

DRAFT AMENDMENT ISO 817:2014/DAM 2

ISO/TC 86/SC 8

Secretariat: ANSI

Voting begins on:
2019-10-09

Voting terminates on:
2020-01-01

Refrigerants — Designation and safety classification AMENDMENT 2

Fluides frigorigènes — Désignation et classification de sécurité
AMENDEMENT 2

ICS: 71.100.45

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Reference number
ISO 817:2014/DAM 2:2019(E)

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Published in Switzerland

Refrigerants — Designation and safety classification

AMENDMENT 2

Clause 3.1.36

Modify to the following:

refrigerant concentration limit

maximum refrigerant concentration, in air, determined and established to reduce the risks of acute toxicity, asphyxiation and flammability hazards

NOTE 1 to entry: Acute Toxicity exposure limit, oxygen deprivation limit and flammable concentration limit are refrigerant concentration limits that are determined in accordance with this document.

Clause 3.2

Delete the following text:

RCL	refrigerant concentration limit
RCL _M	RCL expressed as grams per cubic metre
RCL _{ppm}	RCL expressed as parts per million by volume

Clause 4.1

Modify to the following:

An identifying number shall be assigned to each refrigerant. Assigned numbers and safety classifications are shown in Tables 5, 6 and 7. Tables E.4, E.5 and E.6 provide designations for refrigerants for which insufficient data are available for safety classification or determination of refrigerant concentration limits ATEL or RCL value.

Clause 4.4.1

Modify to the following:

Zeotropes shall be assigned an identifying number in the 400 series. In order to differentiate among the different zeotropes having the same components but in different proportions, an upper-case letter (A, B, C, ...) is added after the number. The numbers and letters shall be assigned considering harmonization as prescribed in clause 9.

Clause 4.4.2

Modify to the following:

Azeotropes shall be assigned an identifying number in the 500 series. In order to differentiate among the different azeotropes having the same components but in different proportions, an upper-case letter (A, B, C, ...) is added after the number. The numbers and letters shall be assigned considering harmonization as prescribed in clause 9.

Clause 5.2

Modify to the following:

The compositional designating prefixes for ethers shall substitute an "E" for "C" (carbon), such that HFE, HCFE, and CFE refer to hydrofluoroether, hydrochlorofluoroether, and chlorofluoroether, respectively. E in the identifying number shall be omitted when composition-designating prefixes are used. The composition designating prefixes for halogenated olefins shall be either CFC, HCFC, or HFC to refer to chlorofluorocarbon, hydrochlorofluorocarbon, or hydrofluorocarbon, respectively, or with substitution of an O for the carbon C as CFO, HCFO, HCO or HFO to refer to chlorofluoro-olefin, hydrochlorofluoro-olefin, hydrochloro-olefin or hydrofluoro-olefin, respectively.

Clause 8

Modify to the following:

8 Refrigerant concentration limits

Clause 8.1

Modify to the following:

Determination of the refrigerant concentration limits shall assume full vaporization and uniform mixing; no removal by dissolution, reaction, or decomposition in the volume to which it is released. Safety factors are included for consideration of temporary local concentrations or uncertainties in the test data.

The RCL for each refrigerant shall be the lowest of the quantities calculated in accordance with 8.1.1.1, 8.1.2 and 8.1.3, using data as indicated in 8.2, and adjusted in accordance with 8.4 unless there is a valid scientific argument to support an alternative value.

Clause 8.1.1.1

Modify to the following:

The ATEL shall be the lowest of the toxic concentration factors (TCF) 8.1.1.2, 8.1.1.3, 8.1.1.4 and 8.1.1.5. For blends, the individual parameter values in 8.1.1.1 to 8.1.1.5 shall be calculated according to the following formula:

$$\frac{1}{C} = \frac{X_1}{C_1} + \frac{X_2}{C_2} + \dots + \frac{X_n}{C_n}$$

Where

x_n is the mole fraction of component n of the blend;

C_n is the TCF for component n in accordance with ISO 10298.

NOTE See Annex D for a sample calculation of ATEL and Annex E for a list of values related to calculation of refrigerant concentration limits.

Clause 8.2.1.1

Modify to the following:

Data for calculations: the data used to calculate the refrigerant concentration limits shall be taken from peer reviewed scientific publications, published safety assessments by governmental agencies or expert panels or scientific and engineering studies. Applications submitting scientific and engineering studies under Annex F, for toxicity data shall indicate the extent of compliance with good laboratory practices (GLP) in effect when the studies were performed, for example Reference [6]. The information shall be supplied in English. Submissions shall include a description of the experimental and analytical methods used and summarize the qualifications of the person or persons providing the evaluation.

Clause 8.3

Modify to the following:

Identify contaminants and impurities, including isomeric and decomposition impurities, from manufacturing, transport, and storage known to increase the flammability or toxicity within the precision of the refrigerant concentration limits. Also identify limits for those impurities. See AHRI Standard 700.

Clause 8.4

Add the following at the end of Clause 8.4:

Updated refrigerant tables are provided at: <http://standards.iso.org/iso/817/ed-3/en>

Table 5

Modify as follows:

- Delete RCL column
- Add column with LFL in kg/m³
- Delete “or RCL” from footnote d

Table 6

Modify as follows:

- Delete RCL column
- Add column with LFL in kg/m³
- Add column for LFL in v/v% for WCF
- Add column for LFL kg/m³ for WCF
- Add column for LFL in v/v% for WCFF
- Add column with LFL in kg/m³ for WCFF
- Delete “or RCL” from footnote a

Table 7

Modify as follows:

- Delete RCL column
- Add column with LFL in kg/m³
- Add column for LFL in v/v% for WCF
- Add column for LFL kg/m³ for WCF
- Add column for LFL in v/v% for WCFF
- Add column with LFL in kg/m³ for WCFF
- Delete “or RCL” from footnote d

Section 9

Add a new section to the main body of the document after Section 8:

9. HARMONIZATION PROCESS

9.1 This document shall include all refrigerants published in ASHRAE 34, in accordance with the following process.

9.2 The common secretariat of ASHRAE SSPC34 and ISO/TC 86/SC 8 (for ISO 817 Maintenance Agency) shall assign a unique identifying number in accordance with Section 4 of ASHRAE 34 and ISO 817 and in sequence with chronological receipt of applications.

9.3 This document shall include all new refrigerant numbers received from ASHRAE 34 per Section 9.2 and list those numbers in Table 5 or Table 6 or Table 7 according the rules of the ISO 817 Maintenance Agency. Optionally the designations are also listed in Table E.1, Table E.2, Table E.3, Table E.4, Table E.5 and Table E.6 of Annex E.

9.4 When not in conflict with the requirements of this document, this document shall include the safety group classification from ASHRAE34 in Table 5, Table 6 or Table 7. In case of differences the safety group classification field in Table 5, Table 6 or Table 7 shall be left blank and include the following table note.

“This document has not assigned a safety group classification. See ASHRAE 34.”

9.5 In Table 5, Table 6 or Table 7, this document shall only publish LFL, ATEL and RCL values from ASHRAE 34 when a safety group classification is included per Section 9.4 and *when these values are in line with the rules of Section 8*, otherwise these fields shall be left blank.

Annex D

Modify the title to the following:

Calculation of ATEL for blends

Clause D.5

Delete Clause D.5

Annex E

Modify the title and text to the following:

Data used to determine safety classification and refrigerant concentration limits and data for unclassified refrigerants

For data used to determine safety classification and refrigerant concentration limits, see Tables E.1 to E.3.

For data for unclassified refrigerants, see Tables E.4 to E.6.

Updated refrigerant tables are provided at: <http://standards.iso.org/iso/817/ed-3/en>

Table E.1

Modify title to the following:

- X079053εφ1γ1.ΕΠΣ Table E.1 — ATEL, ODL and FCL values single-compound refrigerants^a (ppm volume fraction)

Modify as follows:

- Delete RCL column
- Delete RCL Source column
- Delete FCL column

Table E.2

Modify as follows:

- Add column for burning velocity (S_u) at 23°C – 50% RH
- Add column for burning velocity (S_u) at 27°C dew point

Table E.3

Modify as follows:

- Add LFL in kg/m³ for nominal, WCF and WCFF
- Add LFL in kg/m³ for ETFL₆₀ for nominal, WCF and WCFF

Tables E.4, E.5 and E.6

Modify as follows:

- Delete RCL column
- Change LFL ppm by volume to LFL v/v%
- Add column with LFL kg/m³.
- Add column for LFL in v/v% for WCF
- Add column for LFL kg/m³ for WCF
- Add column for LFL in v/v% for WCFF
- Add column with LFL in kg/m³ for WCFF

Clause F.1

Modify to the following:

This annex identifies requirements to apply for designations, safety classifications, and refrigerant concentration limits for refrigerants, including blends, in addenda or revisions to this document.

Clause F.4

Modify to the following:

The cover shall identify the applicant and primary contact, the refrigerant in accordance with F.6.1, and requested action. Requested actions may include assignment or revision of a designation, safety classification, refrigerant concentration limits, or (for blends) formulation tolerance. Commercial and trade names for refrigerants shall not be used on the cover.

Clause F.7

Modify to the following:

Applications for refrigerants shall include the data identified in F.7.1, F.7.2 and F.7.3. The sources for these data shall be identified, and the applicant shall provide copies if requested by the MA. See F.2.6 regarding blend components.