

ISO

INTERNATIONAL ORGANIZATION FOR STANDARDIZATION

*To be
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ISO RECOMMENDATION

R 78

ISO Guide 18

GUIDE ON THE FORM FOR STANDARDS
FOR CHEMICAL PRODUCTS
AND FOR METHODS OF CHEMICAL ANALYSIS

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This second edition supersedes the first edition.

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BRIEF HISTORY

The ISO Recommendation R 78, *Guide on the form for standards for chemical products and for methods of chemical analysis*, was drawn up by Technical Committee ISO/TC 47, *Chemistry*, the Secretariat of which is held by the Ente Nazionale Italiano di Unificazione (UNI).

Work on this question led to the adoption of a Draft ISO Recommendation.

In April 1956, this Draft ISO Recommendation (No. 85) was circulated to all the ISO Member Bodies for enquiry. It was approved by 17 Member Bodies; no Member Body opposed the approval of the Draft.

This Draft ISO Recommendation was then submitted by correspondence to the ISO Council, which decided, in December 1958, to accept it as an ISO RECOMMENDATION.

BRIEF HISTORY RELATING TO THE 2nd EDITION

In October 1960, it was decided to redraft the second part of ISO Recommendation R 78-1958; work on this question led to the adoption of a Draft ISO Recommendation.

In April 1968, this Draft ISO Recommendation (No. 1533) 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	Iran	Spain
Austria	Israel	Switzerland
Belgium	Italy	Thailand
Brazil	Netherlands	Turkey
Cuba	New Zealand	U.A.R.
Czechoslovakia	Poland	United Kingdom
France	Portugal	U.S.A.
Germany	Romania	U.S.S.R.
Hungary	South Africa, Rep. of	

One Member Body opposed the approval of the Draft :

India

This Draft ISO Recommendation was then submitted by correspondence to the ISO Council which decided, in September 1969, to accept it as a new wording of the second part of ISO Recommendation R 78-1958, the first part of this ISO Recommendation remaining unchanged.

The present edition (2nd edition) cancels and replaces the first edition of ISO Recommendation R 78-1958.

GUIDE ON THE FORM FOR STANDARDS FOR CHEMICAL PRODUCTS AND FOR METHODS OF CHEMICAL ANALYSIS

INTRODUCTION

DRAWING UP STANDARDS ACCORDING TO STANDARD LAYOUTS

It is recommended that standards for chemical products and for methods of chemical analysis should be drawn up using the standard layouts of which details are given below.

It must always be remembered, in making use of these standard layouts, that they are to be used as *general layouts for guidance only*. They should be adapted to suit any special requirements. There may, in some cases, be no need for all the subdivisions provided : no account will then be taken of those not required.

Two standard layouts are provided :

- I. Standard layout for a standard for a chemical product, with notes on its application page 5
- II. Standard layout for a standard method of chemical analysis with notes on its application page 11

These layouts have a very wide field of application.

Their object is to help to solve problems of drafting and layout which arise in drawing up standards for chemical products and for methods of chemical analysis.

In a general way, a standard for a chemical product should form a consistent whole; in addition to specifying the characteristics required of the product, it should state how to determine these characteristics. Hence a standard method of chemical analysis has a rightful place in the text itself of a standard for a chemical product. However, to shorten the text, the method of chemical analysis may be issued as a separate standard; in particular, when there exists a general method of chemical analysis applicable to the product, the standard for the product may merely refer to it.

The adoption of a standard form of layout and drafting ensures

- that the various items of information to be included in the standard are set up always in the same order;
- that no important point is overlooked in the preparation of the standard;
- that the section sought may be found rapidly, whatever the origin or scope of the standard.

(This is important, in particular when dealing with a partial translation of a text or when comparing two texts.)

INTERNATIONAL STANDARD ISO 78/1

~~1. STANDARD~~ LAYOUT FOR A STANDARD FOR A CHEMICAL PRODUCT

STANDARD LAYOUT

1. TITLE
2. SCOPE
3. CHARACTERIZATION OF PRODUCT
 - 3.1 Identification
 - 3.1.1 Chemical formulae
 - 3.1.2 Exact molecular weight
Rounded-off molecular weight
 - 3.1.3 Percentage composition of components specified for identification
 - 3.2 Classification
 - 3.3 Codification
4. MANUFACTURE
5. REQUIREMENTS
 - 5.1 Geometrical characteristics
 - 5.2 Physical and physico-chemical characteristics
 - 5.3 Chemical characteristics
 - 5.4 Organoleptic characteristics
 - 5.5 Mechanical characteristics
 - 5.6 Other characteristics (if necessary)
For example, see note on hygienic, toxicological or physiological characteristics, page 9.
6. SAMPLES AND TEST SPECIMENS
7. METHODS OF TEST
 - 7.1 Geometrical tests
 - 7.2 Physical and physico-chemical tests
 - 7.3 Chemical tests
 - 7.4 Organoleptic tests
 - 7.5 Mechanical tests
8. PACKAGING AND MARKING
9. PRECAUTIONS FOR STORAGE, TRANSPORT AND USE
10. ANNEX

NOTES ON THE APPLICATION OF THE STANDARD LAYOUT FOR A STANDARD FOR A CHEMICAL PRODUCT

1. TITLE

The title of the document should reflect the contents of the text very concisely and without ambiguity.

2. SCOPE

This section should state as precisely as possible the types of product covered by the standard. The statement should be brief.

If any confusion is to be feared between these and related products not covered by the standard, it is recommended that the latter should be listed.

3. CHARACTERIZATION OF PRODUCT

This section should contain the following subdivisions :

3.1 Identification

3.1.1 Chemical formulae

3.1.2 Exact molecular weight
Rounded-off molecular weight

3.1.3 Percentage composition of components specified for identification

3.2 Classification

3.3 Codification

This section should contain only straightforward information, as precise as possible.

The layout of the classification and codification in the form of tables is recommended whenever it might help the reader.

4. MANUFACTURE

The object of this section is not to standardize manufacturing processes. It is merely intended to contain an indication of the manufacturing process of the product, especially where the process used would result in certain special features which it might be useful to know, but the determination of which is not possible by standard methods of test.

5. REQUIREMENTS

This section should

- state the characteristics which are required of the products covered by the standard;
- give the recommended limits for these characteristics;
- refer to the test laid down for their determination.

As regards the characteristics,* the purpose of this section is to express the limits of the characteristics of a product. The limits should be defined and expressed numerically, whenever possible, fixing either a minimum limit or a maximum limit, or a value with a tolerance on either side, within which the value of the characteristic is considered as acceptable.

The values and limits for the characteristics should be fixed so as to take into account, on the one hand, the practical possibilities of manufacture and, on the other, limitations of the methods of test.

When it is not possible to express a characteristic numerically, it is usual for a comparison to be made, as regards this characteristic, with a reference sample agreed by buyer and seller.

The standard layout provides for five types of principal characteristics. Not all these types may be applicable in every case; on the other hand, this list is not intended to be limiting, and other types may be provided in certain cases.

5.1 Geometrical characteristics

This clause may be of definite importance in specific cases; for example in the case of monocrystals used in optics.

It may include the particle size analysis of a product. This property should, as far as possible, be specified in accordance with the recommendations laid down by Technical Committee ISO/TC 24, *Sieves, sieving and other sizing methods*. It is necessary, in particular, to state exactly, in addition to the characteristics of the sieves (or the other dimensional classification methods used), the quantities of product passing through and/or retained by these sieves.

5.2 Physical and physico-chemical characteristics

These characteristics, such as density, index of refraction, electrical conductivity, pH value, freezing and boiling points, etc., are often specific for a given product and can generally be determined quickly and accurately.

It is essential to state exactly the units used and to use the symbols and conventions adopted internationally. (It is recalled that Technical Committee ISO/TC 47, *Chemistry*, and many other ISO Technical Committees have adopted 20 °C as the primary reference temperature.)

5.3 Chemical characteristics

It is necessary to mention in what form the *content of the various chemical elements* should be expressed, for example as metal, as oxide, as a given salt. It does not appear possible to give a general rule, and hence each case should be considered separately. If the content of a given element has been expressed in a conventional form, this should be stated.

In general, individual *impurities* should be specified, but if this is not possible for some particular impurities, it may be necessary to specify total impurities, in which case a method of determining total impurities should be given.

It is recommended that the *strength* or *composition* of chemical products should be expressed as percentage by mass.

The *percentage by mass* of an element (whether a constituent or an impurity) in a chemical product is the mass in grammes of this element contained in a reference mass of 100 g of the chemical product, the condition of the latter being specified, for example dry, state of hydration.

The percentage by mass should be given as “per cent” and indicated by the % sign.

The percentage value thus given should be followed by the mention of the condition of the *reference mass* of the product analysed.

In cases where the percentage by mass cannot be used, it is essential to explain clearly the method of expression used.

Generally, the *expression of the strength or composition* of the chemical product is based on the condition of the reference mass of the sample at the moment of beginning the analysis (i.e. the condition of the sample received by the operator carrying out the analysis).

* In this text, the fact has not been overlooked that some users, in placing their orders, often refer simply either to the concentration or to a process of manufacture, making it unnecessary to specify the values of the corresponding characteristics.