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**NATIONAL STANDARD OF THE
PEOPLE'S REPUBLIC OF CHINA**

GB/T 7778-2017

Replacing GB/T 7778-2008

**[Including 2019XG1, 2020XG2] Number designation and safety
classification of refrigerants**

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3.1 Terms and definitions

Foreword

This standard was drafted in accordance with the rules given in GB/T 1.1-2009.

This standard replaces GB/T 7778-2008 "Refrigerant Numbering Method and Safety Classification". This standard is in line with GB/T 7778-2008

The changes in the main technical content are as follows.

- Increased the amount of refrigerant;
- Increased propylene and ether based refrigerant numbering methods;
- Revised the numbering method for other organic and inorganic compounds;
- Revised the classification of toxicity, from A, B, C to A, B;
- Modified the flammability classification, adding 2L weak flammable class;
- Increased the method of determining the refrigerant concentration limit RCL;
- Table 5 added some refrigerant, and increased LFL, ATEL, RCL column;
- Add a "A.3 propane isomer" and "A.4 stereoisomer example" in Appendix A;
- Deleted the original standard Appendix B old and new standard safety classification comparison table;
- Added Appendix B flammability test and fractionation analysis;
- Added Appendix C to test methods for measuring the burning rate of combustible gases;
- Added RCL and ATEL calculations for Appendix D mixed refrigerants;
- Added Appendix E to determine the safety classification and RCL values;
- Added Appendix F application notes.

This standard uses the redrafting method to modify the use of ISO 817.2014 "Refrigerant

Naming and Safety Classification".

The technical differences between this standard and ISO 817:2014 and their reasons are as follows.

---About the normative reference documents, this standard has made technical adjustments to adapt to China's technical conditions, specific adjustments

To. replace ASTM E681 with GB/T 21844;

--- Regarding the definition of "occupational exposure limit value", the indicator in ISO 817 is based on relevant national regulations. This standard is for China

The national conditions have increased the regulations that can be referred to in our country (see Note to 3.1.28);

--- Delete the upper corner note b in Table 6, and adjust the original upper corner notes c, d to b, c;

--- Appendix B refers to the reference to Figure B.1 in ANSI/ASHRAE 34-2013, which is directly included in this standard after this revision.

Medium (see Appendix B, B.1);

--- The nature of Appendix F was changed from a normative appendix to an informative appendix. Because Appendix F involves applying for refrigerant from a foreign institution.

Numbering.

This standard was proposed by the China Machinery Industry Federation.

This standard is under the jurisdiction of the National Refrigeration and Air Conditioning Equipment Standardization Technical Committee (SAC/TC238).

This standard is drafted by. Hefei General Mechanical and Electrical Products Testing Institute Co., Ltd., Ningbo Bolang Thermal Energy Technology Co., Ltd., Hefei General Mechanical Research Institute, Hefei General Environmental Control Technology Co., Ltd.

1 Scope

This standard specifies the method for the numbering of refrigerants, the method for safely classifying refrigerants based on toxicity and flammability data, and

A method of determining the refrigerant concentration limit.

This standard applies to refrigerants used in refrigeration and air conditioning equipment and installations.

2 Normative references

The following documents are indispensable for the application of this document. For dated references, only dated versions apply to this article.

Pieces. For undated references, the latest edition (including all amendments) applies to this document.

GB/T 21844 Standard Test Method for Flammability Concentration Limits of Compounds (Vapours and Gases)

ANSI/ASHRAE34 Renaming and Safety Classification of Refrigerants (Designationsafetyclassificationofrefriger-

Ants)

3.1 Terms and definitions

The following terms and definitions apply to this document.

3.1.1

Acute toxicity

Adverse health effects that may occur during a single release of short-term exposure during accidental release of refrigerant.

3.1.2

Acute toxicity exposure limit acute-toxicityexposurelimit; ATEL

The maximum recommended refrigerant concentration that reduces the risk of acute toxicity to humans in the event of refrigerant release, as determined by this standard.

3.1.3

Anesthetic effect

The ability to perceive pain and other sensory stimuli is diminished.

3.1.4

Close to lethal concentration approximatelethalconcentration; ALC

It is lethal to a single experimental animal, but less than 50% of the animals tested in the LC50 test under the same conditions.

Animals are lethal refrigerant concentrations.

3.1.5

Azeotrope mixed refrigerant azeotrope

Consisting of two or more refrigerants, the equilibrium vapor phase and liquid phase composition are the same at a given pressure, but under other conditions

May be different mixed refrigerants.

3.1.6

Mixed refrigerant blend

A mixed refrigerant composed of two or more refrigerants.

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