
Committee of Experts on the Transport of Dangerous Goods and on the Globally Harmonized System of Classification and Labelling of Chemicals

21 November 2022

Sub-Committee of Experts on the Transport of Dangerous Goods

Sixty-first session

Geneva, 28 November - 6 December 2022

Item 3 of the provisional agenda

Listing, classification and packing

Refrigerating machines and heat pumps

Transmitted by the expert from Germany

Introduction

1. Refrigerating machines of UN numbers 2857 and 3358 containing up to 12 kg of gas may be fully exempted from the dangerous goods regulations if they comply with the requirements of special provision 119 or 291. Heat pumps work on exactly the same principle as refrigerating machines, except that the aim here is not to produce cold but, as the name suggests, heat. Germany is of the opinion that it would therefore be logical also to classify heat pumps as refrigeration machines or to adapt the proper shipping name and the text of the special provisions so that heat pumps can also be exempted.

Explanation

2. Can or may refrigeration machines be defined as units which extract heat from a certain object or medium, regardless of whether this medium is used to generate heat or cold? This includes units such as refrigerating machines or heat pumps, which function according to the same principle, except that the aim of refrigerating machines is to generate cold (text according to special provision 119: "... designed for the specific purpose of keeping food or other items at a low temperature ..."), whilst heat pumps have exactly the opposite purpose. Energy is extracted from an object or medium to generate heat. Seen in this way, every refrigerator is also a kind of heat pump, because it releases the energy extracted from the inside of the refrigerator to the kitchen and heats it up. If heat pumps cannot be classified as refrigerating machines, UN numbers 3363 or 3537/3538 would have to be used for them, depending on the quantity and type of gas, which would mean inconsistency with UN numbers 3358 or 2857.

Proposal

3. Amend special provision 119 and special provision 291 in Chapter 3.3 by adding a note to read as follows (new text is underlined):

"119 Refrigerating machines include machines or other appliances which have been designed for the specific purpose of keeping food or other items at a low temperature in an internal compartment, and air conditioning units. Refrigerating machines and refrigerating machine components are not subject to the Regulations if they contain

less than 12 kg of gas in Division 2.2 or less than 12 litres ammonium solution (UN 2672).

Note: For the purposes of transport, heat pumps may be considered as refrigerating machines.”

“291 Flammable liquified gases shall be contained within refrigerating machine components. These components shall be designed and tested to at least three times the working pressure of the machinery. The refrigerating machines shall be designed and constructed to contain the liquified gas and preclude the risk of bursting or cracking of the pressure retaining components during normal conditions of transport. Refrigerating machines and refrigerating-machine components are considered not subject to these Regulations if they contain less than 12 kg of gas.

Note: For the purposes of transport, heat pumps may be considered as refrigerating machines.”

Justification

4. Similar documents on this topic have already been submitted to the RID/ADR/ADN Joint Meeting on its autumn 2021 session by the International Association of Dangerous Goods Safety Advisors (IASA) (see document ECE/TRANS/WP.15/AC.1/2021/25 and INF.45 of the March 2021 session). The discussion on this session of the RID/ADR/ADN Joint Meeting led to the adoption of similar amendments to special provision 119 and 291 in RID, ADR and ADN for entry into force on 1 January 2023 as those proposed under paragraph 3 (see document ECE/TRANS/WP.15/AC.1/162). This proposal aims at providing consistency of the regulations for articles that pose the same danger as well as harmonizing special provisions 119 and 291 in RID, ADR and ADN with special provisions 119 and 291 in the Model Regulations.
