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Performance of refrigerant recovery and/or recycling equipment

*Performance des matériels de récupération et/ou de recyclage des fluides
frigorigènes*



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ISO copyright office
Case postale 56 • CH-1211 Geneva 20
Tel. + 41 22 749 01 11
Fax + 41 22 734 10 79
E-mail copyright@iso.ch
Web www.iso.ch

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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. 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.

Attention is drawn to the possibility that some of the elements of this International Standard may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

International Standard ISO 11650 was prepared by Technical Committee ISO/TC 86, *Refrigeration and air-conditioning*, Subcommittee SC 8, *Refrigerants and refrigeration lubricants*.

Annexes A and B form a normative part of this International Standard.

Performance of refrigerant recovery and/or recycling equipment

1 Scope

This International Standard specifies the test apparatus, test gas mixtures, sampling procedures and analytical techniques used to determine the performance of refrigerant recovery and/or recycling equipment (hereinafter, "equipment").

This International Standard also specifies the refrigerants to be used for the evaluation of equipment, i.e. halogenated hydrocarbon refrigerants and blends containing halogenated hydrocarbons.

This International Standard is not intended for use as a guide in defining the maximum levels of contaminants in recycled refrigerants used in various applications.

This International Standard is not intended to define safety requirements. It is strongly recommended that the product be designed, constructed, assembled, and installed in accordance with recognized safety requirements.

2 Terms and definitions

For the purposes of this International Standard, the following terms and definitions apply.

2.1

recover

to remove refrigerant in any condition from a system and store it in an external container

2.2

recycle

to reduce contaminants in used refrigerants by separating oil, removing non-condensables, and using devices such as filter-driers to reduce moisture, acidity, and particulate matter

2.3

reclaim

to process used refrigerant to new product specifications, and to verify by chemical analysis of the refrigerant that new product specifications have been met

NOTE The identification of contaminants and required chemical analyses are specified by reference to national or International Standards for new product specifications.

2.4

standard contaminated refrigerant sample

mixture of new or reclaimed refrigerant and specified quantities of identified contaminants which constitute the mixture to be processed by the equipment under test

NOTE These contaminant levels are expected only from severe service conditions.

2.5

recycle flow rate

amount of refrigerant processed divided by the time elapsed in the recycling mode

NOTE For equipment which uses a separate recycling sequence, the recycle rate does not include the recovery rate (or elapsed time). For equipment which does not use a separate recycling sequence, the recycle rate is a rate based solely on the higher recovery rate, of liquid or of vapour, by which the contaminant levels would have been measured.

2.6

compression-suction method

recovery method of transferring liquid refrigerant from a system to a recovery cylinder by lowering the pressure in the cylinder and raising the pressure in the system, and by connecting a separate line between the system liquid port and the cylinder

2.7

equipment

a refrigerant recovery or recycling system, including a compressor or pump or equivalent means, which is capable of recovering refrigerant to a final recovery vacuum of 100 kPa (absolute) or less without the assistance of components contained within an air-conditioning or refrigeration system

2.8

blends

refrigerants consisting of mixtures of two or more chemical compounds, often used individually as refrigerants for other applications

2.9

vapour recovery rate

the average rate that refrigerant is withdrawn from the mixing chamber between two pressures as vapour recovery rate is changing depending on the pressure

NOTE The initial condition is vapour only at saturation pressure and a temperature at either 24 °C or at boiling point (100 kPa absolute), whichever is higher. The final-pressure condition is 15 % of the initial pressure, but not lower than the equipment final recovery vacuum and not higher than 100 kPa (absolute).

2.10

clearing equipment

the process of removing refrigerant from internal equipment volume before recovering or recycling a different refrigerant in order to minimize cross-contamination

3 Equipment requirements

3.1 Operating instructions

The equipment manufacturer shall provide operating instructions including connections, necessary maintenance procedures, and source information for replacement parts and repair. These instructions shall match those furnished to customers.

3.2 Replacement of filter/drier

If the equipment contains any filter/drier(s), the equipment shall indicate when the filter/drier(s) needs replacement. This requirement can be met by use of a sight glass/moisture indicator, by a moisture transducer and indicator light, or by some measurement of the amount of refrigerant processed such as a flow-meter or hour-meter. Written instructions such as "to change the filter every 200 kg, or every 30 days" shall not be acceptable except for systems where the filter/drier(s) are changed for every operation.