

## Maximum refrigerant charge

The maximum charge of refrigerant allowed in any specific application is calculated in accordance with the procedures of the applicable design standard. There is a refrigerating system safety standard and an electrical safety appliance standard as follows and it is important to know which standard to apply:

- Annex GG of AS/NZS 60335.2.40 Household and similar electrical appliances - Safety Particular requirements for electrical heat pumps, air-conditioners and dehumidifiers for appliances, for air conditioning for household and similar use; and
- Annex A of AS/NZS 5149.1 Refrigerating systems and heat pumps – Safety and environmental requirements Part 1 Definitions, classification and selection criteria, for all other refrigerating and air conditioning systems.

This maximum quantity refers to the largest charge of refrigerant, that can be released into an occupied space, from any single refrigerating system.

Each separate system or independent refrigerant circuit is considered separately. Simultaneous failure of multiple systems is not a safety criterion that is considered.

Under AS/NZS 5149.1, maximum refrigerant quantities cannot be calculated for appliances already covered by IEC or ISO product standards that specify refrigerant quantity limits. For example, allowable charge limits for room, split, multi-split and VRF air conditioners using flammable refrigerants are defined in AS/NZS 60335.2.40, so AS/NZS 5149 Annex A and Clause A.5 is not applicable to those appliances.

When installing air conditioners and heat pumps in compliance with AS/NZS 60335.2.40 it is that standard's rules and procedures that must be followed, not AS/NZS 5149.

Any room, split, multi-split and VRF split system air conditioner installed in Australia must comply with the requirements of AS/NZS 60335.2.40 and AS/NZS 5149. Where any contradiction between the two standards exists, AS/NZS 60335.2.40 will take precedence.

Where AS/NZS 60335.2.40 does not apply, then AS/NZS 5149.1 must be applied.

For more information and examples refer to:

**Australian Standards**, available at <https://infostore.saiglobal.com/en-au/>

- AS/NZS 60335.2.40 Household and similar electrical appliances - Safety Particular requirements for electrical heat pumps, air-conditioners and dehumidifiers for appliances
- AS/NZS 5149.1 Refrigerating systems and heat pumps – Safety and environmental requirements Part 1 Definitions, classification and selection criteria

**Australian Institute of Refrigeration, Air Conditioning and Heating Resources (AIRAH)** resources, available at: <https://www.airah.org.au/frsg>

- AIRAH Flammable Refrigerant Safety Guide 2013
- AIRAH's Flammable Refrigerant Safety Guide, 2018 Update
- AIRAH's Flammable Refrigerant Safety Guide online resources, Module 4 Design Rules for Flammable Refrigerants

**United Nations: Good Servicing Practices for Flammable Refrigerants App.** available at: <https://wedocs.unep.org/bitstream/handle/20.500.11822/27136/8017Smartapp2.pdf?sequence=1&isAllowed=y>

The user-friendly application includes a refrigerant charge size calculator and a room size calculator for flammable refrigerants based on ISO 5149.