INTERNATIONAL STANDARD

**ISO 7168-1**

First edition
1999-07-01

# Air quality — Exchange of data —

# Part 1:
General data format

*Qualité de l'air — Échange de données —*

*Partie 1: Format général de données*

Reference number
ISO 7168-1:1999(E)

## Contents





International Organization for Standardization
Case postale 56 • CH-1211 Genève 20 • Switzerland
Internet iso@iso.ch

Printed in Switzerland

## 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. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 3.

Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

International Standard ISO 7168-1 was prepared by Technical Committee ISO/TC 146, *Air quality*, Subcommittee SC 4, *General aspects*.

ISO 7168 consists of the following parts, under the general title *Air quality — Exchange of data*:

— *Part 1: General data format*

— *Part 2: Condensed data format*

The first editions of the several parts of ISO 7168 together cancel and replace the first edition (ISO 7168:1985), which has been technically revised.

Annexes A, B and C form a normative part of this part of ISO 7168. Annexes D and E are for information only.

## Introduction

For the interpretation or comparison of air quality data, the data themselves are usually not sufficient. Other information may be needed for a proper evaluation, e.g. basic information on the measurement, such as

— object of the measurements,

— place of sampling,

— date of sampling,

or additional information, such as

— the measuring method used,

— sampling period of a single measurement,

— characteristics of the sampling site,

— validity of the data.

In some cases, the user will need other information to be compared with the measured data in conformity with regulations or to enable certain complex processing operations to be performed, e.g.

— additional meteorological data,

— geographical and economic data,

— data on localized or diffuse atmospheric emissions.

The transmission of such information in a data file is not mandatory. Where necessary and possible, this supplementary information may be attached to a data file as comment.

ISO 7168-1 specifies the general data format for the exchange of air quality data. This general data format supports both the direct readability and the automated processing of data files. Each information presented in a data file prepared in accordance with ISO 7168-1 is related to a defined keyword and therefore consistently self-explanatory. The general data format is intended for the international exchange of air quality data.

ISO 7168-2 [1] specifies a condensed data format which is intended only for the exchange of data files between automatic data processing systems. A good knowledge of the file structure is necessary for the interpretation of these data files.

# Air quality — Exchange of data —

# Part 1:
General data format

## 1 Scope

This part of ISO 7168 specifies a general format for the exchange of air quality data and related information. It defines mandatory and optional keywords to identify the data presented in a data file, and the values and formats of the data allocated to a keyword.

This part of ISO 7168 is recommended for the international exchange of air quality data. It is also intended for direct data import, e.g. into spreadsheets.

## 2 Normative references

The following normative documents contain provisions which, through reference in this text, constitute provisions of this part of ISO 7168. For dated references, subsequent amendments to, or revisions of, any of these publications do not apply. However, parties to agreements based on this part of ISO 7168 are encouraged to investigate the possibility of applying the most recent editions of the normative documents indicated below. For undated references, the latest edition of the normative document referred to applies. Members of ISO and IEC maintain registers of currently valid International Standards.

ISO/IEC 646, *Information technology — ISO 7-bit coded characters set for information exchange*.

ISO 1000:1992, *SI units and recommendations for the use of their multiples and of certain other units.*

ISO 3166-1:1997, *Codes for the representation of names of countries and their subdivisions — Part 1: Country codes.*

ISO 3534-1:1993, *Statistics — Vocabulary and symbols — Part 1: Probability and general statistical terms.*

ISO 4226:1993, *Air quality — General aspects — Units of measurement.*

ISO 6709:1983, *Standard representation of latitude, longitude and altitude for geographic points location.*

ISO 6879:1995, *Air quality — Performance characteristics and related concepts for air quality measuring methods.*

ISO 8756:1994, *Air quality — Handling of temperature, pressure and humidity data.*

## 3 Terms and definitions

For the purposes of this part of ISO 7168, the terms and definitions given in ISO 6879 and the following apply.

**3.1**
**air quality characteristic**
one of the quantifiable properties relating to an air mass under investigation

EXAMPLE Concentration of a constituent.

**3.2**
**air quality data set**
set of values for the description of air quality transmitted by the data file

**3.3**
**air quality datum**
value of the air quality characteristic

**3.4**
**data**
air quality data and general data

**3.5**
**general data**
additional data, other than air quality data, needed for a proper evaluation of the air quality data transmitted

**3.6**
**keyword**
unique identifier of data presented in a data file in the English language

**3.7**
**level descriptor**
unique identifier of a hierarchical level in a data file in the English language

EXAMPLE The group, block or record level.

## 4 Symbols and abbreviated terms

| | |
|---|---|
| CR | Carriage return |
| dec | decimal |
| LF | Line feed |
| RNL | Return to new line |
| UT | Universal time |

## 5 File format

### 5.1 Overview

The data file is structured by groups, blocks and records representing the hierarchical levels of the file (see Figure 1).

A group is the highest hierarchical level in a data file. It may contain thematically related blocks, records and data.

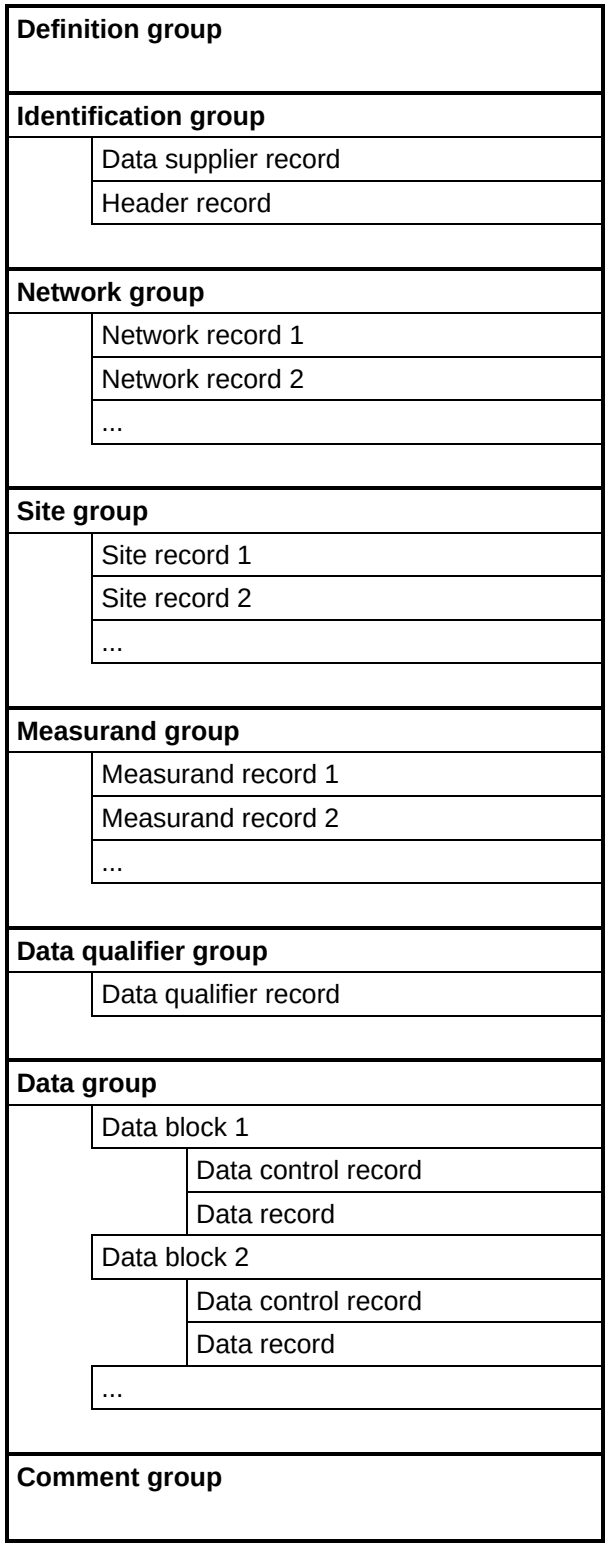



**Figure 1 — Data file structure**

A block is the second hierarchical level, and is only used within a data group. It contains records and gives control to the blocks of air quality data.

A record is the third hierarchical level. It is used to structure the contents of an actual group or the data block. A record contains keywords and related data and, in the case of the data record, the air quality data transmitted. In a data group, the records are controlled by the block level.

The datum level is the lowest hierarchical level.

## 5.2 Construction of data files

Data files shall be constructed in accordance with the following rules.

a) The data file shall be in compliance with the international information exchange code defined in ISO/IEC 646 (see annex A). Specific national characters shall not be used for the presentation of air quality data. Furthermore, certain control characters shall not be used in the data file (shaded characters in Table A.1 of annex A).

b) To enable direct reading of print-outs, a return to new line (RNL) code shall be placed at the end of each line. The RNL consist of a line feed plus carriage return (decimal codes 13 and 10) to enable readability of the files on different operating systems. For some operating systems, the application software will need to create the RNL double character to be used in air quality data files.

c) The maximum length of line is 255 characters, including the RNL code only at the end of the data.

d) Each level descriptor or keyword shall begin at a new line.

e) Only keywords and level descriptors defined in Table 1 shall be used in accordance with 6.2.

f) Data presented in a group or record shall be allocated to a keyword.

g) Each keyword shall be followed by a combination of an equal sign and a data separator "=;" to separate the keyword from the data.

h) Values and formats of data shall be in accordance with the specifications of 6.3 and 6.4 and Table 1.

i) In cases specified in 6.3 and Table 1, data may be presented as a sequence. Each datum shall be separated from the previous one by a data separator, i.e. a semicolon.

j) Blank characters are disregarded in the file except for the format <text>. They may be used for indenting to create legible files, and their number and position in the file is of no importance except for the format <text>.

k) Comments shall be placed between curly brackets "{ }" either on a separate line or at the end of a line.

l) No distinction is made between upper- and lower-case letters.

m) Information to be presented in the text format shall be placed within quotation marks (decimal code 34).

n) Within a group, block or record, the order of keywords may be changed.

**Table 1 — Level descriptors and keywords**

| Level descriptor / Keyword | Use[a] | Format[b] | Fixed[c] | Value[d] | Definition in |
|---|---|---|---|---|---|
| **[definition_group]** | M | | | | 6.3.2 |
| file_name | M | <text> | | | 6.3.2.1 |
| file_creation_date | M | <time> | | | 6.3.2.2 |
| file_data_status | M | <text> | x | "unvalidated" "validated" | 6.3.2.3 |
| file_data_separator | M | | x | ; {semicolon} | 6.3.2.4 |
| file_decimal_separator | M | | x | , {comma} | 6.3.2.5 |
| file_comment_separators | M | | x | { } | 6.3.2.6 |
| file_format | M | <text> | x | "ISO7168-1:1998" | 6.3.2.7 |
| **[identification_group]** | M | | | | 6.3.3 |
| **[data_supplier_record]** | M | | | | 6.3.3.1 |
| data_supplier_name | M | <text> | | | 6.3.3.1.1 |
| data_supplier_code | O | <text> | | | 6.3.3.1.2 |

| Level descriptor / Keyword | Use[a] | Format[b] | Fixed[c] | Value[d] | Definition in |
|---|---|---|---|---|---|
| data_supplier_address | M | <sequence of text> | | | 6.3.3.1.3 |
| data_supplier_responsible | O | <text> | | | 6.3.3.1.4 |
| data_supplier_phone_number | O | <text> | | | 6.3.3.1.5 |
| data_supplier_fax_number | O | <text> | | | 6.3.3.1.6 |
| data_supplier_email_address | O | <text> | | | 6.3.3.1.7 |
| data_supplier_country_name | M | <text> | x | | 6.3.3.1.8 |
| data_supplier_country_code | M | <text> | x | | 6.3.3.1.9 |
| **[header_record]** | M | | | | 6.3.3.2 |
| number_of_network_records | M | <numerical> | | | 6.3.3.2.1 |
| number_of_site_records | M | <numerical> | | | 6.3.3.2.2 |
| number_of_measurand_records | M | <numerical> | | | 6.3.3.2.3 |
| number_of_data_blocks | M | <numerical> | | | 6.3.3.2.4 |
| **[network_group]** | M | | | | 6.3.4 |
| **[network_record]** | M | | | | 6.3.4.1 |
| network_country_code | M | <text> | | | 6.3.4.1.1 |
| network_name | M | <text> | | | 6.3.4.1.2 |
| network_short_name | O | <text> | | | 6.3.4.1.3 |
| network_address | M | <sequence of text> | | | 6.3.4.1.4 |
| network_responsible | O | <text> | | | 6.3.4.1.5 |
| network_phone_number | O | <text> | | | 6.3.4.1.6 |
| network_fax_number | O | <text> | | | 6.3.4.1.7 |
| network_email_address | O | <text> | | | 6.3.4.1.8 |
| network_start_time | M | <time> | | | 6.3.4.1.9 |
| network_end_time | M | <time> | | | 6.3.4.1.10 |
| network_coverage | O | <text> | | | 6.3.4.1.11 |
| network_time_reference | M | <text> | x | "local"<br>"UT" | 6.3.4.1.12 |
| **[site_group]** | M | | | | 6.3.5 |
| **[site_record]** | M | | | | 6.3.5.1 |
| site_network_country_code | M | <text> | | | 6.3.5.1.1 |
| site_name | M | <text> | | | 6.3.5.1.2 |
| site_address | M | <sequence of text> | | | 6.3.5.1.3 |
| site_responsible | O | <text> | | | 6.3.5.1.4 |
| site_start_time | M | <time> | | | 6.3.5.1.5 |
| site_end_time | M | <time> | | | 6.3.5.1.6 |
| site_type | M | <text> | x | | 6.3.5.1.7 |
| site_scale | O/M | <sequence of text> | x | | 6.3.5.1.8 |
| site_scale_code | O/M | <numerical> | x | | 6.3.5.1.9 |
| site_time_minus_UT | M | <time> | | | 6.3.5.1.10 |
| site_latitude | M | <text> | | | 6.3.5.1.11 |
| site_longitude | M | <text> | | | 6.3.5.1.12 |
| site_altitude | M | <text> | | | 6.3.5.1.13 |
| site_geodesic_system | O | <text> | | | 6.3.5.1.14 |
| site_zone_type | O/M | <text> | x | | 6.3.5.1.15 |
| site_zone_type_code | O/M | <numerical> | | | 6.3.5.1.16 |

| Level descriptor / Keyword | Use[a] | Format[b] | Fixed[c] | Value[d] | Definition in |
|---|---|---|---|---|---|
| site_zone_characterization | O/M | <sequence of text> | x | | 6.3.5.1.17 |
| site_zone_characterization_code | O/M | <numerical> | | | 6.3.5.1.18 |
| site_inhabitants | O | <numerical> | | | 6.3.5.1.19 |
| site_emission_sources | O/M | <sequence of text> | x | | 6.3.5.1.20 |
| site_emission_sources_code | O/M | <numerical> | x | | 6.3.5.1.21 |
| site_traffic_volume | O | <text> | x | | 6.3.5.1.22 |
| site_traffic_volume_number | O | <numerical> | | | 6.3.5.1.23 |
| site_lorry_percentage | O | <numerical> | | | 6.3.5.1.24 |
| site_street_type | O | <text> | x | | 6.3.5.1.25 |
| site_traffic_situation | O | <text> | x | | 6.3.5.1.26 |
| **[measurand_group]** | M | | | | 6.3.6 |
| **[measurand_record]** | M | | | | 6.3.6.1 |
| measurand_code | M | <text> | x | | 6.3.6.1.1 |
| measurand_name | M | <text> | x | | 6.3.6.1.2 |
| measurand_unit | M | <text> | x | | 6.3.6.1.3 |
| measurement_method | M | <text> | | | 6.3.6.1.4 |
| measurement_method_standard | M | <text> | | | 6.3.6.1.5 |
| measurement_type | O | <sequence of text> | x | "automatic"<br>"manual" | 6.3.6.1.6 |
| measurement_device | O | <text> | | | 6.3.6.1.7 |
| measurement_start_time | O | <time> | | | 6.3.6.1.8 |
| measurement_end_time | O | <time> | | | 6.3.6.1.9 |
| calibration_method | O | <text> | | | 6.3.6.1.10 |
| calibration_method_standard | O | <text> | | | 6.3.6.1.11 |
| calibration_type | O | <sequence of text> | x | "automatic"<br>"manual" | 6.3.6.1.12 |
| calibration_period | O | <time> | | | 6.3.6.1.13 |
| reference_temperature | M | <numerical> | | | 6.3.6.1.14 |
| reference_temperature_unit | M | <text> | x | "kelvin"<br>"degree Celsius" | 6.3.6.1.15 |
| reference_pressure | M | <numerical> | | | 6.3.6.1.16 |
| reference_pressure_unit | M | <text> | x | "pascal"<br>"kilopascal" | 6.3.6.1.17 |
| length_unit | M | <text> | x | "metre" | 6.3.6.1.18 |
| sampling_location | O | <text> | | | 6.3.6.1.19 |
| sampling_height | M | <numerical> | | | 6.3.6.1.20 |
| sampling_line_length | O | <numerical> | | | 6.3.6.1.21 |
| lower_limit | O | <numerical> | | | 6.3.6.1.22 |
| upper_limit | O | <numerical> | | | 6.3.6.1.23 |
| quantification_limit | O | <numerical> | | | 6.3.6.1.24 |
| measurement_uncertainty | O | <numerical> | | | 6.3.6.1.25 |
| **[data_qualifier_group]** | M | | | | 6.3.7 |
| **[data_qualifier_record]** | M | | | | 6.3.7.1 |
| calibration_drift | O | <text> | x | "D" | 6.3.7.1.1 |
| calibration_mode | O | <text> | x | "C" | 6.3.7.1.2 |

| Level descriptor / Keyword | Use[a] | Format[b] | Fixed[c] | Value[d] | Definition in |
|---|---|---|---|---|---|
| corrected_datum | O | <text> | x | "O" | 6.3.7.1.3 |
| estimated_datum | O | <text> | x | "E" | 6.3.7.1.4 |
| faulty_measurement | O | <text> | x | "F" | 6.3.7.1.5 |
| invalid_datum | O | <text> | x | "I" | 6.3.7.1.6 |
| maintenance_mode | O | <text> | x | "M" | 6.3.7.1.7 |
| no_datum | O | <text> | x | "N" | 6.3.7.1.8 |
| usable_datum | O | <text> | x | ""<br>"U" | 6.3.7.1.9 |
| zero_mode | O | <text> | x | "Z" | 6.3.7.1.10 |
| **[data_group]** | M | | | | 6.3.8 |
| **[data_block]** | M | | | | 6.3.8.1 |
| **[data_control_record]** | M | | | | 6.3.8.1.1 |
| measurand_code | M | <sequence of text> | x | | 6.3.8.1.1.1 |
| site_network_country_code | M | <sequence of text> | | | 6.3.8.1.1.2 |
| data_start_time | M | <time> | | | 6.3.8.1.1.3 |
| data_duration | M | <time> | | | 6.3.8.1.1.4 |
| data_number | M | <numerical> | | | 6.3.8.1.1.5 |
| data_time_interval | M | <time> | | | 6.3.8.1.1.6 |
| data_samples_per_time_interval | M | <numerical> | | | 6.3.8.1.1.7 |
| data_sampling_time | M | <time> | | | 6.3.8.1.1.8 |
| data_multiplication_factor | O | <numerical> | | | 6.3.8.1.1.9 |
| data_type | M | <text> | x | | 6.3.8.1.1.10 |
| data_type_code | M | <numerical> | x | | 6.3.8.1.1.11 |
| data_type_parameter | O/M | <numerical> | | | 6.3.8.1.1.12 |
| data_columns | O/M | <numerical> | | | 6.3.8.1.1.13 |
| **[data_record]** | M | | | | 6.3.8.1.2 |
| data | M | <data> | | | 6.3.8.1.2.1 |
| **[comment_group]** | O | | | | 6.3.9 |

[a] M: Mandatory use; O: Optional use.

[b] Permissible formats are presented in angle brackets.

[c] A cross (x) in this column indicates that fixed values specified in a list shall be used as information.

[d] Fixed values are presented in Table 1 if only one or two fixed values are permitted. For all other cases, refer to the specified subclause.

# 6 Specifications

## 6.1 Creation of file names

### 6.1.1 General

The file name is deliberately restricted to eight characters plus one full stop plus three characters (i.e. eleven characters). Parametering of the file name enables the identification of the content of the file. This includes information about the measurement location and the date of the measurement. The parameters used for the construction of file names are defined in Table 2.

**Table 2 — Parameters for constructing file names**

| Parameter | Description | Number of characters | Value/Format[a] |
|---|---|---|---|
| *CC* | Country of origin of the data | 2 | <alphanumerical> |
| *NN* | Measurement network | 2 | <alphanumerical> |
| *SSSS* | Measuring station | 4 | <alphanumerical> |
| *YY* | Year of measurement date | 2 | 00 to 99 |
| *MM* | Month of measurement date | 2 | 01 to 12 |
| *DD* | Day of measurement date | 2 | 01 to 31 |
| *X* | Unused field in the file name | 1 | - {hyphen} or letter A to Z |
| *Q* | File qualifier | 1 | see Table 3 |

[a] Permissible formats are presented in angle brackets.

**Table 3 — Values of file qualifier *Q***

| Value of *Q* | Description |
|---|---|
| $ | International validated data file |
| & | International unvalidated data file |
| V | Internal validated data file |
| U | Internal unvalidated data file |
| I | Internal incomplete data file |

### 6.1.2 File names for international exchange of data

#### 6.1.2.1 General

For the international exchange of air quality data, the file name shall consist of eight characters plus one full stop plus three characters. The most righthand position in the file name is reserved for the file qualifier, which specifies whether the file includes e.g. validated or unvalidated data for international purposes (see Table 3).

The country code shall be in accordance with the alpha-2 code of ISO 3166-1 (see examples in annex D). The two characters of the network code shall be unique regarding the networks of the related country. If the file includes data from several networks of the same country, then the associated character fields are filled with hyphens, i.e. *NN* = --.

#### 6.1.2.2 Daily international file

A daily file includes information within a day. The file name shall be constructed in the following way:

| *C* | *C* | *N* | *N* | *D* | *D* | *M* | *M* | . | *Y* | *Y* | *Q* |
|---|---|---|---|---|---|---|---|---|---|---|---|

EXAMPLE "DE121505.96$"

a) Daily file with validated data from 15th May 1996

b) Country of origin: Germany

c) Network code: 12

#### 6.1.2.3 Monthly international file

A monthly file includes information within a month. Different files may be distinguished by letters A to Z in unused fields (*X*). The file name shall be constructed in the following way:

| *C* | *C* | *N* | *N* | *X* | *X* | *M* | *M* | . | *Y* | *Y* | *Q* |
|---|---|---|---|---|---|---|---|---|---|---|---|

EXAMPLE "FRG6-A12.97&" and "FRG6-B12.97&"

a) Monthly files A and B with unvalidated data from December 1997

b) Country of origin: France

c) Network code: G6

#### 6.1.2.4 Annual international file

An annual file includes information within a year. Different files may be distinguished by letters A to Z in unused fields (*X*). The file name shall be constructed in the following way:

| *C* | *C* | *N* | *N* | *X* | *X* | *X* | *X* | . | *Y* | *Y* | *Q* |
|---|---|---|---|---|---|---|---|---|---|---|---|

EXAMPLE "GBX1----.98$"

a) Annual file with validated data from year 1998

b) Country of origin: United Kingdom

c) Network code: X1

#### 6.1.2.5 Multiannual international file

A multiannual file includes information covering more than a year. Different files may be distinguished by letters A to Z in unused fields (*X*). The file name shall be constructed in the following way:

| *C* | *C* | *N* | *N* | *X* | *X* | *X* | *X* | . | *X* | *X* | *Q* |
|---|---|---|---|---|---|---|---|---|---|---|---|

EXAMPLE "USN5----.G-$" and "USN5----.H-$"

a) Multiannual files G and H with validated data; time information is specified in the data file

b) Country of origin: United States

c) Network code: N5

### 6.1.3 File names for internal exchange of data

#### 6.1.3.1 General

For the internal exchange of air quality data, the file name consists of eight characters plus one full stop plus three characters. The most righthand position in the file name is reserved for the file qualifier, which specifies the internal status of the file according to Table 3.

NOTE Internal exchange of data means, for example, exchange between stations or networks within a country.

#### 6.1.3.2 Daily internal file

A daily file includes information within a day. The file name shall be constructed in the following way:

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| *S* | *S* | *S* | *S* | *D* | *D* | *M* | *M* | . | *Y* | *Y* | *Q* |

EXAMPLE "13241505.96V"

a) Daily file for internal purposes with validated data from 15th May 1996

b) Station code: 1324

#### 6.1.3.3 Monthly internal file

A monthly file includes information within a month. Different files may be distinguished by letters A to Z in unused fields (*X*). The file name shall be constructed in the following way:

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| *S* | *S* | *S* | *S* | *X* | *X* | *M* | *M* | . | *Y* | *Y* | *Q* |

EXAMPLE "XD34A-12.97V" and "XD34C-12.97V"

a) Monthly files A and C for internal purposes with validated data from December 1997

b) Station code: XD34

#### 6.1.3.4 Annual internal file

An annual file includes information within a year. Different files may be distinguished by letters A to Z in unused fields (*X*). The file name shall be constructed in the following way:

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| *S* | *S* | *S* | *S* | *X* | *X* | *X* | *X* | . | *Y* | *Y* | *Q* |

EXAMPLE "0078----.98U"

a) Annual file for internal purposes with unvalidated data from year 1998

b) Station code: 0078

#### 6.1.3.5 Multiannual internal file

A multiannual file includes information covering more than a year. Different files may be distinguished by letters A to Z in unused fields (*X*). The file name shall be constructed in the following way:

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| *S* | *S* | *S* | *S* | *X* | *X* | *X* | *X* | . | *X* | *X* | *Q* |

EXAMPLE "GF78--XA.--I" and "GF78--XB.--I"

a) Multiannual files XA and XB for internal purposes with an incomplete data set; time information is specified in the data file.

b) Station code: GF78

### 6.1.4 File names for other purposes

Other file names may be used in situations where the use of file names formatted in accordance with 6.1.1 or 6.1.2 is not appropriate. In such cases, the most righthand character shall be different from the characters specified in Table 3.

## 6.2 Construction of level descriptors and keywords

For the construction of level descriptors and keywords, the following apply

a) Keywords always consist of a single word. In compound words, each part shall be separated by an underscore (see annex A, character number 95) to achieve better legibility.

EXAMPLE reference_temperature_unit

b) No distinction is made between upper and lower case letters.

EXAMPLES

i) measurand_name

ii) Measurand_Name

iii) MEASURAND_NAME

iv) mEAsuranD_nAMe

c) Group, block and record level descriptors are constructed like keywords and placed between square brackets (see annex A, character numbers 91 and 93). Outside comments, square brackets shall only be used in combination with level descriptors.

EXAMPLE [definition_group]

## 6.3 Definition of level descriptors and keywords

### 6.3.1 General

This subclause specifies all level descriptors and keywords as well as the fixed values and formats of data allocated to a keyword. The complete list of permissible level descriptors and keywords is also given in Table 1. The permissible formats of variable values of keywords are specified in 6.4.

Level descriptors and keywords are presented in the order of Table 1. The mandatory (M) or optional (O) use as well as the formats are added for the convenience of the user of this part of ISO 7168.

### 6.3.2 [definition_group]

The definition group provides general information on the data file.

Use: M

#### 6.3.2.1 file_name

Name of the data file in accordance with 6.1.

Use: M; Format: <text>

#### 6.3.2.2 file_creation_date

Date of creation of the data file.

Use: M; Format: <time>

#### 6.3.2.3 file_data_status

Status of the data presented in the data file. The only permissible values are:

— "unvalidated"

— "validated"

Use: M; Format: <text>

#### 6.3.2.4 file_data_separator

Character used for separating keywords and data or data in data records or sequences. The only permissible character is the semicolon (decimal code 59).

Use: M; Value: ;

NOTE Air quality data files may be interpreted by spreadsheet programs. In this case, a redefinition of the data separator of the spreadsheet program may be necessary.

#### 6.3.2.5 file_decimal_separator

Character used as separator in real numbers. The only permissible character is the comma (decimal code 44).

Use: M; Value: ,

#### 6.3.2.6 file_comment_separators

Characters used to separate commentary text. The commentary text shall be placed between curly brackets (decimal codes 123 and 125).

Use: M; Value: { }

#### 6.3.2.7 file_format

Standard used for the format of the data file. The only permissible value is:

— "ISO7168-1:1999"

Use: M; Format: <text>

### 6.3.3 [identification_group]

The identification group provides information on the data supplier record and the header record.

Use: M

#### 6.3.3.1 [data_supplier_record]

The data supplier record provides all relevant information about the institution providing the data.

Use: M

##### 6.3.3.1.1 data_supplier_name

Name of the institution providing the data.

Use: M; Format: <text>

##### 6.3.3.1.2 data_supplier_code

Alphanumerical code of the institution providing the data.

Use: O; Format: <text>

##### 6.3.3.1.3 data_supplier_address

Full address of the data supplier in correct order for postage use. Each part of the address shall be separated by a data separator.

Use: M; Format: <sequence of text>

#### 6.3.3.1.4 data_supplier_responsible

Name of the person responsible for the data supply.

Use: O; Format: <text>

#### 6.3.3.1.5 data_supplier_phone_number

Phone number of the data supplier.

Use: O; Format: <text>

#### 6.3.3.1.6 data_supplier_fax_number

Fax number of the data supplier.

Use: O; Format: <text>

#### 6.3.3.1.7 data_supplier_email_address

Electronic mail address of the data supplier.

Use: O; Format: <text>

#### 6.3.3.1.8 data_supplier_country_name

Short name of the country of the data supplier, in the English language and in accordance with ISO 3166-1 (see examples in annex D).

Use: M; Format: <text>

#### 6.3.3.1.9 data_supplier_country_code

Country code of the data supplier in accordance with ISO 3166-1 (see examples in annex D).

Use: M; Format: <text>

### 6.3.3.2 [header_record]

The header record provides information on the numbers of measurand records, network records, site records and data blocks.

Use: M

#### 6.3.3.2.1 number_of_network_records

Number of network records included in the data file.

Use: M; Format: <numerical>

#### 6.3.3.2.2 number_of_site_records

Number of site records included in the data file.

Use: M; Format: <numerical>

#### 6.3.3.2.3 number_of_measurand_records

Number of measurand records included in the data file.

Use: M; Format: <numerical>

#### 6.3.3.2.4 number_of_data_blocks

Number of data blocks included in the data file.

Use: M; Format: <numerical>

### 6.3.4 [network_group]

The network group provides information on the network records.

Use: M

#### 6.3.4.1 [network_record]

The network record provides all relevant information about the network providing the data.

Use: M

#### 6.3.4.1.1 network_country_code

Code consisting of the network code unique in the country of the network and the country code itself, separated by a full stop. The network code shall be placed in the first position and the country code in the second. The country code shall be in accordance with ISO 3166-1 (see examples in annex D). This information establishes a clear international identification of the network reporting air quality data.

Use: M; Format: <text>

EXAMPLE "N7.DE"

Network N7 in Germany.

#### 6.3.4.1.2 network_name

Name of the network.

Use: M; Format: <text>

#### 6.3.4.1.3 network_short_name

Short name of the network.

Use: O; Format: <text>

#### 6.3.4.1.4 network_address

Full address of the network in correct order for postage use. Each part of the address shall be separated by a data separator.

Use: M; Format: <sequence of text>

#### 6.3.4.1.5 network_responsible

Name of the responsible person within the network.

Use: O; Format: <text>

#### 6.3.4.1.6 network_phone_number

Phone number of the network.

Use: O; Format: <text>

#### 6.3.4.1.7 network_fax_number

Fax number of the network.

Use: O; Format: <text>

#### 6.3.4.1.8 network_email_address

Electronic mail address of the network.

Use: O; Format: <text>

#### 6.3.4.1.9 network_start_time

Date when the network started to create data.

Use: M; Format: <time>

#### 6.3.4.1.10 network_end_time

Date when the network stopped creating data. If the network is still working, all positions in the time format shall be filled with nines, i.e. "9999-99-99.99-99-99".

Use: M; Format: <time>

#### 6.3.4.1.11 network_coverage

Information about the geographical coverage of the network, in English, e.g. country, state, province.

Use: O; Format: <text>

#### 6.3.4.1.12 network_time_reference

Time reference used in the network. Time-related information shall be presented in local time or UT. Accordingly, the only permissible values of this keyword are:

— "local"

— "UT"

Use: M; Format: <text>

### 6.3.5 [site_group]

The site group consists of the site records.

Use: M

#### 6.3.5.1 [site_record]

The site record provides information about a sampling site.

Use: M

#### 6.3.5.1.1 site_network_country_code

Code consisting of the site code unique in the network managing the site, the network code itself, and the country code, each code separated by a full stop. The site code shall be placed in the first position, the network code in the second and the country code in the third. This information establishes a clear international identification of the actual sampling site. The network and country codes shall be in accordance with the specifications of 6.3.4.1.1.

Use: M; Format: <text>

EXAMPLE "NW16.N7.DE"

Site NW16 within the German network N7.

#### 6.3.5.1.2 site_name

Name of the sampling site.

Use: M; Format: <text>

#### 6.3.5.1.3 site_address

Full address of the sampling site in correct order for postage use. Each part of the address shall be separated by a data separator.

Use: M; Format: <sequence of text>

#### 6.3.5.1.4 site_responsible

Name of the technical body responsible for the site (if different from that responsible for the network).

Use: O; Format: <text>

#### 6.3.5.1.5 site_start_time

Date when the site started to create data.

Use: M; Format: <time>

#### 6.3.5.1.6 site_end_time

Date when the site stopped creating data. If the site is still working, all positions in the time format shall be filled with nines, i.e. "9999-99-99.99-99-99".

Use: M; Format: <time>

#### 6.3.5.1.7 site_type

Type of site as described by one of the following values:

— "traffic"

— "industrial"

— "background"

Use: M; Format: <text>

#### 6.3.5.1.8 site_scale

Scale of the site, with reference to the relevant monitoring programs in which the site participates, described by a sequence of text values specified in Table 4. This keyword shall only be used in combination with the keyword site_scale_code (see 6.3.5.1.9).

Use: O/M; Format: <sequence of text>

#### 6.3.5.1.9 site_scale_code

Scale of the site, with reference to the relevant monitoring programs in which the site participates, described by the sum of the numerical values of the site scale specified in Table 4. This keyword shall only be used in combination with the keyword site_scale (see 6.3.5.1.8).

Use: O/M; Format: <numerical>

**Table 4 — Site scale values**

| Numerical value | Text value |
|---|---|
| 1 | "local" |
| 2 | "regional" |
| 4 | "national" |
| 8 | "international" |

EXAMPLE For a local and national site, the numerical site scale value is five (5 = 1 + 4).

#### 6.3.5.1.10 site_time_minus_UT

Difference between site-related time and UT.

Use: M; Format: <time>

#### 6.3.5.1.11 site_latitude

Latitude of the sampling site, in accordance with annex C.

Use: M; Format: <text>

#### 6.3.5.1.12 site_longitude

Longitude of the sampling site, in accordance with annex C.

Use: M; Format: <text>

#### 6.3.5.1.13 site_altitude

Altitude above mean sea level (geodetic reference datum), in accordance with annex C.

Use: M; Format: <text>

#### 6.3.5.1.14 site_geodesic_system

Projection system used to determine the longitude, latitude and altitude.

Use: O; Format: <text>

NOTE The specification of the geodesic system is useful when the site location needs to be determined with high precision.

#### 6.3.5.1.15 site_zone_type

Type of zone in which the site is located, presented as text specified in Table 5. This keyword shall only be used in combination with the keyword site_zone_type_code (see 6.3.5.1.16).

Use: O/M; Format: <text>

#### 6.3.5.1.16 site_zone_type_code

Type of zone in which the site is located, presented as a numerical value specified in Table 5. This keyword shall only be used in combination with the keyword site_zone_type (see 6.3.5.1.15).

Use: O/M; Format: <numerical>

**Table 5 — Values for type of zone**

| Numerical value | Text value |
|---|---|
| 1 | "urban" |
| 2 | "suburban" |
| 3 | "rural" |

#### 6.3.5.1.17 site_zone_characterization

Local homogeneous environment of the site, presented as a sequence of text specified in Table 6. This keyword shall only be used in combination with the keyword site_zone_characterization_code (see 6.3.5.1.18).

Use: O/M; Format: <sequence of text>

#### 6.3.5.1.18 site_zone_characterization_code

Local homogeneous environment of the site, presented as a sum of numerical values specified in Table 6. This keyword shall only be used in combination with the keyword site_zone_characterization (see 6.3.5.1.17).

Use: O/M; Format: <numerical>

**Table 6 — Values for characterization of zone**

| Numerical value | Text value |
|---|---|
| 1 | "residential" |
| 2 | "commercial" |
| 4 | "industrial" |
| 8 | "agricultural" |
| 16 | "natural" |
| 32 | "airport" |
| 64 | "park" |
| 128 | "mountain" |
| 256 | "valley" |
| 512 | "seaside" |
| 1024 | "lakeside" |

#### 6.3.5.1.19 site_inhabitants

Number of inhabitants of the city where the site is located.

Use: O; Format: <numerical>

#### 6.3.5.1.20 site_emission_sources

Main sources of emissions influencing the site, presented as a sequence of text specified in Table 7. This keyword shall only be used in combination with the keyword site_emission_sources_code (see 6.3.5.1.21).

Use: O/M; Format: <sequence of text>

**Table 7 — Site emission sources**

| Numerical value | Text value | Comment |
|---|---|---|
| 1 | "public power" | including co-generation and district heating |
| 2 | "residential combustion" | including commercial and institutional combustion |
| 4 | "industrial combustion" | |
| 8 | "production processes" | |
| 16 | "fossil fuels" | extraction and distribution |
| 32 | "solvent use" | |
| 64 | "road transport" | |
| 128 | "other mobile sources" | including machinery to be specified as a comment |
| 256 | "waste" | treatment and disposal |
| 512 | "agriculture" | |
| 1024 | "nature" | |

#### 6.3.5.1.21 site_emission_sources_code

Code of main sources of emissions influencing the site, presented as the sum of the numerical values specified in Table 7. This keyword shall only be used in combination with the keyword site_emission_sources (see 6.3.5.1.20).

Use: O/M; Format: <numerical>

EXAMPLE Area with extraction and distribution of fossil fuels and industrial combustion (20 = 16 + 4).

#### 6.3.5.1.22 site_traffic_volume

Annual average of the daily traffic in the street at the sampling site, described by one of the text values specified in Table 8.

Use: O; Format: <text>

**Table 8 — Traffic volume values**

| Number of vehicles per day | Text value |
|---|---|
| $<$ 2 000 | "low" |
| 2 000 to 10 000 | "medium" |
| $>$ 10 000 | "high" |

#### 6.3.5.1.23 site_traffic_volume_number

Annual average of the daily traffic in the street at the sampling site, described by a measured or estimated number of vehicles.

Use: O; Format: <numerical>

#### 6.3.5.1.24 site_lorry_percentage

Percentage of vehicles with a maximum mass greater than 3,5 t, with respect to the whole traffic.

Use: O; Format: <numerical>

#### 6.3.5.1.25 site_street_type

Type of street, described by one of the text values specified in Table 9.

Use: O; Format: <text>

**Table 9 — Street type values**

| Condition[a] | Text value |
|---|---|
| $D / H \leqslant 3$ | "canyon" |
| $D / H > 3$ | "wide" |
| $v > 80$ km/h | "highway" |
| [a] $D$ is the width and $H$ the height of the street canyon and $v$ the mean velocity of the traffic. | |

#### 6.3.5.1.26 site_traffic_situation

Characterization of the immediate environment by one of the following values:

— "crossroads"

— "traffic lights"

— "parking"

— "bus stop"

— "taxi stop"

— "footway"

— "school"

— "hospital"

— "open area"

Use: O; Format: <text>

### 6.3.6 [measurand_group]

The measurand group consists of the measurand records.

Use: M

#### 6.3.6.1 [measurand_record]

The measurand record provides detailed information on the measurand.

Use: M

#### 6.3.6.1.1 measurand_code

Code of the measurand in accordance with annex B.

Use: M; Format: <text>

#### 6.3.6.1.2 measurand_name

Name of the measurand in English language and in accordance with annex B.

Use: M; Format: <text>

#### 6.3.6.1.3 measurand_unit

Unit of the measured quantity, in accordance with the text representation of ISO 4226 or ISO 1000.

Use: M; Format: <text>

#### 6.3.6.1.4 measurement_method

Name of the method for determining the individual air quality characteristic as specified in Table 10 or as free text in the English language.

Use: M; Format: <text>

**Table 10 — Measurement methods**

| Measurand | Measurement method |
|---|---|
| Sulfur dioxide | "UV fluorescence" |
| | "electrochemical method" |
| | "flame photometry" |
| | "gas chromatography" |
| | "flame photometric detection" |
| | "conductivity" |
| | "spectrophotometry" |
| | "thorin spectrophotometric method" |
| | "nondispersive infrared spectrometric method" |
| | "tetrachloromercurate (TCM)/*p*-rosaniline method" |
| | "titrimetric method" |
| | "KOH impregnated filter method" |
| | "annular denuder/filter pack" |
| | "rotating denuder" |
| Particulates | "gravimetric method" |
| | "beta ray absorption method" |
| Black smoke | "reflectometry" |
| Ozone | "ultraviolet method" |
| | "chemiluminescence method" |
| | "electrochemical method" |
| | "spectrophotometry/gas phase" |
| | "KI method" |
| | "indigo sulfate method" |
| Nitrogen dioxide | "chemiluminescence method" |
| | "electrochemical method" |
| | "spectrophotometry/gas phase" |
| | "nondispersive infrared spectrometric method" |
| | "luminol chemiluminescence method" |
| | "modified Griess-Saltzman method" |
| | "Saltzman method" |
| | "iodide absorption method" |
| Nitrogen oxides | "chemiluminescence method" |
| | "nondispersive infrared spectrometric method" |
| Carbon monoxide | "nondispersive infrared spectrometric method" |
| | "gas chromatographic method" |
| | "coulometric method" |
| | "infrared fluorescence" |
| Hydrogen sulfide | "gas chromatographic/flame photometric method" |
| | "methylene blue spectrophotometric method" |
| Lead | "atomic absorption spectrometric method" |

#### 6.3.6.1.5 measurement_method_standard

National or International Standard describing the measurement method for determining the individual air quality characteristic. If standards do not exist, reference shall be given to the documentation of the method used, or a list of performance characteristics (see ISO 6879) shall be given separately as comments.

Use: M; Format: <text>

#### 6.3.6.1.6 measurement_type

Type of measurement as a sequence of the following values:

— "automatic"

— "manual"

Use: O; Format: <sequence of text>

#### 6.3.6.1.7 measurement_device

Name of the manufacturer and name of the measurement device.

Use: O; Format: <text>

#### 6.3.6.1.8 measurement_start_time

Date when the measurement device started creating data.

Use: O; Format: <time>

#### 6.3.6.1.9 measurement_end_time

Date when the measurement device stopped creating data. If the device is still working, all positions in the time format shall be filled with nines, i.e. "9999-99-99.99-99-99".

Use: O; Format: <time>

#### 6.3.6.1.10 calibration_method

Name of the calibration method of the measuring device, as specified in Table 11 or, if not included in the Table, as free text in English language.

Use: O; Format: <text>

#### 6.3.6.1.11 calibration_method_standard

National or International Standard describing the calibration method.

Use: O; Format: <text>

#### 6.3.6.1.12 calibration_type

The type of calibration shall be presented as a sequence of the following values:

— "automatic"

— "manual"

Use: O; Format: <sequence of text>

#### 6.3.6.1.13 calibration_period

The period between two successive calibrations.

Use: O; Format: <time>

**Table 11 — Calibration methods**

| Method |
|---|
| "calibration cell" |
| "diffusion cell" |
| "permeation tube" |
| "compressed gases" |
| "calibrated filter" |
| "UV lamp" |
| "standard solution" |
| "reference measurement method" |
| "exterior air purified" |
| "blank filter" |
| "blank solution" |
| "unknown" |
| "not applicable" |
| "electric current" |
| "flowrate check" |
| "freon electrode" |
| "standard mass" |
| "ozone generator stopped" |
| "black filter" |

#### 6.3.6.1.14 reference_temperature

Value of the reference temperature used for adjusting the data (in accordance with ISO 8756).

Use: M; Format: <numerical>

#### 6.3.6.1.15 reference_temperature_unit

Unit of the reference temperature value specified, in one of the following:

— "kelvin"

— "degree Celsius"

Use: M; Format: <text>

#### 6.3.6.1.16 reference_pressure

Value of the reference pressure used for adjusting the data (in accordance with ISO 8756).

Use: M; Format: <numerical>

#### 6.3.6.1.17 reference_pressure_unit

Unit of the reference pressure value specified in one of the following:

— "pascal"

— "kilopascal"

Use: M; Format: <text>

#### 6.3.6.1.18 length_unit

Unit of length. All lengths shall be presented in metres. Therefore, the only text value of this keyword is:

— "metre"

Use: M; Format: <text>

#### 6.3.6.1.19 sampling_location

Location of the air intake or sampling point, specified by one of the following text values or by a user-defined description:

— "facade of building"

— "pavement"

— "kerbside"

— "courtyard"

— "free air flow"

Use: O; Format: <text>

#### 6.3.6.1.20 sampling_height

Height of air intake or sampling point above ground level, in metres.

Use: M; Format: <numerical>

#### 6.3.6.1.21 sampling_line_length

Length of the sampling line, in metres.

Use: O; Format: <numerical>

#### 6.3.6.1.22 lower_limit

Lowest value of a quantity (e.g. air quality characteristic, temperature, wind speed, etc.) which can be measured within specified limits of performance characteristics. For an air quality characteristic, the lower limit is identical with the detection limit (see ISO 6879).

Use: O; Format: <numerical>

#### 6.3.6.1.23 upper_limit

Highest value of a quantity (e.g. air quality characteristic, temperature, wind speed etc.) which can be measured within specified limits of performance characteristics. For an air quality characteristic, the upper limit is identical with the upper limit of measurement (see ISO 6879).

Use: O; Format: <numerical>

#### 6.3.6.1.24 quantification_limit

Lowest value of the air quality characteristic above which, with a probability of at least 95 %, the used measurement method allows quantification of the measurand (see ISO 6879).

Use: O; Format: <numerical>

#### 6.3.6.1.25 measurement_uncertainty

Parameter, associated with the result of the measurement, that characterizes the dispersion of the values that could reasonably be attributed to the measurand [2].

Use: O; Format: <numerical>

NOTE The measurement uncertainty is described by standard deviations.

### 6.3.7 [data_qualifier_group]

The data qualifier group provides the data qualifier record.

Use: M

#### 6.3.7.1 [data_qualifier_record]

The data qualifier record provides information on the significance of the data qualifiers. All data qualifiers used in the data block shall be specified.

Use: M

#### 6.3.7.1.1 calibration_drift

This data qualifier indicates that the measured datum is incorrect between two calibrations. The only permitted value is "D".

Use: O; Format: <text>

#### 6.3.7.1.2 calibration_mode

This data qualifier indicates that the measurement instrument operates in a calibration mode. During calibration a reference gas mixture is introduced for calibration purposes. The only permitted value is "C".

Use: O; Format: <text>

#### 6.3.7.1.3 corrected_datum

This data qualifier indicates that the following datum has been corrected. The only permitted value is "O".

Use: O; Format: <text>

#### 6.3.7.1.4 estimated_datum

This data qualifier specifies that the following datum is an estimate. The datum did not exist before estimation, it was faulty or invalid. The only permitted value is "E".

Use: O; Format: <text>

#### 6.3.7.1.5 faulty_measurement

This data qualifier indicates a failure detected in the data acquisition chain. The only permitted value is "F".

Use: O; Format: <text>

#### 6.3.7.1.6 invalid_datum

This data qualifier indicates that the following datum is invalid and should not be taken into account. The only permitted value is "I".

Use: O; Format: <text>

#### 6.3.7.1.7 maintenance_mode

This data qualifier indicates that the datum was acquired during maintenance operations on a measurement device. In this case the measurement is generally invalid. The only permitted value is "M".

Use: O; format: <text>

#### 6.3.7.1.8 no_datum

This qualifier indicates that the datum is absent. The following data field is empty. The only permitted value is "N".

Use: O; Format: <text>

#### 6.3.7.1.9 usable_datum

This qualifier indicates a usable datum. For this keyword only, the character can be omitted and be replaced by an empty string. Therefore, all data presented without a data qualifier are assumed to be usable data. The values of this keyword are "U" or "" (i.e. empty string).

Use: O; Format: <text>

#### 6.3.7.1.10 zero_mode

This data qualifier indicates that a zero test was conducted, or that a complementary gas free of measurands was introduced. The only permitted value is "Z".

Use: O; Format: <text>

### 6.3.8 [data_group]

The data group provides information on the data blocks.

Use: M

#### 6.3.8.1 [data_block]

The data block provides information on the data control record and the data record.

Use: M

#### 6.3.8.1.1 [data_control_record]

The data control record provides information on the data record. The data in the data record may be presented in a sequential or non-sequential mode. Both modes can be distinguished by the data type code.

a) Sequential mode

In the sequential mode, each datum listed is an element of a homogeneous sequence, i.e. each datum is related to different measurands or different sites or different times. Therefore, only one parameter may be varied in the data control record, either the measurand or the site or the time. In case of variation of the

1) measurand, the data record consists of a sequence of data related to the different measurands listed for a given site and for a particular time;

2) site, the data record consists of a sequence of data related to the different sites listed for a given measurand and for a particular time;

3) time, the data record consists of a sequence of data related to an interval of time for a given measurand and site. The start time of each datum can be calculated from the data start time, the data duration and the data number.

b) Non-sequential mode

In the non-sequential mode, sets of data are listed in the data record. Each set is presented on a separate line and may consist of different data elements specified by the keyword data_columns.

Use: M

#### 6.3.8.1.1.1 measurand_code

Code of the measurand as specified in the corresponding measurand record. The information shall be presented as a sequence of measurand codes defined in the measurand group.

Use: M; Format: <sequence of text>

#### 6.3.8.1.1.2 site_network_country_code

Code of the actual sampling site as specified in the corresponding site record. The information may be presented as a sequence of site codes defined in the site group.

Use: M; Format: <sequence of text>

#### 6.3.8.1.1.3 data_start_time

Start time of the first measuring interval of the reported data.

Use: M; Format: <time>

#### 6.3.8.1.1.4 data_duration

Duration between the start time of the first measuring interval and the end time of the last measuring interval of reported data.

Use: M; Format: <time>

#### 6.3.8.1.1.5 data_number

Number of data or number of data sets in the data record.

Use: M; Format: <numerical>

#### 6.3.8.1.1.6 data_time_interval

Reference time interval of the data, e.g. averaging time. Each datum is assumed to be calculated from a number of single measurements. This number and the sampling time of a single measurement shall also be reported.

Use: M; Format: <time>

#### 6.3.8.1.1.7 data_samples_per_time_interval

Number of measurements which have been used for calculating a single datum. For example, an half-hourly mean value can consist of three 10-minute values.

Use: M; Format: <numerical>

#### 6.3.8.1.1.8 data_sampling_time

Interval of time over which a single sample is taken.

Use: M; Format: <time>

EXAMPLE

data_time_interval =; "0000-00-00.00-30-00";

data_samples_per_time_interval =; 3;

data_sampling_time =; "0000-00-00.00-10-00";

In this example, the data in the data record represent half-hourly mean values which have been calculated from the results of three single measurements with a sampling time of 10 min each.

#### 6.3.8.1.1.9 data_multiplication_factor

Factor in decimal form, e.g. 0,01 or 0,1 or 1 or 10 or 100 etc., by which each datum shall be multiplied to obtain values in the specified units. The factor is one if this keyword is omitted.

Use: O; Format: <numerical>

#### 6.3.8.1.1.10 data_type

Type of reported data, e.g. arithmetic mean, standard deviation, percentile or non-sequential data, as specified in Table 12. For data type code 9, the name of the procedure used shall be given as free text.

Use: M; Format: <text>

#### 6.3.8.1.1.11 data_type_code

Code of the type of reported data as specified in Table 12, e.g. sequential data such as arithmetic mean, standard deviation or percentile, or non-sequential data sets.

Use: M; Format: <numerical>

**Table 12 — Data types and codes**

| Code | Data type |
|---|---|
| 1 | "arithmetic mean" |
| 2 | "geometric mean" |
| 3 | "standard deviation of arithmetic mean" |
| 4 | "standard deviation of geometric mean" |
| 5 | "maximum value" |
| 6 | "minimum value" |
| 7 | "percentile" |
| 8 | "accumulation" |
| 9 | [a] |
| 0 | "non-sequential data" |

[a] If the data have been calculated by a procedure not listed in the Table, code 9 shall be used. The name of this procedure shall be specified by the data type keyword. Further description may be included by comments.

#### 6.3.8.1.1.12 data_type_parameter

Value of the parameter allocated to the data type, e.g. 98,0 in the case of data type code 7 (percentile). The use of this keyword is mandatory for data type code 7.

Use: O/M; Format: <numerical>

#### 6.3.8.1.1.13 data_columns

Descriptors allocated to the elements of the data sets, presented as a sequence of text. The use of this keyword is mandatory in the case of non-sequential data (see annex E).

Use: O/M; Format: <sequence of text>

#### 6.3.8.1.2 [data_record]

The data record provides the data.

Use: M

#### 6.3.8.1.2.1 data

Air quality data or air quality data sets.

Use: M; Format: <sequence of data>

### 6.3.9 [comment_group]

The comment group provides additional information which cannot be presented in any of the preceding parts.

Use: O

## 6.4 Presentation of data

### 6.4.1 General

The following specifications apply to the presentation of data in a data file. Data may be represented either by fixed values as specified in 6.3 or by values in accordance with specified formats. The data shall follow the combination of equal sign and data separator "=;" behind a keyword. Upper- and lower-case letters are always equivalent. In this part of ISO 7168, formats are represented by the format name in angle brackets, e.g. <text>.

### 6.4.2 Fixed values

Several keywords require the use of fixed values as specified in 6.3. Only these values shall be allocated to the corresponding keyword.

### 6.4.3 Formats of variable values

#### 6.4.3.1 Format <numerical>

The format <numerical> requires that the data be presented in a numerical form without using powers of 10. The decimal separator used shall conform with the decimal separator specified in the definition group. Additional separators behind e.g. thousands are not permitted.

EXAMPLES

a) 58

b) −12503

c) −1,876

d) +23,500

#### 6.4.3.2 Format <text>

The format <text> requires that the data conform with the permissible characters specified in annex A, excluding all characters specified in Table 13.

**Table 13 — Characters forbidden in format <text>**

| Dec code | Symbol | Dec code | Symbol |
|---|---|---|---|
| 10 | CR | 91 | [ |
| 13 | LF | 93 | ] |
| 59 | ; | 123 | { |
| 61 | = | 125 | } |

#### 6.4.3.3 Format <alphanumerical>

The format <alphanumerical> is a subset of the format <text>. It requires that the data conform with the permissible characters specified in annex A, excluding all characters specified in Table 14.

**Table 14 — Characters forbidden in format <alphanumerical>**

| Dec code | Symbol | Dec code | Symbol | Dec code | Symbol | Dec code | Symbol |
|---|---|---|---|---|---|---|---|
| 10 | CR | 38 | & | 59 | ; | 94 | ^ |
| 13 | LF | 39 | ' | 60 | < | 96 | ` |
| 32 | SP | 40 | ( | 61 | = | 123 | { |
| 33 | ! | 41 | ) | 62 | > | 124 | \| |
| 34 | " | 42 | * | 63 | ? | 125 | } |
| 35 | # | 43 | + | 91 | [ | | |
| 36 | $ | 47 | / | 92 | \ | | |
| 37 | % | 58 | : | 93 | ] | | |

#### 6.4.3.4 Format <sequence of ...>

The format <sequence of ...> requires that the data be in accordance with the format specified inside the angle brackets and presented as a sequence of values separated by the data separator.

#### 6.4.3.5 Format <time>

The format <time> requires that the time information be presented as text in the format:

| | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| *Y* | *Y* | *Y* | *Y* | - | *M* | *M* | - | *D* | *D* | . | *h* | *h* | - | *m* | *m* | - | *s* | *s* |

where

*YYYY* is the year;

*MM* is the month;

*DD* is the day;

*hh* is the hour;

*mm* is the minute;

*ss* is the second.

EXAMPLES

1) One day: "0000-00-01.00-00-00"

2) Fifteen minutes: "0000-00-00.00-15-00"

3) 11 a.m. on 15th August 2003: "2003-08-15.11-00-00"

#### 6.4.3.6 Format <data>

##### 6.4.3.6.1 General

The format <data> requires that the data be presented in accordance with the data control record. Sequential data and elements of non-sequential data sets related to measurands specified in the data control record can be presented in any numerical format, and shall be in units specified in ISO 4226 or ISO 1000. These data are always preceded by a data qualifier. Keywords and values of data qualifiers are defined in Table 15.

Air quality data may be presented as integers. The necessary data multiplication factor shall be given in the data control record. If the factor is not specified, then it is assumed to be one.

##### 6.4.3.6.2 Sequential data

Sequential data are listed in a homogeneous sequence, i.e. each air quality datum is related to different measurands or different sites or different times. These data shall be separated by the specified data separator. The data record shall be terminated by the data separator.

##### 6.4.3.6.3 Non-sequential data

Non-sequential data consist of data sets. Each data set is presented on a separate line and consists of different data elements specified by the keyword data_columns. The number of data sets is specified by the keyword data_number. The format of each element shall be in accordance with the requirements of this part of ISO 7168.

The elements of a data set are separated by the data separator. Each data set is terminated by a data separator.

**Table 15 — Data qualifier keywords and values**

| Keyword | Value | Remark |
|---|---|---|
| calibration_drift | "D" | see 6.3.7.1.1 |
| calibration_mode | "C" | see 6.3.7.1.2 |
| corrected_datum | "O" | see 6.3.7.1.3 |
| estimated_datum | "E" | see 6.3.7.1.4 |
| faulty_measurement | "F" | see 6.3.7.1.5 |
| invalid_datum | "I" | see 6.3.7.1.6 |
| maintenance_mode | "M" | see 6.3.7.1.7 |
| no_datum | "N" | see 6.3.7.1.8 |
| usable_datum | ""<br>"U" | see 6.3.7.1.9 |
| zero_mode | "Z" | see 6.3.7.1.10 |

# Annex A
(normative)

# 7-bit coded character set

**Table A.1 — 7-bit coded character set in compliance with ISO/IEC 646**

| Dec code | Symbol | Dec code | Symbol | Dec code | Symbol | Dec code | Symbol |
|---|---|---|---|---|---|---|---|
| 0 | NUL | 32 | SP | 64 | @ | 96 | ` |
| 1 | SOH | 33 | ! | 65 | A | 97 | a |
| 2 | STX | 34 | " | 66 | B | 98 | b |
| 3 | ETX | 35 | # | 67 | C | 99 | c |
| 4 | EOT | 36 | $ | 68 | D | 100 | d |
| 5 | ENQ | 37 | % | 69 | E | 101 | e |
| 6 | ACQ | 38 | & | 70 | F | 102 | f |
| 7 | BEL | 39 | ' | 71 | G | 103 | g |
| 8 | BS | 40 | ( | 72 | H | 104 | h |
| 9 | HT | 41 | ) | 73 | I | 105 | i |
| 10 | LF | 42 | * | 74 | J | 106 | j |
| 11 | VT | 43 | + | 75 | K | 107 | k |
| 12 | FF | 44 | , | 76 | L | 108 | l |
| 13 | CR | 45 | — | 77 | M | 109 | m |
| 14 | SO | 46 | . | 78 | N | 110 | n |
| 15 | SI | 47 | / | 79 | O | 111 | o |
| 16 | DLE | 48 | 0 | 80 | P | 112 | p |
| 17 | DC1 | 49 | 1 | 81 | Q | 113 | q |
| 18 | DC2 | 50 | 2 | 82 | R | 114 | r |
| 19 | DC3 | 51 | 3 | 83 | S | 115 | s |
| 20 | DC4 | 52 | 4 | 84 | T | 116 | t |
| 21 | NAK | 53 | 5 | 85 | U | 117 | u |
| 22 | SYN | 54 | 6 | 86 | V | 118 | v |
| 23 | ETB | 55 | 7 | 87 | W | 119 | w |
| 24 | CAN | 56 | 8 | 88 | X | 120 | x |
| 25 | EM | 57 | 9 | 89 | Y | 121 | y |
| 26 | SUB | 58 | : | 90 | Z | 122 | z |
| 27 | ESC | 59 | ; | 91 | [ | 123 | { |
| 28 | IS4 | 60 | < | 92 | \ | 124 | \| |
| 29 | IS3 | 61 | = | 93 | ] | 125 | } |
| 30 | IS2 | 62 | > | 94 | ^ | 126 | ~ |
| 31 | IS1 | 63 | ? | 95 | _ | 127 | DEL |

# Annex B
(normative)

# Measurand codes

Table B.1 specifies measurand names and measurand codes. These names and codes should generally be used.

The measurand code consists of two alphanumerical characters. If the same measurand is measured more than one time, the measurements may be distinguished by a third alphanumerical character added behind the measurand code. This may be necessary e.g. for different

— measurement units,

— measurement methods,

— heights of sampling or measurement point above ground level,

— detection limits,

— upper limits of measurement,

— data types.

EXAMPLE Two different ozone measurements may be distinguished by the following codes:

— measurand_code = 081

— measurand_code = 082

If a measurand is not included in Table B.1, then the user may specify the measurand name and allocate a measurand code. The user-defined code shall begin with letters "X", "Y" or "Z" in the first position of the code.

**Table B.1 — Measurand names and codes**

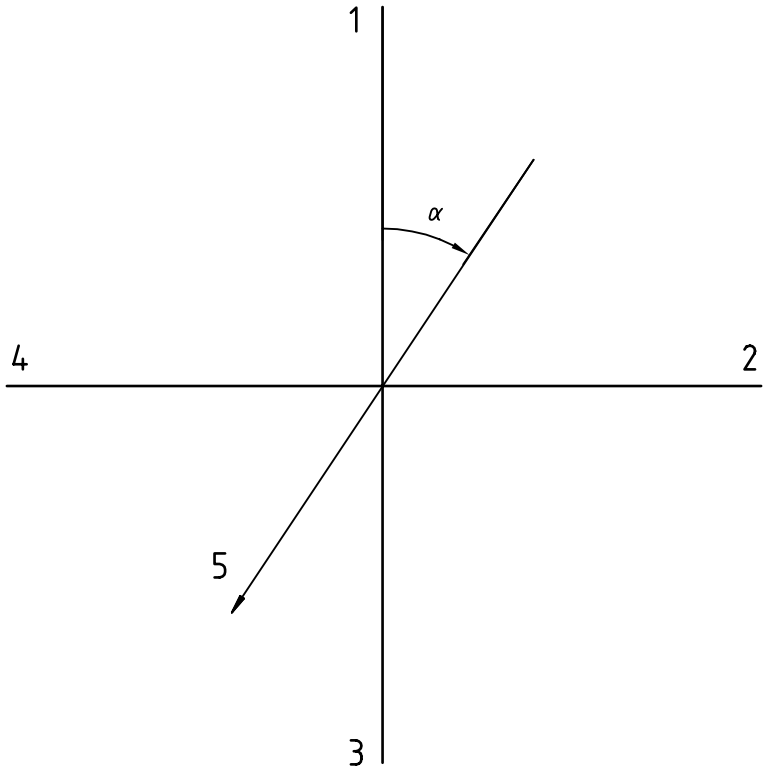
| Measurand name | Code | Formula | Remark or IUPAC name |
|---|---|---|---|
| **Gaseous pollutants** | | | |
| Ammonia | 21 | $NH_3$ | |
| Black smoke | 11 | | |
| Carbon dioxide | 17 | $CO_2$ | |
| Carbon monoxide | 04 | CO | |
| Elemental carbon | 18 | C | |
| Hydrogen chloride | 07 | HCl | |
| Hydrogen fluoride | 06 | HF | |
| Hydrogen oxides | 12 | $H_2O_2$ | |
| Hydrogen sulfide | 05 | $H_2S$ | |
| Methane | 16 | $CH_4$ | |
| Nitric acid | 37 | $HNO_3$ | |
| Nitrogen dioxide | 03 | $NO_2$ | |
| Nitrogen monoxide | 02 | NO | |
| Nitrogen oxides | 35 | $NO_x$ | $NO + NO_2$ |

| Measurand name | Code | Formula | Remark or IUPAC name |
|---|---|---|---|
| Nitrous oxide | 36 | $N_2O$ | |
| Non-methane hydrocarbons | 20 | | measured as methane equivalent |
| Ozone | 08 | $O_3$ | |
| Peroxyacetyl nitrate | 09 | $CH_3C(O)OONO_2$ | |
| Strong acidity | 10 | | $SO_2$ equivalent |
| Sulfur dioxide | 01 | $SO_2$ | |
| Sulfur trioxide | 13 | $SO_3$ | |
| Sulfuric acid | 38 | $H_2SO_4$ | |
| Total chlorine | 98 | Cl | |
| Total fluoride | 99 | F | |
| Total hydrocarbons | 15 | | measured as methane equivalent |
| **Particulates** | | | |
| Particulate aluminium | 91 | Al | |
| Particulate arsenic | 80 | As | |
| Particulate beryllium | 81 | Be | |
| Particulate cadmium | 82 | Cd | |
| Particulate chrome | 83 | Cr | |
| Particulate copper | 84 | Cu | |
| Particulate iron | 86 | Fe | |
| Particulate lead | 19 | Pb | |
| Particulate magnesium | 89 | Mg | |
| Particulate manganese | 90 | Mn | |
| Particulate mercury | 85 | Hg | |
| Particulate nickel | 87 | Ni | |
| Particulate sulfur | 14 | S | |
| Particulate tin | 57 | Sn | |
| Particulate vanadium | 92 | V | |
| Particulate zinc | 88 | Zn | |
| PM10 | 24 | | |
| PM2,5 | 39 | | |
| Sedimentary dusts | 23 | | |
| Soot | 70 | | |
| Total suspended particulates | 22 | | |
| **Particulates in rain water** | | | |
| Aluminium | B1 | Al | |
| Cadmium | B3 | Cd | |
| Calcium | B2 | Ca | |
| Iron | B4 | Fe | |
| Lead | B7 | Pb | |
| Magnesium | B5 | Mg | |
| Manganese | B6 | Mn | |
| Zinc | B8 | Zn | |

| Measurand name | Code | Formula | Remark or IUPAC name |
|---|---|---|---|
| **Substances soluble in rain water** | | | |
| Aluminium ion | A1 | $Al^{3+}$ | |
| Ammonium ion | 48 | $NH_4^+$ | |
| Cadmium ion | A2 | $Cd^{2+}$ | |
| Calcium ion | 43 | $Ca^{2+}$ | |
| Chloride ion | 40 | $Cl^-$ | |
| Hydrogen ion | 44 | $H^+$ | |
| Iron ion | A3 | $Fe^{3+}$ | |
| Lead ion | A5 | $Pb^{2+}$ | |
| Magnesium ion | 46 | $Mg^{2+}$ | |
| Manganese ion | A4 | $Mn^{2+}$ | |
| Nitrate ion | 41 | $NO_3^-$ | |
| Potassium ion | 45 | $K^+$ | |
| Sodium ion | 47 | $Na^+$ | |
| Sulfate ion | 42 | $SO_4^{2-}$ | |
| Zinc ion | A6 | $Zn^{2+}$ | |
| **Volatile organic compounds (VOC)** | | | |
| 1,3-butadiene | V0 | $C_4H_6$ | 1,3-butadiene |
| 1-butene | V1 | $C_4H_8$ | but-1-ene |
| *trans*-2-butene | V2 | $C_4H_8$ | *trans*-but-2-ene |
| Acetylene | V3 | $C_2H_2$ | ethyne |
| Benzene | V4 | $C_6H_6$ | benzene |
| Isobutane | V5 | $C_4H_{10}$ | 2-methylpropane |
| n-butane | V6 | $C_4H_{10}$ | n-butane |
| *cis*-2-butene | V7 | $C_4H_8$ | (*Z*)-but-2-ene |
| Ethane | V8 | $C_2H_6$ | ethane |
| Ethene | V9 | $C_2H_4$ | ethene |
| Ethylbenzene | VA | $C_8H_{10}$ | ethylbenzene |
| Formaldehyde | VB | $CH_2O$ | methanal |
| n-heptane | VC | $C_7H_{16}$ | n-heptane |
| n-hexane | VD | $C_6H_{14}$ | n-hexane |
| 1-hexene | VE | $C_6H_{12}$ | hex-1-ene |
| Isoprene | VF | $C_5H_8$ | 2-methyl-1,3-butadiene |
| Isooctane | VG | $C_8H_{18}$ | 2,2,4-trimethylpentane |
| n-octane | VH | $C_8H_{18}$ | n-octane |
| Isopentane | VI | $C_5H_{12}$ | 2-methylbutane |
| n-pentane | VK | $C_5H_{12}$ | n-pentane |
| 1-pentene | VL | $C_5H_{10}$ | pent-1-ene |
| 2-pentene | VM | $C_5H_{10}$ | pent-2-ene |
| Propane | Vn | $C_3h_8$ | propane |
| Propene | Vp | $C_3h_6$ | propene |
| Toluene | Vq | $C_7h_8$ | methylbenzene |

| Measurand name | Code | Formula | Remark or IUPAC name |
|---|---|---|---|
| 1,2,3-trimethylbenzene | VR | $C_9H_{12}$ | 1,2,3-trimethylbenzene |
| 1,2,4-trimethylbenzene | VS | $C_9H_{12}$ | 1,2,4-trimethylbenzene |
| 1,3,5-trimethylbenzene | VT | $C_9H_{12}$ | 1,3,5-trimethylbenzene |
| *m,p*-xylene | VU | $C_8H_{10}$ | *m,p*-xylene |
| *o*-xylene | VV | $C_8H_{10}$ | *o*-xylene |
| **Chlorinated hydrocarbons** | | | |
| Trichloromethane | H0 | $CHCl_3$ | trichloromethane |
| 1,1,1-trichloroethane | H1 | $CH_3CCl_3$ | 1,1,1-trichloroethane |
| Tetrachloromethane | H2 | $CCl_4$ | tetrachloromethane |
| Trichloroethene | H3 | $ClCHCCl_2$ | trichloroethene |
| Tetrachloroethene | H4 | $C_2Cl_4$ | tetrachloroethene |
| **Polycyclic aromatic hydrocarbons (PAH) in air** | | | |
| Benzo(a)pyrene | P0 | BaP | in air |
| Benzo(e)pyrene | P1 | BeP | in air |
| Benzo(a)anthracene | P2 | BaA | in air |
| Dibenzo(a,h)anthracene | P3 | DBahA | in air |
| Benzo(ghi)perylene | P4 | BghiP | in air |
| Coronen | P5 | COR | in air |
| **Polycyclic aromatic hydrocarbons (PAH) in particulates** | | | |
| Benzo(a)pyrene | P6 | BaP | in particulates |
| Benzo(e)pyrene | P7 | BeP | in particulates |
| Benzo(a)anthracene | P8 | BaA | in particulates |
| Dibenzo(a,h)anthracene | P9 | DBahA | in particulates |
| Benzo(ghi)perylene | PA | BghiP | in particulates |
| Coronen | PB | COR | in particulates |
| **Carbonyl compounds** | | | |
| Formaldehyde | VB | $CH_2O$ | methanal |
| Acetaldehyde | C1 | $C_2H_4O$ | ethanal |
| Propanal | C2 | $C_3H_6O$ | propanal |
| Butanal | C3 | $C_4H_8O$ | butanal |
| n-hexanal | C4 | $C_6H_{12}O$ | n-hexanal |
| Acrolein | C5 | $C_3H_4O$ | 2-propenal |
| Crotonaldehyde | C6 | $C_4H_6O$ | 2-butenal |
| Acetone | C7 | $C_3H_6O$ | propanone |
| Benzaldehyde | C8 | $C_7H_6O$ | benzenecarbaldehyde |
| Acetophenone | C9 | $C_8H_8O$ | phenyl-1-ethanone |
| **Meteorological parameters** | | | |
| Absolute humidity | 55 | | |
| Mixing height | 56 | | |
| Precipitation | 60 | | |
| Pressure | 53 | | |
| Relative humidity | 58 | | |

| Measurand name | Code | Formula | Remark or IUPAC name |
|---|---|---|---|
| Temperature | 54 | | |
| Volume of air | 64 | | |
| Wind component west to east | 62 | | wind from west to east: + sign |
| Wind component south to north | 61 | | wind from south to north: + sign |
| Wind component vertical | 63 | | upwards: + sign |
| Wind direction | 52 | | see Figure B.1 |
| Wind velocity | 51 | | |
| Duration of sunlight | 59 | | |
| Direct solar IR radiation | 71 | | |
| Direct solar UV radiation | 72 | | |
| Direct solar visible radiation | 77 | | |
| Direct solar radiation | 73 | | |
| Global radiation | 74 | | |
| Diffused radiation | 75 | | |
| Reflected radiation | 76 | | |
| **Other** | | | |
| Conductivity | 49 | | |
| pH | 50 | | |
| **Traffic** | | | |
| Noise | 66 | | |
| Vehicles | 65 | | |
| Vehicle coverage | 6A | | |
| **Radioactivity** | | | |
| Aerosol gamma activity | 34 | | |
| Artificial alpha activity | 25 | | |
| Artificial beta activity | 26 | | |
| Beta activity | 29 | | |
| Iodine-131 activity | 27 | | |
| Radon activity | 28 | | |
| Dose of absorbed ambient gamma rays | 32 | | |
| Dose equivalent of absorbed ambient gamma rays | 30 | | |
| Dose rate of absorbed ambient gamma rays | 31 | | |
| Ambient gamma activity | 33 | | |




**Key**

1 North
2 East
3 South
4 West
5 Wind flow

**Figure B.1 — Angle $\alpha$ of wind direction**

# Annex C
(normative)

# Presentation of latitude, longitude and altitude data

## C.1 General

This annex specifies a variable-length format for the representation of latitude, longitude and altitude. It allows the use of normal sexagesimal notations involving degrees, minutes and seconds as well as various combinations of sexagesimal and decimal notations:

— degrees and decimal degrees;

— degrees, minutes and decimal minutes;

— degrees, minutes, seconds and decimal seconds.

The format uses the numeric characters 0 to 9, the graphic characters plus (+) and minus (−) and the comma as the decimal separator. In the data file, the latitude, longitude and altitude data are presented as text.

The presentation of each, the latitude, longitude or altitude, shall be in accordance with ISO 6709.

## C.2 Latitude

**C.2.1** Latitudes north of the equator and the equator itself shall be designated by use of the plus sign (+), latitudes south of the equator shall be designated by use of the minus sign (−).

**C.2.2** The first two digits of the latitude string shall represent degrees. Subsequent digits shall represent minutes, seconds or decimal fractions according to the following convention, in which the decimal separator (comma) indicates the transition from the sexagesimal system to the decimal system. The number of digits behind the data separator shall be chosen in such way that the location is specified with sufficient precision.

a) Degrees (*D*) and decimal degrees: ±*DD*,*DD*

b) Degrees (*D*), minutes (*M*) and decimal minutes: ±*DDMM*,*MM*

c) Degrees (*D*), minutes (*M*), seconds (*S*) and decimal seconds: ±*DDMMSS*,*S*

**C.2.3** Leading zeros shall be inserted for degree values less than ten, and zeros shall be embedded in proper position when minutes or seconds are less than ten.

EXAMPLES

a) "+75,3457"

b) "−0645,68"

c) "+500709,1"

## C.3 Longitude

**C.3.1** Longitudes east of Greenwich shall be designated by use of the plus sign (+), longitudes west of Greenwich shall be designated by use of the minus sign (−). The Prime Meridian shall be designated by use of the plus sign (+). The 180th meridian shall be designated by use of the minus sign (−).

**C.3.2** The first three digits of the longitude string shall represent degrees. Subsequent digits shall represent minutes, seconds or decimal fractions according to the following convention in which the decimal separator (comma) indicates the transition from the sexagesimal system to the decimal system. The number of digits behind the data separator shall be chosen in such way that the location is specified with sufficient precision.

a) Degrees (*D*) and decimal degrees: ±*DDD*,*DD*

b) Degrees (*D*), minutes (*M*) and decimal minutes: ±*DDDMM*,*MM*

c) Degrees (*D*), minutes (*M*), seconds (*S*) and decimal seconds: ±*DDDMMSS*,SS

**C.3.3** Leading zeros shall be inserted for degree values less than 100, and zeros shall be embedded in proper position when minutes or seconds are less than ten.

EXAMPLES

a) "−005,3457"

b) "+01615,28"

c) "+1701209,1"

## C.4 Altitude

**C.4.1** Altitudes above the geodetic reference datum or at the geodetic datum level shall be designated by use of the plus sign (+), altitudes below the geodetic reference datum shall be designated by use of the minus sign (−).

**C.4.2** The altitude shall be represented in metres, using decimal fractions if required.

EXAMPLES

a) "+245,6"

b) "−12"

# Annex D
(informative)

# Examples of country short names and codes

**Table D.1 — Country names and codes [ISO 3166-1]**

| Country short name | Alpha-2 code | Official name in English |
|---|---|---|
| AUSTRALIA | AU | Australia |
| AUSTRIA | AT | Republic of Austria |
| BELGIUM | BE | Kingdom of Belgium |
| CANADA | CA | Canada |
| CHINA | CN | People's Republic of China |
| CZECH REPUBLIC | CZ | Czech Republic |
| DENMARK | DK | Kingdom of Denmark |
| FINLAND | FI | Republic of Finland |
| FRANCE | FR | French Republic |
| GERMANY | DE | Federal Republic of Germany |
| GREECE | GR | Hellenic Republic |
| HUNGARY | HU | Republic of Hungary |
| IRELAND | IE | Ireland |
| ITALY | IT | Italian Republic |
| JAPAN | JP | Japan |
| LUXEMBOURG | LU | Grand Duchy of Luxembourg |
| MEXICO | MX | United Mexican States |
| NETHERLANDS | NL | Kingdom of the Netherlands |
| NEW ZEALAND | NZ | New Zealand |
| NORWAY | NO | Kingdom of Norway |
| POLAND | PL | Republic of Poland |
| PORTUGAL | PT | Portuguese Republic |
| ROMANIA | RO | Romania |
| RUSSIAN FEDERATION | RU | Russian Federation |
| SLOVAKIA | SK | Slovak Republic |
| SOUTH AFRICA | ZA | Republic of South Africa |
| SPAIN | ES | Kingdom of Spain |
| SWEDEN | SE | Kingdom of Sweden |
| SWITZERLAND | CH | Swiss Confederation |
| TURKEY | TR | Republic of Turkey |
| UNITED KINGDOM | GB | United Kingdom of Great Britain and Northern Ireland |
| UNITED STATES | US | United States of America |

# Annex E
(informative)

# Examples of data files

## E.1 Example of complete data file

```
[definition_group]
  file_name =; "FR241503.94$"
  file_creation_date =; "1995-06-02.11-45-00"
  file_data_status =; "validated"
  file_data_separator =; ; {semicolon}
  file_decimal_separator =; , {comma}
  file_comment_separators =; { }
  file_format =; "ISO7168-1:1998"
[identification_group]
  [data_supplier_record]
    data_supplier_name =; "QUALITAIR"
    data_supplier_code =; "QA"
    data_supplier_address =; "NICE LEADER"; "64 route de GRENOBLE"; "F-
06200 NICE"; "FRANCE"
    data_supplier_responsible =; "Responsible Person"
    data_supplier_phone_number =; "+33 1234567890"
    data_supplier_fax_number =; "+33 1234567800"
    data_supplier_email_address ;= "qualitair@provider.country"
    data_supplier_country_name =; "FRANCE"
    data_supplier_country_code =; "FR"
  [header_record]
    number_of_network_records =; 1
    number_of_site_records =; 2
    number_of_measurand_records =; 3
    number_of_data_blocks =; 4
[network_group]
  [network_record]
    network_country_code =; "24.FR"
    network_name =; "QUALITAIR06"
    network_short_name =; "QA06"
    network_address =; "NICE LEADER"; "64 route de GRENOBLE"; "F-
06200 NICE"; "FRANCE"
    network_responsible =; "GERAUD Michel"
    network_phone_number =; "+33 8765432109"
    network_fax_number =; "+33 8765432100"
    network_email_address =; "qualitair06@provider.country"
    network_start_time =; "1990-01-01.00-00-00"
    network_end_time =; "9999-99-99.99-99-99"
    network_coverage =; "province"
    network_time_reference =; "UT"
```

```
[site_group]
  [site_record]
    site_network_country_code =; "24001.24.FR"
    site_name =; "Blausasc"
    site_address =; "Address of the site"
    site_responsible =; "Responsible Person"
    site_start_time =; "1992-06-01.00-00-00"
    site_end_time =; "9999-99-99.99-99-99"
    site_type =; "background"
    site_scale =; "regional"; "national"
    site_scale_code =; 6
    site_time_minus_UT =; "0000-00-00.02-00-00"
    site_latitude =; "+434825,00"
    site_longitude =; "+0072158,00"
    site_altitude =; "+320"
    site_geodesic_system =; "WGS84"
    site_zone_type =; "rural"
    site_zone_type_code =; 3
    site_zone_characterization =; "natural"; "lakeside"
    site_zone_characterization_code =; 1040
    site_inhabitants =; 5000"
    site_emission_sources =; "agriculture"; "nature"
    site_emission_sources_code =; 1536
    site_traffic_volume =; "low"
    site_lorry_percentage =; 10
    site_street_type =; "wide"
    site_traffic_situation =; "open area"
  [site_record]
    site_network_country_code =; "24005.24.FR"
    site_name =; "Brancolar"
    site_address =; "Address of the site"
    site_responsible =; "Responsible Person"
    site_start_time =; "1992-06-01.00-00-00"
    site_end_time =; "9999-99-99.99-99-99"
    site_type =; "background"
    site_scale =; "regional"; "national"
    site_scale_code =; 6
    site_time_minus_UT =; "0000-00-00.02-00-00"
    site_latitude =; "+434332,00"
    site_longitude =; "+0071623,00"
    site_altitude =; "+162"
    site_geodesic_system =; "WGS84"
    site_zone_type =; "rural"
    site_zone_type_code =; 3
    site_zone_characterization =; "natural"; "lakeside"
    site_zone_characterization_code =; 1040
    site_inhabitants =; 5000"
    site_emission_sources =; "agriculture"; "nature"
    site_emission_sources_code =; 1536
    site_traffic_volume =; "low"
```

```
    site_lorry_percentage =; 10
    site_street_type =; "wide"
    site_traffic_situation =; "open area"
[measurand_group]
  [measurand_record]
    measurand_code =; "08"
    measurand_name =; "ozone"
    measurand_unit =; "microgram per cubic metre"
    measurement_method =; "ultraviolet method"
    measurement_method_standard =; "ISO 13964"
    measurement_type =; "automatic"
    measurement_device =; "Manufacturer – XY 67"
    measurement_start_time =; 1993-01-01.00-00-00"
    measurement_end_time =; 9999-99-99.99-99-99"
    calibration_method =; "UV lamp"
    calibration_method_standard =; "not applicable"
    calibration_type =; "automatic"
    calibration_period =; 0000-00-01.00-00-00
    reference_temperature =; 20,0
    reference_temperature_unit =; "degree Celsius"
    reference_pressure =; 101,3
    reference_pressure_unit =; "kilopascal"
    length_unit =; "metre"
    sampling_location =; "free air flow"
    sampling_height =; 3
    sampling_line_length =; 4,5
    lower_limit =; 0
    upper_limit =; 200
    quantification_limit =; 20
    measurement_uncertainty =; 20
  [measurand_record]
    measurand_code =; "01"
    measurand_name =; "sulfur dioxide"
    measurand_unit =; "microgram per cubic metre"
    measurement_method =; "UV fluorescence"
    measurement_method_standard =; "ISO 10498"
    measurement_type =; "automatic"
    measurement_device =; "Manufacturer – ZZ 100"
    measurement_start_time =; 1994-01-01.00-00-00"
    measurement_end_time =; 9999-99-99.99-99-99"
    calibration_method =; "reference measurement method"
    calibration_method_standard =; "not applicable"
    calibration_type =; "manual"
    calibration_period =; 0000-01-00.00-00-00
    reference_temperature =; 20,0
    reference_temperature_unit =; "degree Celsius"
    reference_pressure =; 101,3
    reference_pressure_unit =; "kilopascal"
    length_unit =; "metre"
    sampling_location =; "free air flow"
```

```
    sampling_height =; 3
    sampling_line_length =; 3,5
    lower_limit =; 0
    upper_limit =; 2670
    quantification_limit =; 5
    measurement_uncertainty =; 5
  [measurand_record]
    measurand_code =; "22"
    measurand_name =; "total suspended particulates"
    measurand_unit =; "microgram per cubic metre"
    measurement_method =; "beta ray absorption method"
    measurement_method_standard =; "ISO 10473"
    measurement_type =; "automatic"
    measurement_device =; "Manufacturer – ABC 50"
    measurement_start_time =; 1994-01-01.00-00-00"
    measurement_end_time =; 9999-99-99.99-99-99"
    calibration_method =; "reference measurement method"
    calibration_method_standard =; "not applicable"
    calibration_type =; "manual"
    calibration_period =; 0000-00-07.00-00-00
    reference_temperature =; 20,0
    reference_temperature_unit =; "degree Celsius"
    reference_pressure =; 101,3
    reference_pressure_unit =; "kilopascal"
    length_unit =; "metre"
    sampling_location =; "free air flow"
    sampling_height =; 3
    sampling_line_length =; 5,5
    lower_limit =; 0
    upper_limit =; 3800
    quantification_limit =; 10
    measurement_uncertainty =; 10
[data_qualifier_group]
  [data_qualifier_record]
    usable_datum =; ""
    calibration_mode =; "C"
    zero_mode =; "Z"
    maintenance_mode =; "M"
    faulty_measurement =; "F"
    no_datum =; "N"
    calibration_drift =; "D"
    corrected_datum =; "O"
    estimated_datum =; "E"
    invalid_datum =; "I"
[data_group]
  [data_block]
    [data_control_record]
      measurand_code =; "08"
      site_network_country_code =; "24001.24.FR"
      data_start_time =; "1994-07-09.00-00-00"
```

```
    data_duration =; "0000-00-01.00-00-00"
    data_number =; 96
    data_time_interval =; "0000-00-00.00-15-00"
    data_samples_per_time_interval =; 1
    data_sampling_time =; "0000-00-00.00-15-00"
    data_multiplication_factor =; 1
    data_type =; "arithmetic mean
    data_type_code =; 1
  [data_record]
     data =;  97;  55;   2;   1;  25;  10;  33;  46;  27;   1;   0;   0;   8;
     data =;   3;   4;  20;  24;  26;  11;   3;   9;   8;   2;   0;   0;   0;
     data =;   2;   2;F687;   1;   1;   5;  40;  50;  64;  82;  95;  95; 111;
     data =;  97;  94; 114;  98; 104;  95; 107; 109; 110; 119; 108; 102; 120;
     data =; 128; 115; 110; 120; 111; 109; 106; 119; 104; 103; 111; 118; 131;
     data =; 128; 127;  92; 102; 101;  85; 105; 105; 106; 104; 101;  95;  84;
     data =;  89;  65;  35;  41;  43;  37;  25;  18;   3;   0;   0;   0;   0;
     data =;   0;   0;N   ;N   ;   0;
[data_block]
  [data_control_record]
    measurand_code =; "01"
    site_network_country_code =; "24001.24.FR"
    data_start_time =; "1994-07-09.00-00-00"
    data_duration =; "0000-00-01.00-00-00"
    data_number =; 96
    data_time_interval =; "0000-00-00.00-15-00"
    data_samples_per_time_interval =; 1
    data_sampling_time =; "0000-00-00.00-15-00"
    data_multiplication_factor =; 1
    data_type =; "arithmetic mean"
    data_type_code =; 1
  [data_record]
    data =;   1;   1;   1;Z  0;   1;   1;   1;   1;   1;   1;   2;   1;   1;
    data =;   1;   1;   1;   1;   1;   1;   1;   1;   1;   1;   1;   2;   1;
    data =;   1;   1;   1;   1;   1;   2;   1;   1;   2;   1;   1;   1;   1;
    data =;   1;   1;   1;N   ;   1;   1;   1;   1;   1;   1;   1;   1;   1;
    data =;   1;   1;   1;   1;I  2;I  1;   1;   1;   1;   1;   1;   1;   2;
    data =;   1;   1;   1;   1;   1;   1;   1;   1;   2;   1;   1;   1;   1;
    data =;   1;   1;   1;   1;   1;   1;   1;   1;   1;   1;   1;   1;   1;
    data =;   1;   2;   3;   2;   2;
[data_block]
  [data_control_record]
    measurand_code =; "22"
    site_network_country_code =; "24001.24.FR"
    data_start_time =; "1994-07-09.00-00-00"
    data_duration =; "0000-00-01.00-00-00"
    data_number =; 96
    data_time_interval =; "0000-00-00.00-15-00"
    data_samples_per_time_interval =; 1
    data_sampling_time =; "0000-00-00.00-15-00"
    data_multiplication_factor =; 1
```

```
      data_type =; "arithmetic mean"
      data_type_code =; 1
    [data_record]
      data =;  33;  33;  33;  33;  33;  33;  33;  33;  33;  33;  31;  29;  29;
      data =;  29;  29;  29;  29;  29;  29;  29;  29;  29;  29;  29;  29;  29;
      data =;  36;  42;  42;  42;  42;  42;  42;  42;  42;  42;  42;  42;  42;
      data =;  42;  42;  42;  44;  45;F645;  45;  45;  45;  45;  45;  45;  45;
      data =;  45;  45;  45;  45;  45;  45;  31;  19;  19;  19;  19;  19;  19;
      data =;  19;  19;  19;Z  0;  19;  19;  19;  19;  19;  23;  28;  27;  28;
      data =;  28;  28;  27;  27;  27;  28;  27;  27;  27;  27;  27;  27;  31;
      data =;  34;  34;  34;M  0;M  0;
  [data_block]
    [data_control_record]
      measurand_code =; "08"
      site_network_country_code =; "24005.24.FR"
      data_start_time =; "1994-07-09.00-00-00"
      data_duration =; "0000-00-01.00-00-00"
      data_number =; 96
      data_time_interval =; "0000-00-00.00-15-00"
      data_samples_per_time_interval =; 1
      data_sampling_time =; "0000-00-00.00-15-00"
      data_multiplication_factor =; 1
      data_type =; "arithmetic mean"
      data_type_code =; 1
    [data_record]
      data =;  41;  52;  57;  40;  52;  44;  55;  59;  48;  55;  48;  30;  20;
      data =;  17;  22;   9;  27;  11;  11;  14;  13;   6;   3;   6;C198;C  2;
      data =;   4;  27;  63;  73;  87;  89;  90;  83;  88;  94;  97;  98;  92;
      data =;  93;  95; 100; 103; 110; 111; 107; 110; 110; 109; 109; 108; 110;
      data =; 112; 112; 115; 113; 116; 112; 108; 109; 109; 111; 111; 104; 104;
      data =;  98; 101; 104; 105; 106; 107; 104; 106; 105; 100;  99;  98;  99;
      data =;  87;  65;  70;  61;  61;  66;  60;  66;  59;  30;  18;  23;  20;
      data =;  48;  44;  23;  23;  38;
```

## E.2 Example of non-sequential data

```
[data_group]
  [data_block]
    [data_control_record]
      measurand_code =; "08"
      site_network_country_code =; "24001.24.FR"
      data_start_time =; "1994-07-09.00-00-00"
      data_duration =; "0000-00-08.00-00-00"
      data_number =; 8
      data_time_interval =; "0000-00-01.00-00-00"
      data_samples_per_time_interval =; 48
      data_sampling_time =; "0000-00-00.00-30-00"
      data_multiplication_factor =; 1
      data_type =; "non-sequential data"
      data_type_code =; 0
```

```
      data_columns =; "minimum value"; "maximum value", "arithmetic mean"
    [data_record]
      data =;   5; 123;  43;
      data =;   7; 145;  65;
      data =;   2;  87;  31;
      data =;   3;  65;  25;
      data =;   5;  77;  29;
      data =;   8; 134;  59;
      data =;   7; 112;  56;
      data =;   4;  96;  48;
```

## E.3 Example for transmission of exceedence data

```
[data_group]
  [data_block]
    [data_control_record]
      measurand_code =; "08"
      site_network_country_code =; "C234.NW.DE"
      data_start_time =; "1996-07-01.00-00-00"
      data_duration =; "0000-01-00.00-00-00"
      data_number =; 3
      data_time_interval =; "0000-00-00.08-00-00"
      data_samples_per_time_interval =; 16
      data_sampling_time =; "0000-00-00.00-30-00"
      data_multiplication_factor =; 1
      data_type =; "non-sequential data"
      data_type_code =; 0
      data_columns =; "threshold value"; "averaging time"; "start time"; "number of
consecutive exceedences"
    [data_record]
      data =; 110; 0000-00-00.08-00-00; 1996-07-03.12-00-00; 2;
      data =; 110; 0000-00-00.08-00-00; 1996-07-03.12-00-00; 2;
      data =; 110; 0000-00-00.08-00-00; 1996-07-03.12-00-00; 2;
```

# Bibliography

[1] ISO 7168-2:1998, *Air quality — Exchange of data — Part 2: Condensed data format.*

[2] *Guide to the expression of uncertainty in measurement* (GUM); 1st edition; International Organization for Standardization, Geneva, 1993.

ICS 13.040.01

Price based on 49 pages