, Plastics, from the work of ISO/TC 61, Plastics, of the International Organization for Standardization (ISO).

CEN/TC 249 has decided to submit the final draft for formal vote. The result was positive.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by April 1995, and conflicting national standards shall be withdrawn at the latest by April 1995.

According to the CEN/CENELEC Internal Regulations, the following countries are bound to implement this European Standard: Austria, Belgium, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland, United Kingdom.

Introduction

As indicated in the title, this International Standard is designed for received batches and not for inspection during manufacturing of a product. In the latter case, the manufacturer should have the necessary facilities available and a good knowledge of the product, thus allowing him to assure the quality through an appropriate control system.

For checking received batches, the customer has only limited information about a given product.

The sampling plans described hereafter are intended as "normal" plans, and require a certain number of results for the assessment of a batch to a given confidence level.

Other sampling plans, i.e. reduced or tightened plans, can be considered, depending on the product type, the application for which the product is intended, the test method and the degree of inspection required.

The choice of sampling plan and the extent of sampling depends on

— the knowledge of the product acquired by the customer during product qualification, plus information from routine inspections of received batches;

— the degree of confidence that the customer is prepared to accord the inspections undertaken by the manufacturer.

1 Scope

This International Standard specifies two methods of sampling — by attributes or by measurements (variables) — applicable to batches of reinforcement materials (in particular textile glass, carbon fibre and aramid fibre) in various forms (e.g. package, roll, bulk material). For both methods, this International Standard includes tables with acceptance and rejection criteria based on a given number of acceptable quality levels (AQLs) that are usually applied to the various reinforcement materials.

2 Normative references

The following standards contain provisions which, through reference in this text, constitute provisions of this International Standard. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this International Standard are encouraged to investigate the possibility of applying the most recent editions of the standards indicated below. Members of IEC and ISO maintain registers of currently valid International Standards.

ISO 472:1988, *Plastics — Vocabulary.*

ISO 2859-1:1989, *Sampling procedures for inspection by attributes — Part 1: Sampling plans indexed by acceptable quality level (AQL) for lot-by-lot inspection.*

ISO 3534:1977, *Statistics — Vocabulary and symbols.*

ISO 3951:1989, *Sampling procedures and charts for inspection by variables for percent nonconforming.*

3 Definitions

For the purposes of this International Standard, the definitions given in ISO 472, ISO 2859-1, ISO 3534 and ISO 3951 apply, plus the following definitions, some of which are versions of definitions already published in ISO 3534, for instance, but reworded to suit the particular context of this International Standard.

3.1
sampling plan

a series of rules established to obtain, through the selection of a sample and its subsequent analysis, an evaluation which is as reliable as possible of the quality of a received batch, so as to determine, using criteria defined in the product specification, if this batch is acceptable

for the purposes of this International Standard, two main sampling methods are considered: by attributes and by measurements (variables)

3.2
elementary unit

the smallest normally commercially available entity of a given product

the description (form, dimensions, mass, etc.) of the elementary unit will normally be defined in the product specification. This unit may be supplied in one of several forms:

— package (single yarn, folded or cabled yarn, roving, etc.);

— roll (mat, woven fabric, veil, etc.);

— the smallest physical entity in a bulk product (e.g. chopped fibres, milled fibres).

NOTE 1 For a given product, the dimensions, mass or volume of the elementary unit may change, as fabrication techniques evolve, without necessarily causing any modification in the product properties or the way in which these properties vary throughout the elementary unit. As an example, while some years ago a bobbin of yarn had a weight of 2 kg, the same item can now be supplied as a 10 kg bobbin. In both cases, it is the bobbin which must be considered as the elementary unit.

3.3
case

the smallest conveniently handleable unit (i.e. a carton or other container), which may contain one or more elementary units of the same type and quality

3.4
batch (dispatched or received batch)

a definite quantity of product made up of elementary units of the same type and produced under conditions assumed to be constant

a batch may constitute all or part of any particular order

the cases making up a batch may be handleable individually, or several may by assembled together on a pallet. All the cases constituting a batch are dispatched to, or intended for, a single customer and accompanied by a single dispatch note

NOTE 2 In addition to the concept of a shipped batch, the user of this International Standard should be aware of the concept of a production batch. The latter concept generally applies only when production takes place in discontinuous runs. This is the case with carbon fibres, for instance, which must therefore be indentified by indicating the production batch on each case. For continous production (most textile-glass items, for example), the production-batch concept does not apply. Nevertheless, each case should, in principle, be marked with a production date. If, within a particular shipped batch, there are widely separated production dates, manufacturer and customer may agree to consider sampling each production run separately.

3.5
acceptability quality level (AQL)

the maximum percent nonconforming (or the maximum number of nonconformities per 100 units) that, for purposes of sampling inspection, can be considered satisfactory as a process average

the AQL will normally be defined, for each property, in the product specification. It may not be the same for all properties. In addition, properties subject to a lower limit and an upper limit may have a different AQL for each limit

3.6
sample

a given number of elementary units which have been selected at random with a view to performing a test either directly on these units or on one or more specimens taken from the units

NOTE 3 Where necessary, an additional sampling stage may be carried out on these elementary units to give a laboratory sample (e.g. a single piece of fabric or a given amount of chopped fibres). Instructions for the preparation of this laboratory sample will normally be given in the test method concerned.

3.7
inspection by attributes (counting nonconformities)

a method of inspection that, for every selected elementary unit, determines either

— the presence or absence of one or more qualitative characteristics; or

— the conformance or not of a properly with one or more limits defined in the manufacturer's specification.

the number of nonconforming units is then compared to the AQL given in the product specification to determine whether the batch should be accepted or rejected (see example 1, subclause **7.1**)

3.8
inspection by measurements (variables)

a method of inspection that consists of measuring one or more quantitative characteristics for each elementary unit in a batch or in a sample taken from the batch. Each quantitative characteristic must be measurable on a continuous scale. If more than one characteristic is measured, it requires only one characteristic to be unsatisfactory for the batch to be unacceptable

this method of inspection using measurements is only applicable to characteristics that obey a normal (i.e. Gaussian) distribution law

for the purposes of this International Standard, the measurement results obtained for each elementary unit are used to calculate the mean for the sample and the standard deviation. From these data, the lower quality statistic Q_L and/or the upper quality statistic Q_U are calculated, using the formulae given in example 2 (see **7.2.1**), and Q_L and/or Q_U then compared with the acceptability constant k (see Table 2). A graph may also be plotted as an aid in assessing the quality of the batch sampled

inspection by measurements may be applied to one or more properties with

— one limit, either lower or upper (see **7.2.1**, example 2);

— two limits, either with different AQLs or with the same AQL.

in the case of two limits with different AQLs, batch acceptance calculations are carried out first for one limit, then for the other (see **7.2.2**). In the case of two limits with the same AQL, the batch acceptance decision is based on a graphical treatment of the results (see **7.2.3**, example 3)

3.9
operating characteristic curve

each sampling plan is characterized by an operating characteristic curve which indicates, for a given AQL, the probability P_a of a batch being accepted, depending on the actual (i.e. measured) level p of nonconformities, in percent, in the batch

the graph shown in Figure 1 is an example, taken from ISO 3951, for a sample of 15 units and an AQL of 1,5 % (the "*s*" method). If the product supplied contains 4 % nonconformities, about 62 % of the batches submitted would be expected to be acceptable using this sampling plan

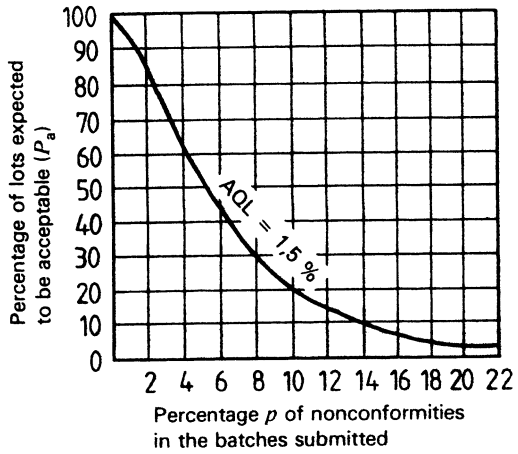

Figure 1 — Example of an operating characteristic curve

operating characteristic curves of this kind allow an estimate to be made of the risk β to the customer in accepting batches with a nonconformity level greater than the AQL. Conversely, the risk α to the manufacturer of having a batch rejected which contains less nonconformities than the AQL can also be estimated

manufacturer's and customer's risks can be assessed using the operating characteristic curve. For example, it can be seen in Figure 1 that the horizontal line corresponding to P_a = 10 % cuts the operating characteristic curve at a nonconformity level of 13,38 %. This means that, in 10 % of the cases, the customer may have to accept with this sampling plan a batch containing in practice 13,38 % nonconformities

as for the manufacturer, there is a 5 % probability of him having a batch rejected by a customer although it contains only 1,09 % nonconformities

4 Choice of sampling plan

4.1 General

From the various possibilities described in ISO 2859-1 and ISO 3951, this International Standard specifies, for both methods of inspection, the normal inspection level (i.e. level II in the two International Standards mentioned above), corresponding to a confidence level of 95 %. Other inspection levels, corresponding to higher or lower confidence levels, may be use, however. In these cases, the above-mentioned two International Standards shall be consulted.

For inspection by measurements, this International Standard only includes the "*s*" method which is based on the actual standard deviation measured on the sample.

4.2 Attributes or measurements?

When a batch is to be sampled, the method of inspection, i.e. by attributes or by measurements, must be decided first.

a) Inspection by attributes is simpler, especially as far as the decision, taken after sampling, as to the acceptability of the received batch is concerned. This method of inspection can be used with one or several qualitative parameters and does not require any knowledge of the distribution law governing the results. It does require, however, a greater number of elementary units in the sample than does inspection by measurements.

b) Inspection by measurements cannot be used if the law governing the distribution of the results is not a Gaussian one. However, inspection by measurements requires, for a given AQL, a smaller number of elementary units compared with inspection by attributes. Indeed, the use of the results themselves and their distribution provides much more information on the quality of the batch. Inspection by measurements is thus particularly suitable for use with destructive testing, complex test procedures or products for which quality is a critical factor. When this inspection method is used in conjunction with quality-control charts, it is also a good way of detecting shifts in quality.

The choice of sampling plan must thus take into consideration

— the type of test which will be conducted and its cost;

— the distribution of the measured values.

It should be noted that it is possible to use inspection by measurements for certain parameters and inspection by attributes for others. In addition, it must be pointed out that the product specification should, in principle, indicate the inspection method that is most appropriate for the product concerned.

4.3 Severity of inspection

For a given inspection level (for the purposes of this International Standard, this is the normal level, which is related to a confidence level of 95 %): sampling can be characterized either by normal inspection severity or by tightened or reduced severity. For the qualification of a product, or in cases of dispute, the minimum inspection level shall be the normal level. If a decrease in quality is observed over several lots, or if the severity of the inspection procedure needs to be improved for any other reason, then the tightened level of inspection shall be applied.

For regular deliveries of a reputable product well known to the customer, however, sampling can be carried out at the reduced level. By the same token, it is possible to use the "σ" method rather than the "s" method when the standard deviation of the property measured is accurately known.

The full sampling plans (see ISO 2859-1 and ISO 3951) shall be consulted if the normal plan is inapplicable, or if it is applicable but for some reason cannot be carried out.

4.4 Remarks

4.4.1 Before carrying out an inspection procedure (i.e. sampling plus the inspection itself), it is necessary for manufacturer and customer to agree what the following terms represent in practice for a given product:

a) the dispatched batch;

b) an elementary unit;

c) the sample (i.e. how many elementary units);

d) an individual result, the mean of the results and the standard deviation.

4.4.2 The decision regarding batch acceptance will depend solely on the individual results for each of the elementary units. These results may, if several specimens have been taken from each elementary unit, in fact each be the mean of several measurements.

If, for any reason, the distribution of the results obtained for a particular elementary unit needs to be taken into consideration, this distribution shall be considered as an additional parameter and a tolerance specified for it.

4.4.3 The sampling plan must form part of a coherent system which requires

a) that the product specification include the following information:

— the properties guaranteed,

— the inspection method used (by attributes or by measurements) for each property,

— the required quality level (AQL) for each property (the AQL will not necessarily be the same for each property),

— any departures from the normal sampling plan or from the standard sampling method;

b) that the test method specify, in addition to the test procedure itself:

— the number of specimens to be taken from each elementary unit in the sample,

— the place where the specimen(s) is/are to be taken in each elementary unit,

— the way in which the individual result for each elementary unit is to be expressed.

5 Sampling

Table 1 and Table 2 specify the number of elementary units to be taken, which will depend on the number of elementary units in the dispatched batch. The tables also specify the batch acceptance and rejection criteria to be applied for AQLs between 0,65 % and 6,5 %.

For reduced or tightened sampling plans, ISO 2859-1 (attributes) and ISO 3951 (variables) shall be consulted in order to obtain the sample size from the tables of sample size versus batch size, and also the acceptance criteria for different AQLs.

6 Procedure

6.1 Determine the total number of elementary units in the batch, as well as the number of cases and the number of pallets.

6.2 Using Table 1 or Table 2, establish the number of elementary units to be selected (i.e. the sample size n).

When sampling, elementary units should be selected at random. In practice, the problem boils down to determining the number of pallets and the number of cases from which the n elementary units are to be selected. This may be conveniently done by determining, from Table 1 or Table 2,

— the number p of pallets to be sampled (considering them as the elementary units of the batch);

— the number c of cases to be sampled (considering them as the elementary units of the batch).

It is advisable, when taking cases from the selected pallets, to take as nearly as possible the same number of cases from each pallet (i.e. the number of cases should be as close to c/p as possible), then to proceed in the same way when taking the elementary units from each of the cases selected (i.e. the number of elementary units taken from each case should be as close to n/c as possible).

Table 1 — Inspection by attributes (normal inspection) (Level II of ISO 2859-1)

Number of elementary units in batch	Sample size and corresponding code letter		Acceptance criteria as per following AQLs											
			0,65		1,0		1,5		2,5		4,0		6,5	
			A	R	A	R	A	R	A	R	A	R	A	R
2 to 8	2	A	⇩		⇩		⇩		⇩		⇩		0	1
9 to 15	3	B	⇩		⇩		⇩		⇩		0	1	⇧	
16 to 25	5	C	⇩		⇩		⇩		0	1	⇧		⇩	
26 to 50	8	D	⇩		⇩		0	1	⇧		⇩		1	2
51 to 90	13	E	⇩		0	1	⇧		⇩		1	2	2	3
91 to 150	20	F	0	1	⇧		⇩		1	2	2	3	3	4
151 to 280	32	G	⇧		⇩		1	2	2	3	3	4	5	6
281 to 500	50	H	⇩		1	2	2	3	3	4	5	6	7	8
501 to 1 200	80	J	1	2	2	3	3	4	5	6	7	8	10	11
1 201 to 3 200	125	K	2	3	3	4	5	6	7	8	10	11	14	15
3 201 to 10 000	200	L	3	4	5	6	7	8	10	11	14	15	21	22

Key:

⇧ & ⇩: Use the criteria specified for the sampling plan immediately above or below the arrow.

A: Batch is acceptable if the number of nonconforming units is equal to or less than the number given.

R: Batch is unacceptable if the number of nonconforming units is equal or greater than the number given.

NOTE – For batches of more than 10 000 elementary units, sampling shall be the subject of an agreement between manufacturer and customer.

Table 2 — Inspection by measurements (normal inspection) (Level II of ISO 3951)

Number of elementary units in batch	Sample size and corresponding code letter		Acceptable quality level (%)					
			0,65	1,0	1,5	2,5	4,0	6,5
			Acceptability constant k					
3 to 15	3	B	↓	↓	↓	1,12	0,958	0,765
16 to 25	4	C	↓	1,45	1,34	1,17	1,01	0,814
26 to 50	5	D	1,65	1,53	1,40	1,24	1,07	0,874
51 to 90	7	E	1,75	1,62	1,50	1,33	1,15	0,955
91 to 150	10	F	1,84	1,72	1,58	1,41	1,23	1,03
151 to 280	15	G	1,91	1,79	1,65	1,47	1,30	1,09
281 to 400	20	H	1,96	1,82	1,69	1,51	1,33	1,12
401 to 500	25	I	1,98	1,85	1,72	1,53	1,35	1,14
501 to 1 200	35	J	2,03	1,89	1,76	1,57	1,39	1,18
1 201 to 3 200	50	K	2,08	1,93	1,80	1,61	1,42	1,21
3 201 to 10 000	75	L	2,12	1,98	1,84	1,65	1,46	1,24

Key:

↓: Use the constant k given for the sampling plan immediately below the head of the arrow.

NOTE — For batches of more than 10 000 elementary units, sampling shall be the subject of an agreement between manufacturer and customer.

This sampling approach, which generally works satisfactorily, is much less expensive than random selection using a table of random numbers.

EXAMPLE (for inspection by attributes)

Consider a batch consisting of:

10 pallets

120 cases (12 cases/pallet)

2 400 elementary units (20 EUs/pallet)

— Sample size: From Table 1, 10th line (1 201 to 3 200), $n = 125$

— Number of pallets to be taken: From Table 1, 2nd line (9 to 15), $p = 3$

— Number of cases to be taken: From Table 1, 6th line (91 to 150), $c = 20$

— Number of cases to be taken per pallet:

$$\frac{c}{p} = \frac{20}{3} = 6{,}66$$

This means that 6 or 7 cases are to be taken from each of the three pallets selected, in order to obtain a total of 20 cases, i.e. 7 cases from two of the pallets and 6 cases from the third.

— Number of elementary units to be taken per case:

$$\frac{n}{c} = \frac{125}{20} = 6{,}75$$

This means that 6 or 7 elementary units are to be taken from each of the 20 cases selected, in order to obtain a total of 125 elementary units, i.e. 6 elementary units from 15 of the cases and 7 elementary units from the five others.

6.3 Choose only cases showing no evident signs of damage (due to rough handling, exposure to moisture, etc.). For such cases, the question of damage shall be dealt with separately.

6.4 Carry out the required tests and express the result for each elementary unit as specified in the test method.

6.5 Determine whether the batch is acceptable or not by calculating the number of nonconforming units or the percent nonconforming, in accordance with the rules laid down for the particular inspection method used (see clause **7**).

7 Determination of batch acceptability

7.1 Inspection by attributes

Each elementary unit inspected is classified as either acceptable or nonconforming. The total number of nonconforming units is compared to the acceptance and rejection values given in Table 1 for the specified. AQL and the size of the sample taken.

EXAMPLE 1

Consider a batch made up of 864 elementary units. The product specification stipulates an AQL of 1,5 %. From Table 1, it can be seen that

— for an 864-unit batch, 80 elementary units must be taken as the sample;

— for an AQL of 1,5 %, the batch is acceptable if the number of nonconforming units found in the sample is equal to or less than 3;

— the batch is unacceptable if this number is 4 or more.

7.2 Inspection by measurements ("*s*" method)

7.2.1 *Case of a single limit*

To judge the batch acceptability, the lower-limit quality statistic Q_L or upper-limit quality statistic Q_U is first calculated. The value obtained is then compared with the acceptability constant k corresponding to the AQL specified and the size of the sample taken (see Table 2).

EXAMPLE 2

Consider a batch made up of 864 elementary units, on which a tensile-strength test is to be conducted to determine acceptability. The product specification calls for a lower limit of 2,00 N and an AQL of 1,5 %. Sampling (see Table 2) requires, for a batch of 864 elementary units, the inspection of 35 units. Table 2 also specifies, for an AQL of 1,5 %, an acceptability constant k of 1,76.

Inspection results

— Individual results:

Table 3 — Individual results obtained in example 2

2,34	2,23	2,14	2,31	2,37
2,16	2,41	2,18	2,39	2,14
2,13	2,27	2,28	2,45	2,36
2,41	2,61	2,14	2,19	2,95
2,12	2,24	2,10	2,23	2,34
2,41	2,39	2,12	2,06	2,54
2,01	2,29	2,46	2,39	2,27

— Mean: $\bar{x}$ = 2,27 N

— Standard deviation: s = 0,15 N

Acceptability requirements for the batch (case of a lower limit only)

$$Q_L = \frac{\bar{x} - L_L}{s} = \frac{2,27 - 2,00}{0,15} = 1,8$$

The batch, is acceptable if $Q_L \geqslant k$. It is unacceptable if $Q_L < k$.

In this example, the batch is acceptable since k = 1,76.

NOTE 4 In the case of an upper limit only, the batch is acceptable if

$$Q_U = \frac{L_U - \bar{x}}{s} \geqslant k$$

7.2.2 *Case of two separate limits*

The expression "separate limits" means that each limit has a different AQL associated with it.

The procedure given in **7.2.1** shall be applied for each of two such separate limits. The batch is acceptable if both Q_U and Q_L are greater than k. It is unacceptable if either Q_U or Q_L is less than k.

7.2.3 *Case of combined limits*

The expression "combined limits" means that exactly the same AQL is specified for both of the limits.

In this case, a graphical method shall be used to determine whether the batch is acceptable or not, as described in ISO 3951. For each sample size greater than 4 elementary units, ISO 3951 provides a graph consisting of a family of acceptance curves, each curve corresponding to a different AQL.

To determine whether the batch is acceptable or not, the values of the following two quantities are calculated:

— the standardized mean;

— the standardized standard deviation.

EXAMPLE 3

Consider the inspection by measurements of a batch of textile materials, based on the following data:

— Batch size: 864 elementary units

— Property to be measured: mass per unit length with an L_L of 180 tex and an L_U of 220 tex

— AQL: 1,5 %

— Sample size (see Table 2): 35 elementary units (code-letter J)

— Mean result: $\bar{x}$ = 207 tex

— Standard deviation: s = 5 tex

The standardized mean is calculated from the equation

$$\bar{x}_n = \frac{\bar{x} - L_L}{L_U - L_L}$$

and the standardized standard deviation calculated from the equation

$$s_n = \frac{s}{T_U - T_L}$$

and the point corresponding to the values obtained is determined on the acceptance-curve diagram corresponding to sample size J and an AQL of 1,5 % (see Figure 2).

If the resulting point falls within the acceptance zone, the batch is acceptable.

In this example, the standardized mean is 27/40 (= 0,675) and the standardized standard deviation is 5/40 (= 0,125).

The batch is therefore acceptable.

NOTE 5 If the standard deviation s had been 10 tex, the standardized standard deviation s_n, would have been 10/40 (= 0,25).
In this case, the batch would have been automatically rejected whatever the difference between the mean $\bar{x}$ and the median point between the two limits, since the upper standard deviation of the limiting curve is less than 0,25.

8 Sampling report

The sampling report shall include the following information:

a) a reference to this International Standard;

b) all details necessary for the complete identification of the product sampled;

c) all details necessary for the complete identification of the batch and the cases within the batch;

d) the method of inspection used (i.e. by attributes or by measurements);

e) the acceptable quality level(s) used;

f) the total number of elementary units in the batch, the number of cases in the batch and the number of elementary units per case, plus the number of pallets if the product was palletized;

g) a description of the sample (number of elementary units taken, number of cases sampled and number of pallets sampled);

h) an identification of the sample (designation number or designation letter of the sample and/or of the elementary units making up the sample);

i) details of any deviation from the normal sampling plan (as regards, for example, inspection level or severity of inspection).

The sampling report will normally form an integral part of the inspection report for a batch for which one or more characteristics are assessed. If the sampling procedure is to be the subject of a separate report, independent of the inspection report, it shall also include the following information:

j) the name and address of the manufacturer;

k) the name and address of the customer;

l) the place at which the sampling was carried out.

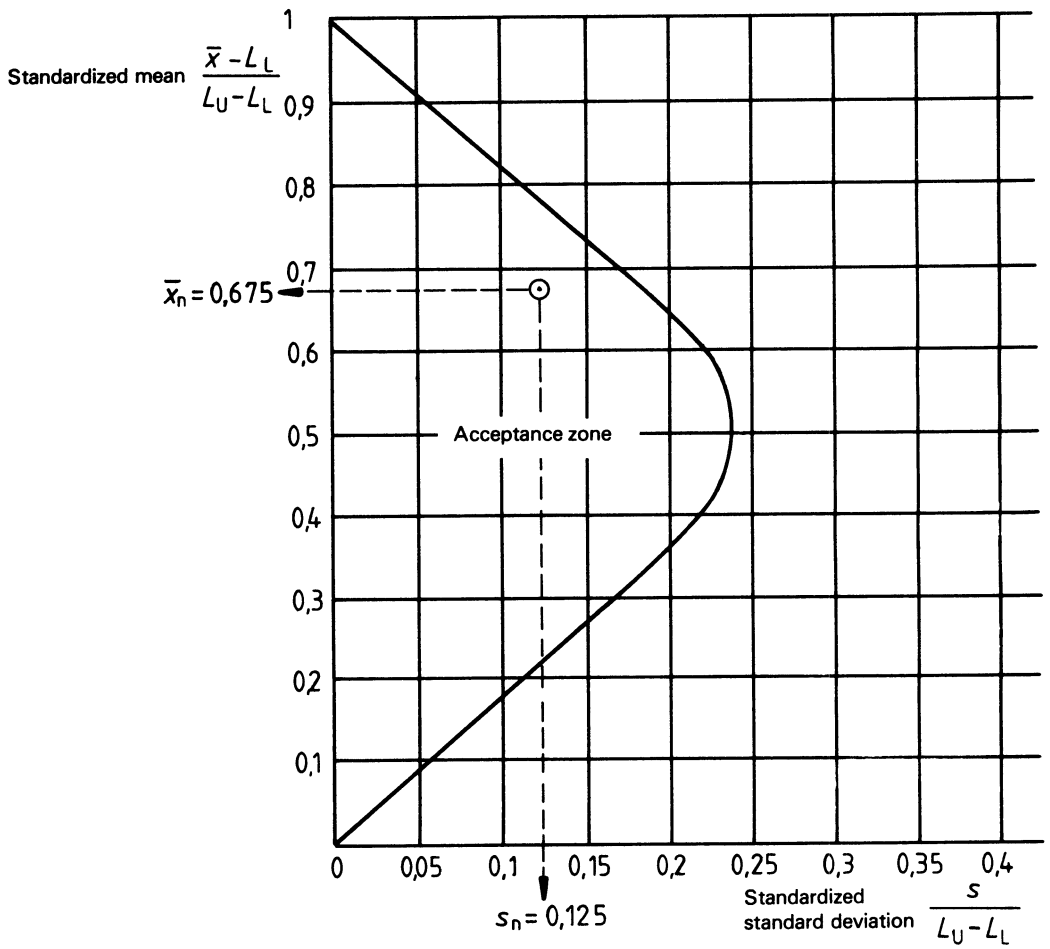

Figure 2 — Acceptance curve for an AQL of 1,5 % (taken from diagram *s*-J in ISO 3951:1989)

blank

National annex NA (informative)
Committees responsible

The United Kingdom participation in the preparation of this European Standard was entrusted to Technical Committee PRI/41, Fibre reinforcement for plastics and composite test methods, upon which the following bodies were represented:

British Plastics Federation

Department of Trade and Industry (National Physical Laboratory)

Ministry of Defence

Motor Industry Research Association

National annex NB (informative)
Cross-references

Publication referred to	Corresponding British Standard
ISO 472:1988	BS 1755 *Glossary of terms used in the plastics industry* Part 1:1982 *Polymer and plastics technology*
ISO 2859-1:1989	BS 6001 *Sampling procedures for inspection by attributes* Part 1:1991 *Specification for sampling plans indexed by acceptable quality level (AQL) for lot-by-lot inspection*
ISO 3951:1989	BS 6002 *Sampling procedures for inspection by variables* Part 1:1993 *Specification for single sampling plans indexed by acceptable quality level (AQL) for lot-by-lot inspection.*

BS EN ISO 1886:1995
BS 2782-10: Method 1007:1995

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