International Standard 8212

INTERNATIONAL ORGANIZATION FOR STANDARDIZATION•МЕЖДУНАРОДНАЯ ОРГАНИЗАЦИЯ ПО СТАНДАРТИЗАЦИИ•ORGANISATION INTERNATIONALE DE NORMALISATION

Soaps and detergents — Techniques of sampling during manufacture

Savons et détergents — Techniques de l'échantillonnage en cours de fabrication

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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.

Draft International Standards adopted by the technical committees are circulated to the member bodies for approval before their acceptance as International Standards by the ISO Council. They are approved in accordance with ISO procedures requiring at least 75 % approval by the member bodies voting.

International Standard ISO 8212 was prepared by Technical Committee ISO/TC 91, *Surface active agents.*

Users should note that all International Standards undergo revision from time to time and that any reference made herein to any other International Standard implies its latest edition, unless otherwise stated.

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Soaps and detergents — Techniques of sampling during manufacture

0 Introduction

Accurate sampling is a difficult operation which requires much care. When it is necessary to obtain statistically valid information about a product, it is essential that the procedures described in this International Standard are followed.

The manufacturer's responsibility for the satisfactory quality of a batch of product can only be established at the time of manufacture.

1 Scope and field of application

This International Standard describes the general techniques of taking and preparing samples of soaps and detergents, for use in conjunction with a previously established sampling plan.

This International Standard is only applicable during manufacture of soaps and detergents and only at the time of packaging (small and large packages) and it does not apply when a standard has been elaborated for a specific product.

In the case of individual packages, this International Standard defines the techniques of preparing a bulk sample and a final sample.

2 References

ISO 607, *Surface active agents and detergents — Methods of sample division.*

ISO 862, *Surface active agents — Vocabulary.*

ISO 6206, *Chemical products for industrial use — Sampling — Vocabulary.*

ISO 8213, *Chemical products for industrial use — Sampling techniques — Solid chemical products in the form of particles varying from powders to coarse lumps.*

3 Definitions

For the purpose of this International Standard the following definitions apply.

3.1 soap

See term 3 of ISO 862.

3.2 detergent

See term 2 of ISO 862.

3.3 batch: A definite quantity of material corresponding to several sampling units which belong together because of their manufacture or production or packaging under conditions which are presumed to be uniform.

3.4 sampling unit: A defined quantity of material having a physical boundary (for example an individual tablet or a container).

3.5 sample: One or more sampling unit(s) taken from a larger number of sampling units, or one or more increments taken from a sampling unit (see ISO 6206).

3.6 representative sample: A sample assumed to have the same composition as the material sampled when the latter is considered as a homogeneous whole (see ISO 6206).

3.7 final sample: A sample obtained or prepared under the sampling plan for possible subdivision into identical portions for testing, reference or storage (see ISO 6206).

4 Principle

Taking of a certain number of increments from the batch to be sampled.

Mixing of the increments to form a representative sample (bulk sample).

Preparation by means of replicate reductions, from the representative sample, of a final sample, then of several laboratory, reference and storage samples.

5 Categories of products to be sampled

Four physical state categories of soap and detergent products are covered by this International Standard:

5.1 Individual solid products in the form of bars, cakes or tablets.

5.2 Particulate products in the form of powder, flakes, chips, etc.

5.3 Paste products.

5.4 Liquid products.

6 Apparatus

The apparatus described below should comply with the specifications given in ISO 8213.

6.1 Individual solid products

6.1.1 Knife or **cutting-wire.**

6.1.2 Mechanical grinder or **grater.**

6.1.3 Air-tight container, dry and clean and of sufficient capacity to hold 20 sampling units.

6.1.4 Air-tight container, dry and clean and of sufficient capacity to hold 500 g of soap.

6.2 Particulate products

6.2.1 Probe samplers (see ISO 8213 and figures 3, 5, 6, 7 and 9).

6.2.2 Stationary sample divider (ISO 607 and figures 1a and 1b) or **rotary sample divider** (see ISO 607 and figures 10, 11 and 12).

6.2.3 Air-tight container, dry and clean and of sufficient capacity to hold the final sample (1 litre).

6.3 Paste products

6.3.1 Scoop or **measuring cup.**

6.3.2 Probe samplers (see ISO 8213 and figures 2, 4, 8 and 9).

6.3.3 Spatula.

6.3.4 Mechanical stirrer.

6.3.5 Air-tight container, dry and clean and of sufficient capacity to hold the final sample (1 litre).

6.4 Liquid products

6.4.1 Sampling tube.

6.4.2 Mechanical stirrer.

6.4.3 Air-tight container, dry and clean and of sufficient capacity to hold the final sample (1 litre).

7 Procedure

7.1 General precautions

See ISO 8213, sub-clause 5.2.

7.2 Place and period of withdrawal of sampling units

In order to ensure that the assessment of the batch is statistically valid, it is essential that the choice of sampling units be carried out at the place and during the course of manufacture.

7.3 Choice and withdrawal of sampling units in the batch (representative sample)

For a given packaging run, take a statistically significant random sample using the random number table (see annex A). Carry out the withdrawal during a packaging run, of at least 1 h duration, commencing within 1 h of manufacture.

NOTE — 10 to 20 sampling units should be sufficient to obtain a representative sample, but a special sampling plan may be required, depending upon the type and the accuracy of the test method to be used and the degree of process variability during the packaging run.

7.4 Conditioning of sampling units (representative sample)

The representative sample shall be stored at ambient laboratory temperature.

For products that can change under ambient conditions (for example gain or loss of moisture), and if it is not possible to reduce immediately the representative sample to the final sample, place the sampling units in an air-tight container before all subsequent reduction.

These sampling units shall be stored so that the free space surrounding them is as small as possible.

7.5 Preparation of final sample

From the representative sample (7.3), in order to prepare the final sample, take increments of about the same mass from each retained sampling unit and collect them. This sampling procedure shall be carried out in the same conditions as indicated in 7.1.

7.5.1 Individual solid products

Reduce the representative sample, stored in the container (6.1.3), to a final sample, by cutting with the knife (6.1.1) each bar, cake or tablet into eight parts by three mutually perpendicular cuts passing through the middle of each face.

Take two diagonally opposite eighths and, if the final sample so obtained exceeds 500 g, divide each eighth into two equal parts. Slice, grate finely or pass through the mechanical grinder (6.1.2), mix thoroughly and fill completely the container (6.1.4).

7.5.2 Particulate products in small packages (up to 5 kg)

Reduce the representative sample by passing the contents of all the sampling units taken (packages) through the sample divider (6.2.2), observing the precautions indicated in 5.6.6 of ISO 8213.

If the volume of the final sample exceeds 1 litre, pass the different fractions obtained through the divider a sufficient number of times to obtain a final sample having the desired volume.

Keep this final sample in the container (6.2.3).

7.5.3 Particulate products in large packages (over 5 kg)

Take increments from each sampling unit taken (package) using a probe sampler (6.2.1) of sufficient size to traverse the complete package diagonally (increment of 0,5 litre).

Combine and mix these increments to form a bulk sample. Pass this bulk sample through a divider (6.2.2) to obtain a final sample of approximately 1 litre.

Keep this final sample in the container (6.2.3).

7.5.4 Paste products[1] in small packages (up to 1 kg or 1 litre)

Ensure homogeneity of sampling units by mixing with the spatula (6.3.3) at a suitable temperature (preferably between 20 and 30 °C). Take equal increments from each package using an appropriate means, for example the measuring cup or scoop (6.3.1) to obtain a final sample of approximately 1 litre. Combine these increments in a container (6.3.5).

7.5.5 Paste products[1] in large packages (over 1 kg or 1 litre)

Ensure the homogeneity of the sampling units as far as possible by appropriate mechanical means. A temperature between 20 and 30 °C is recommended. Take equal increments from each package using a probe sampler (6.3.2) of sufficient size to traverse the complete package diagonally to obtain a final sample of approximately 1 litre. Combine these equal increments in the container (6.3.5).

7.5.6 Liquid products in small packages (up to 5 kg or 5 litres).

Gently shake each individual package (sampling unit taken) and immediately pour equal increments from each package into the container (6.4.3), to obtain a final sample of approximately 1 litre.

7.5.7 Liquid products in large packages (over 5 kg or 5 litres)

Ensure the homogeneity of the sampling units by appropriate means (mixing, shaking, etc.) before taking equal increments from each package. These increments shall be removed using the sampling tube (6.4.1) appropriate to the viscosity of the liquid being sampled. Combine these equal increments in the container (6.4.3).

7.6 Labelling and storage of final samples

The containers with the final samples shall be labelled for identification. Carry out analysis as soon as possible after the preparation of the samples. Where this is not possible, care shall be taken to preserve the final sample in its original condition.

Further divisions of the final sample can be carried out using the methods described in ISO 607.

8 Sampling report

The sampling report shall contain the following information:

a) all customary commercial details (name and description of the product, name of manufacturer, location, date and time of sampling, size of packaging run sampled);

b) number of sampling units taken from the packaging run;

c) number, type and mass of prepared samples (for example a 500 g final sample);

d) reference to sampling methods (for example : reference to this International Standard), apparatus used and ambient conditions at time of sampling (temperature, relative humidity, etc.);

e) any unusual features noticed during the sampling;

f) any operations not specified in this International Standard, or regarded as optional, as well as any incidents likely to have affected the sampling.

1) For some paste products, mixing can modify their specific characteristics.

Annex A

Table of random numbers — Method of use for sampling

(This annex forms an integral part of the Standard.)

To obtain n numbers drawn at random, within th N series of whole numbers: 1, 2, 3 ... N, proceed as follows, using the table.

a) If $N \leqslant 9$

Take the numbers which occur in any single column or any single line of the table, eliminating those above N or those which have already been taken, continuing until n figures are obtained.

Example:

5, 9, 4, 2, 1, etc., any given column

1, 9, 4, 2, 8, etc., any given line

b) If $10 \leqslant N \leqslant 99$

Take the two-figure numbers (the first may be 0) which occur in any single column or any single line of the table, eliminating those above N or those which have already been taken, continuing until n figures are obtained.

Example:

01, 53, 92, 41, 24, 18, etc., any given column

01, 10, 91, 40, 28, 04, 80, 46, etc., any given line

If the number of readings in any column (or any line) is less than n, continue the readings in the same way in another column (or another line). Always take care to choose columns or lines which have not been used before.

c) If $100 \leqslant 999$ or $1\,000 \leqslant N \leqslant 9\,999$

Proceed as before, but taking three-figure numbers (the first two may be 0) up to 999, and four-figure numbers (the first three may be 0) up to 9 999.

Table (part 1) — **Random sampling numbers**

0110	9140	2804	8046	7142	6277	6210	8627	3209	6845
5327	3946	6289	6117	0060	2827	6546	2738	8760	6604
5373	8259	4956	8185	0135	8640	7410	6335	0831	2774
9244	9452	8324	8062	9817	9853	7479	9559	4264	6919
4148	3948	5399	8687	3568	4046	4558	0705	5075	4440
2403	4351	8240	3554	3568	4701	7494	6036	7735	4082
1828	1956	1646	1370	9096	0738	8015	0513	6969	0949
7249	9634	4263	4345	0567	1272	5302	3352	7389	9976
7116	9731	2195	3265	9542	2808	1720	4832	2553	7425
6659	8200	4135	6116	3019	6223	7323	0965	8105	4394
2267	0362	5242	0261	7990	8886	0375	7577	8422	5230
9460	9813	8325	6031	1102	2825	4899	1599	1199	0909
2985	3541	6445	7981	8796	9480	2409	9456	7725	0183
4313	0666	2179	1031	7804	8075	8187	6575	0065	2170
6930	5368	4520	7727	2536	4166	7653	0448	2560	4795
8910	3585	5655	1904	0681	6310	0568	3718	3537	8858
8439	1052	5883	9283	1053	5667	0572	0611	0100	5190
4691	6787	4107	5073	8503	6875	7525	8894	7426	0212
1034	1157	5888	0213	2430	7397	7204	6893	7017	7038
7472	4581	3837	8961	7931	6351	1727	9793	2142	0816
2950	7419	6874	1128	5108	7643	7335	5303	2703	8793
1312	7297	3848	4767	5386	7361	2079	3197	8904	4332
8734	4921	6201	5057	9228	9938	5104	6662	1617	2323
2907	0737	8496	7509	9304	7112	5528	2390	7736	0475
1294	4883	2536	2351	5860	0344	2595	4880	5167	5370

Table (part 2) — **Random sampling numbers**

0430	5819	7017	4512	8081	9198	9786	7388	0704	0138
5632	0752	8287	8178	8552	2264	0658	2336	4912	4268
7960	0067	7837	9890	4490	1619	6766	6148	0370	8322
5138	6660	7759	9633	0924	1094	5103	1371	2874	5400
8615	7292	1010	9987	2993	5116	7876	7215	9714	3906
4968	8420	5016	1391	8711	4118	3881	9840	5843	0751
9228	3252	5804	8004	0773	7886	0146	2400	6957	8968
9657	9617	1033	0469	3564	3799	2784	3815	3611	8362
9270	5743	8129	8655	4769	2900	6421	2788	4858	5335
8206	3008	7396	0240	0524	3384	6518	4268	5988	9096
1562	7953	0607	6254	0132	3860	6630	2865	9750	9397
1528	4342	5173	3322	0026	7513	1743	1299	1340	6470
5697	9273	8609	8442	1780	1961	7221	5630	8036	4029
3186	0656	3248	0341	9308	9853	5129	3956	4717	7594
3275	7697	1415	5573	9661	0016	4090	2384	7698	4588
7931	1949	1739	3437	6157	2128	6026	2268	5247	2987
5956	2912	2698	5721	1703	2321	8880	3288	7420	2121
1866	7901	4279	4715	9741	2674	7148	8392	2497	8018
2673	7071	4948	8100	7842	8208	3256	3217	8331	7256
7824	5427	0957	6076	2914	0336	3466	0631	5249	7289
2251	0864	0373	7808	1256	1144	4152	8262	4998	3315
7661	8813	5810	2612	3237	2829	3133	4833	7826	1897
6651	6718	1088	2972	0673	8440	3154	6962	0199	2604
2917	4989	9207	4484	0916	9129	6517	0889	0137	9055
5970	3582	2346	8356	0780	4899	7204	1042	8795	2435

Table (part 3) — Random sampling numbers

1564	8048	6359	8802	2860	3546	3117	7357	9945	5739
6022	9676	5768	3388	9918	8897	1119	9441	8934	8555
8418	9906	0019	0550	4223	5586	4842	8786	0855	5650
5948	1652	2545	3981	2102	3523	7419	2359	0381	8457
6945	3629	7351	3502	1760	0550	8874	4599	7809	9474
0370	1165	8035	4415	9812	4312	3524	1382	4732	2303
6702	6457	2270	8611	8479	1419	0835	1866	1307	4211
3740	4722	3002	8020	0182	4451	9389	1730	3394	7094
3833	3356	9025	5749	4780	6042	3829	8458	1339	6948
8683	7947	4719	9403	7863	0701	9245	5960	9257	2588
6794	1732	4809	9473	5893	1154	0067	0899	1184	8630
5054	1532	9498	7702	0544	0087	9602	6259	3807	7276
1733	6560	9758	8586	3263	2532	6668	2888	1404	3887
6609	6263	9160	0600	4304	2874	1089	7321	5618	6172
3970	7716	8807	6123	3748	1036	0516	0607	2710	3700
9504	2769	0534	0758	9824	9536	7825	2985	3824	3449
0668	9636	6001	9372	8746	1579	6102	7990	4526	3429
4364	0606	4355	2395	2070	8915	8461	9820	6811	5873
8875	3041	7183	2261	7210	6072	7128	0825	8281	6815
4521	3391	6695	5986	2416	7979	8106	7759	6379	2101
5066	1454	9642	8675	8767	0582	0410	5515	2697	1575
9138	5003	8633	2670	7575	4021	0391	0118	9493	2291
0975	1836	7629	5136	7824	3916	0542	2614	6567	3015
1049	9925	3408	3029	7244	1766	1013	0221	8492	3801
0682	1343	7454	8600	8598	9953	5773	6482	4439	6708

Table (part 4) — Random sampling numbers

0263	4909	9832	0627	1155	4007	0446	6988	4699	1740
2733	3398	7630	3824	0734	7736	8465	0849	0459	8733
1441	2684	1116	0758	5411	3365	4489	6241	6413	3615
5014	5616	1721	8772	4605	0388	1399	5993	7459	4445
3745	5956	5512	8577	4178	0031	3090	2296	0124	5896
8384	8727	5567	5881	3721	1896	3758	7236	6860	1740
9944	8361	7050	8783	3815	9768	3247	1706	9355	3510
3045	2466	6640	6804	1704	8665	2539	2320	9831	9442
5939	5741	7210	0872	3279	3177	6021	2045	0163	3706
4294	1777	5386	7182	7238	8408	7674	1719	9068	9921
3787	2516	2661	6711	9240	5994	3068	5524	0932	5520
4764	2339	4541	5415	6314	7979	3634	5320	5400	6714
0292	9574	0285	4230	2283	5232	8830	5662	6404	2514
7876	1662	2627	0940	7836	3741	3217	8824	7393	7306
3490	3071	2967	4922	3658	4333	6452	9149	4420	6091
3670	8960	6477	3671	9318	1317	6355	4982	6815	0814
3665	2367	8144	9663	0990	6155	4520	0294	7504	0223
3792	0557	8489	8446	8082	1122	1181	8142	7119	3200
2618	2204	9433	2527	5744	9330	0721	8866	3695	1081
8972	8829	0962	5597	8834	5857	9800	7375	9209	0630
7305	8852	1688	3571	3393	2990	9488	8883	2476	9136
1794	4551	1262	4845	4039	7760	1565	4745	1178	8370
3179	1304	7767	4769	7373	5195	5013	6894	5734	5852
2930	3828	7172	3188	7487	2191	1225	7770	3999	0006
8418	9627	7948	6243	1176	9393	2252	0377	9798	8648

Annex B

Figures and examples of apparatus for sampling

(This annex forms an integral part of the Standard.)

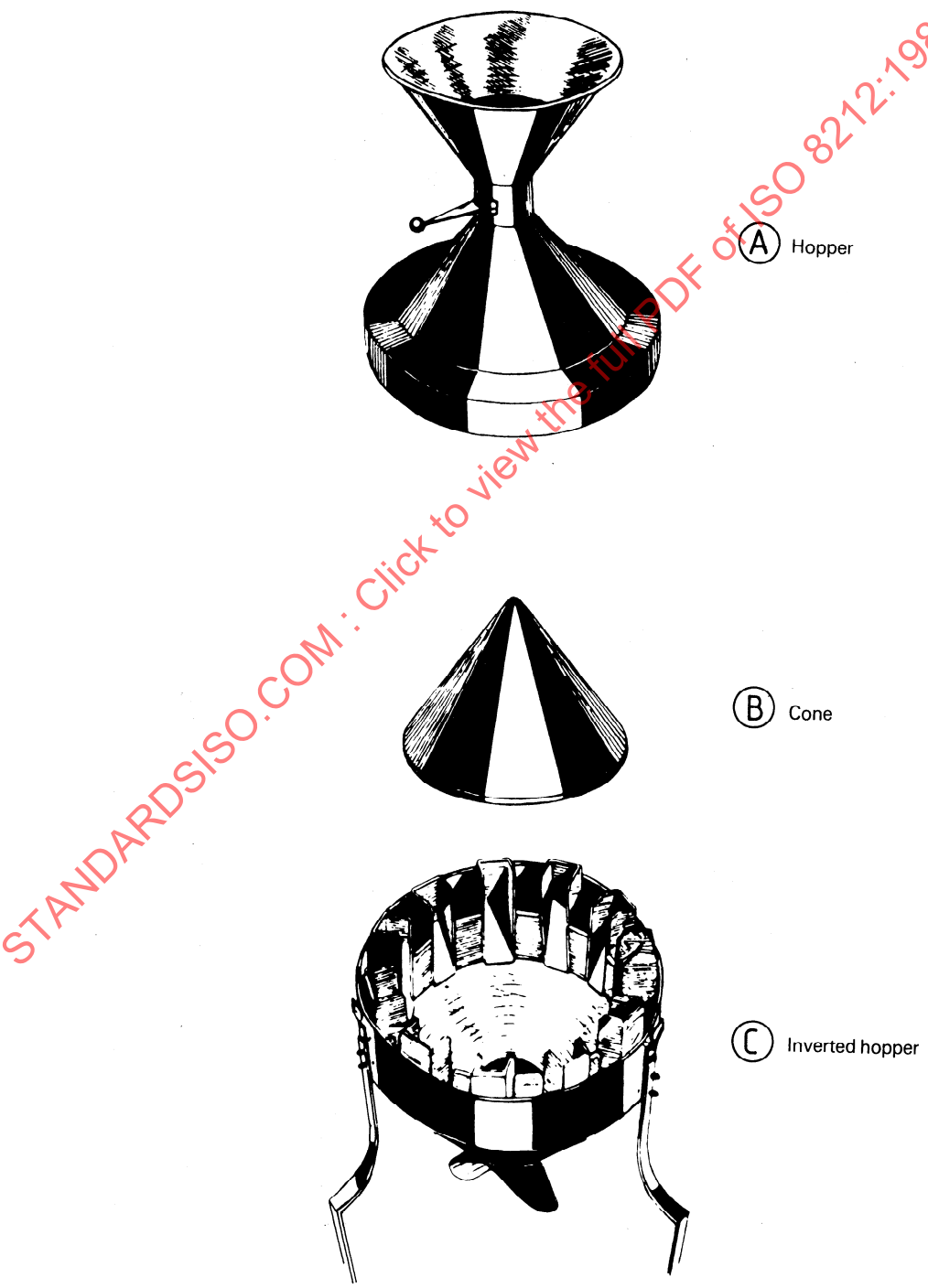

Figure 1a — Exploded view of a typical conical divider (see ISO 607)

Dimensions in millimetres

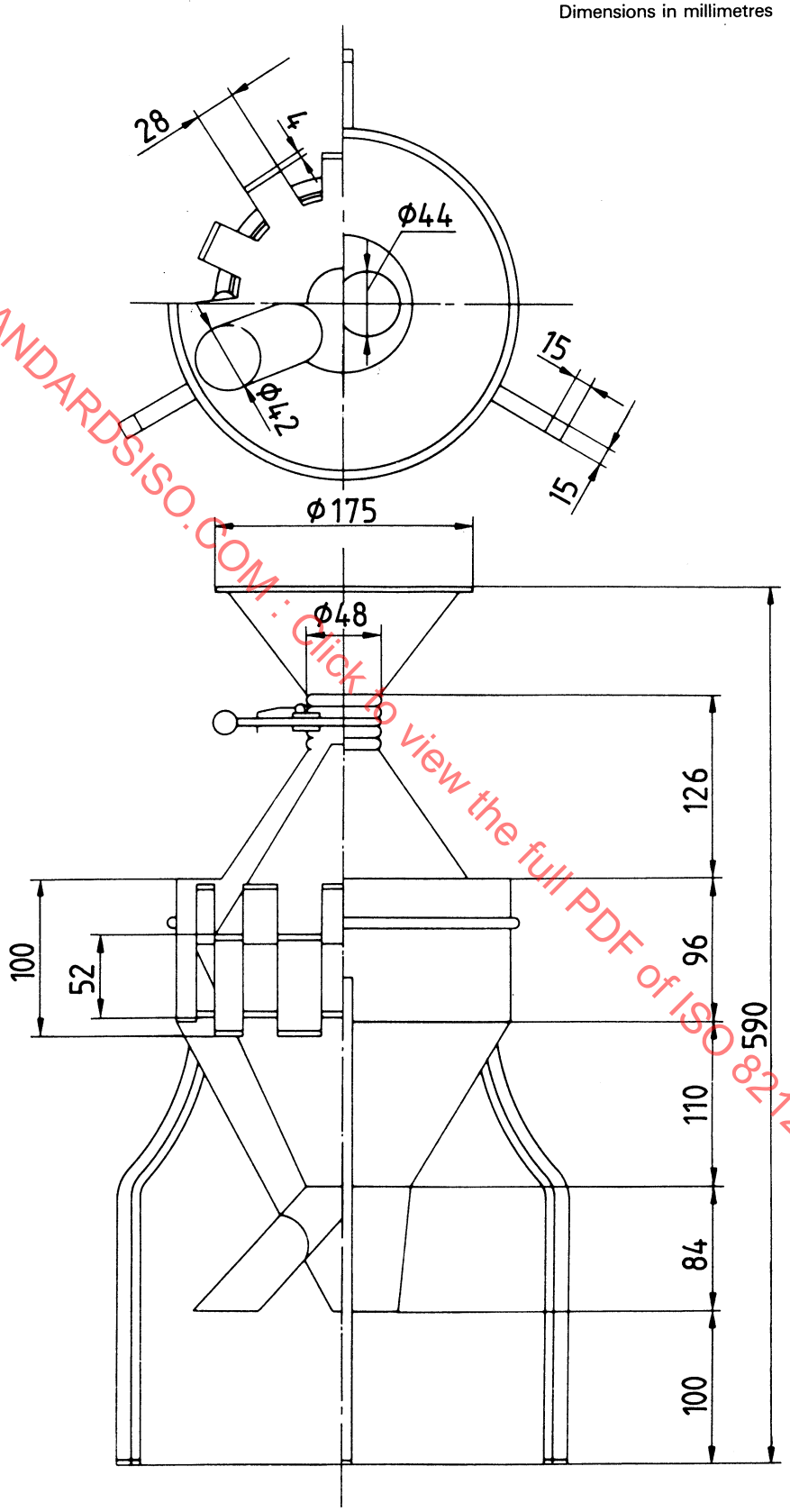

Figure 1b — Diagram of a typical conical divider (see ISO 607)

Dimensions in millimetres

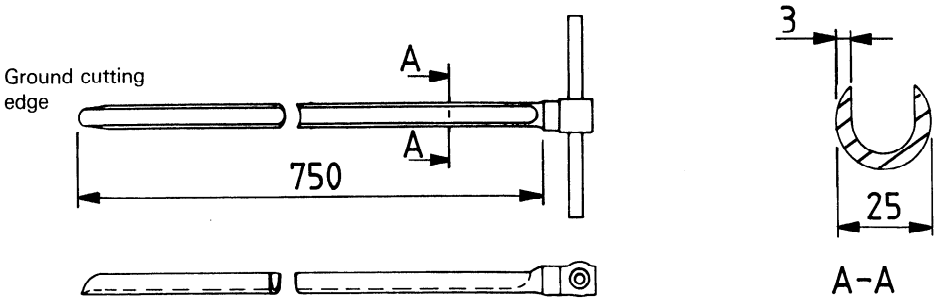

Figure 2 — Open-end sampling spear

Dimensions in millimetres

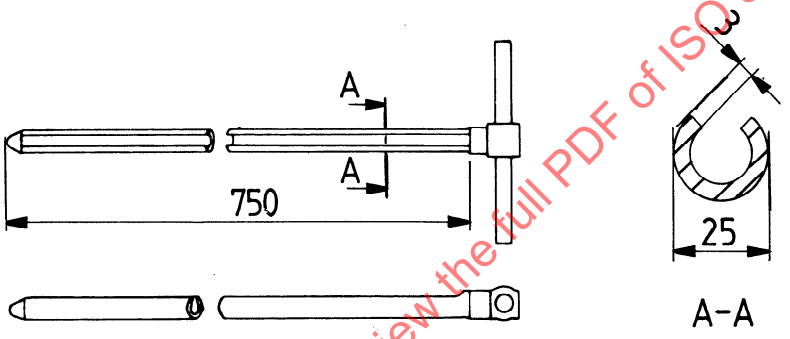

Figure 3 — Closed-end sampling spear

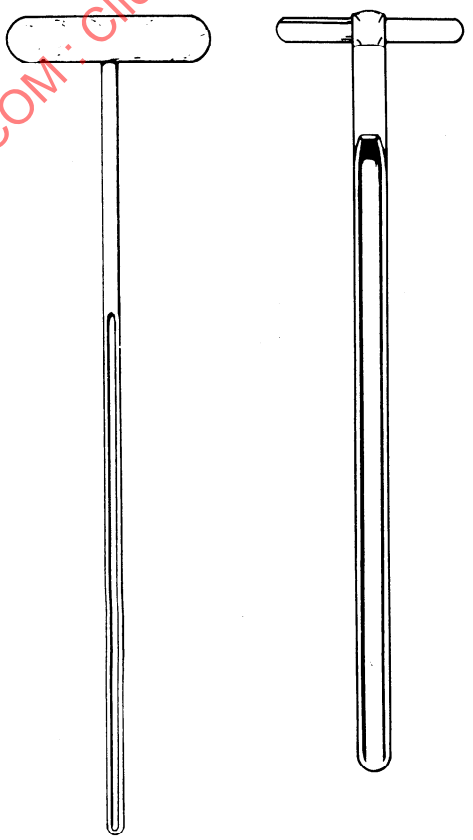

Figure 4 — Further designs of open-end sampling spears

Dimensions in millimetres

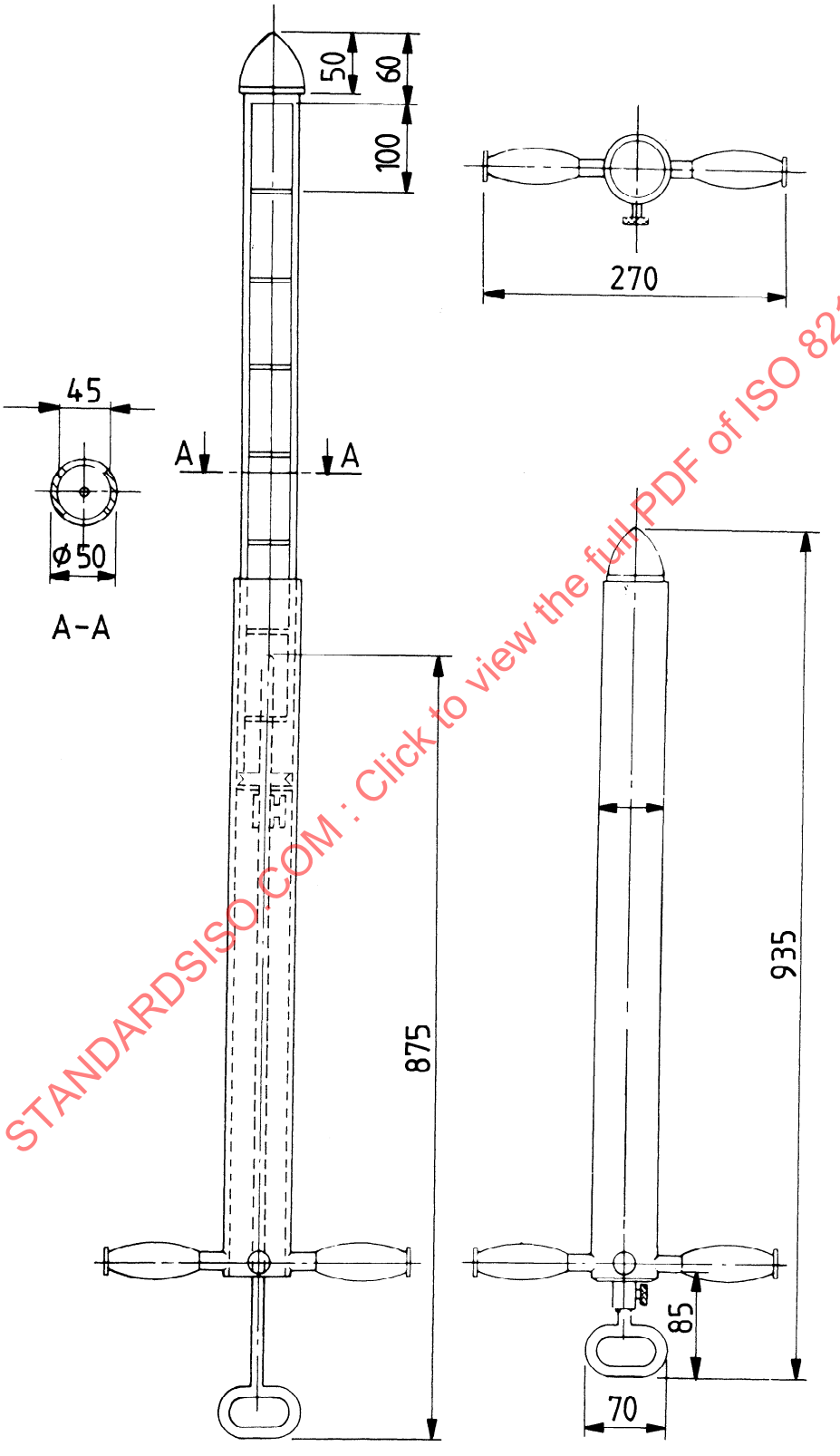

Figure 5 — Closable sampling spear