

## HOUSEHOLD AND SIMILAR ELECTRICAL APPLIANCES – SAFETY –

### Part 2-89: Particular requirements for commercial refrigerating appliances with an incorporated or remote refrigerant unit or compressor

#### INTERPRETATION SHEET 1

This interpretation sheet has been prepared by subcommittee 61C: Safety of refrigeration appliances for household and commercial use, of technical committee 61: Safety of household and similar electrical appliances

The text of this interpretation sheet is based on the following documents:

ISH	Report on voting
61C/562/ISH	61C/571/RVISH

Full information on the voting for the approval of this interpretation sheet can be found in the report on voting indicated in the above table.

#### SC 61C interpretation sheet on: Pressure relief devices used in transcritical refrigeration systems

##### Introduction

Requirements for refrigeration systems that use transcritical refrigerants such as CO<sub>2</sub> (R 744) were introduced into the standard in 2010; however at the time few manufacturers saw transcritical refrigerants as a future progression. It is only recently that commercial refrigerating appliances using such systems are being developed and as a result some clarification of the standard is required due to practicalities of technology being applied.

There is a requirement in 22.103 that appliances employing a **transcritical refrigeration system** shall include a **pressure relief device** in the high pressure side of the refrigeration system. The intent of this device is to prevent the pressure of the system exceeding the **design pressure** should a malfunction occur, such as a failure of the gas cooler fan motor.

A pressure test is carried out on the system with the **pressure relief device** rendered inoperative to ensure that the high side of the system and components can withstand at least 3 times the **design pressure** or as a minimum the high side pressure specified in IEC 60335-2-34, which in the case of R 744 (CO<sub>2</sub>) is 420 bar (42 MPa).

The **pressure relief device** is defined in 3.111 as a “pressure sensing device intended to reduce pressure automatically when pressures within the refrigeration system exceed the setting pressure of the device”.

As per the text of 22.103 the operating pressure of the pressure relief device shall be no higher than the **design pressure** of the high pressure side. The component test parameters for several different types of **pressure relief device** such as mechanical, electrical and those of the burst disc type are listed in the addition of 24.1.4.