

Did you know ...

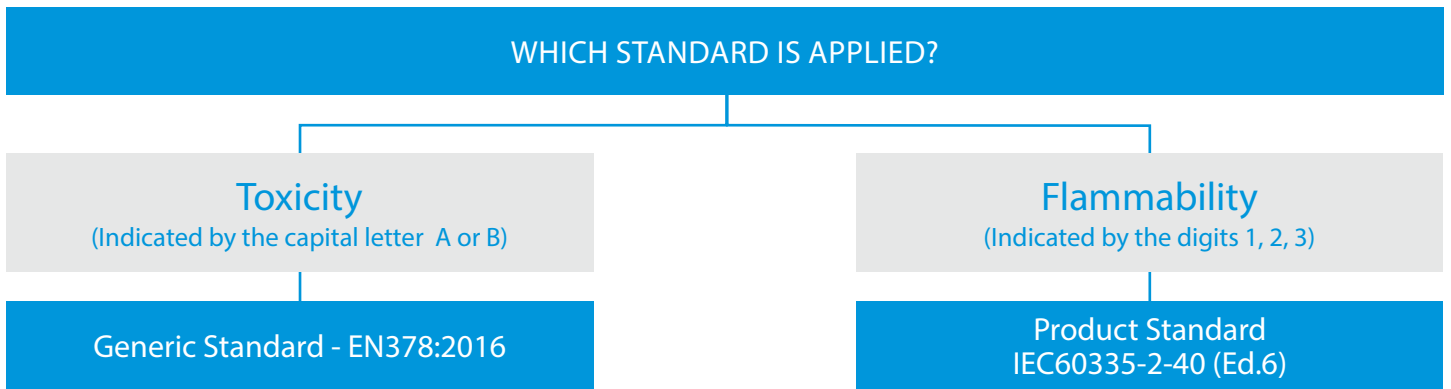
different standards regarding F-gas safety regulations exist?

Why are different standards applied?

Two different standards exist to cover the safety regulations for R-32:

- > A general standard on refrigerants: EN378:2016
- > A specific product standard for heat pumps: IEC60335-2-40 (Ed.6)

EN378:2016 states that if a specific product standard tackles the topic, it prevails over the generic standard. Therefore flammability is covered by IEC60335-2-40 (Ed.6).

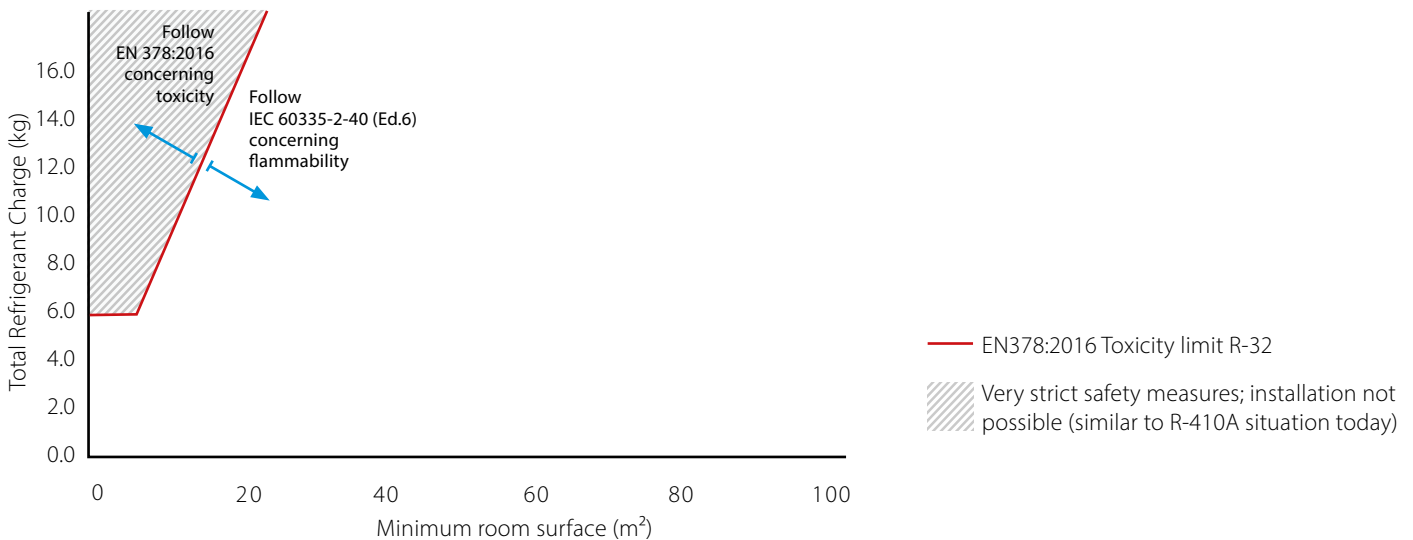


As a result of the combined standard the refrigerant classification is:

		Toxicity	
		Lower	Higher
Flammability	No flame Propagation	A1	B1
	Lower flammability	A2L* R-32	B2L*
	Higher flammability	A2	B2
		A3	B3

*A2L and B2L are lower flammability refrigerants with a maximum burning velocity of ≤ 10 cm/s

Overview of room area limitation by EN378:2016 and IEC60335-2-40 (Ed.6)



What to take into account

in terms of additional measures for R-32?

Toxicity

- › Although both R-410A and R-32 are classified as 'A' in EN378:2016 the toxicity limit is slightly different: 0.30 kg/m³ for R-32 vs 0,44kg/m³ for R-410A.
- › On the other hand the refrigerant charge for R-32 is lower **resulting in only a small change of room area limitation**

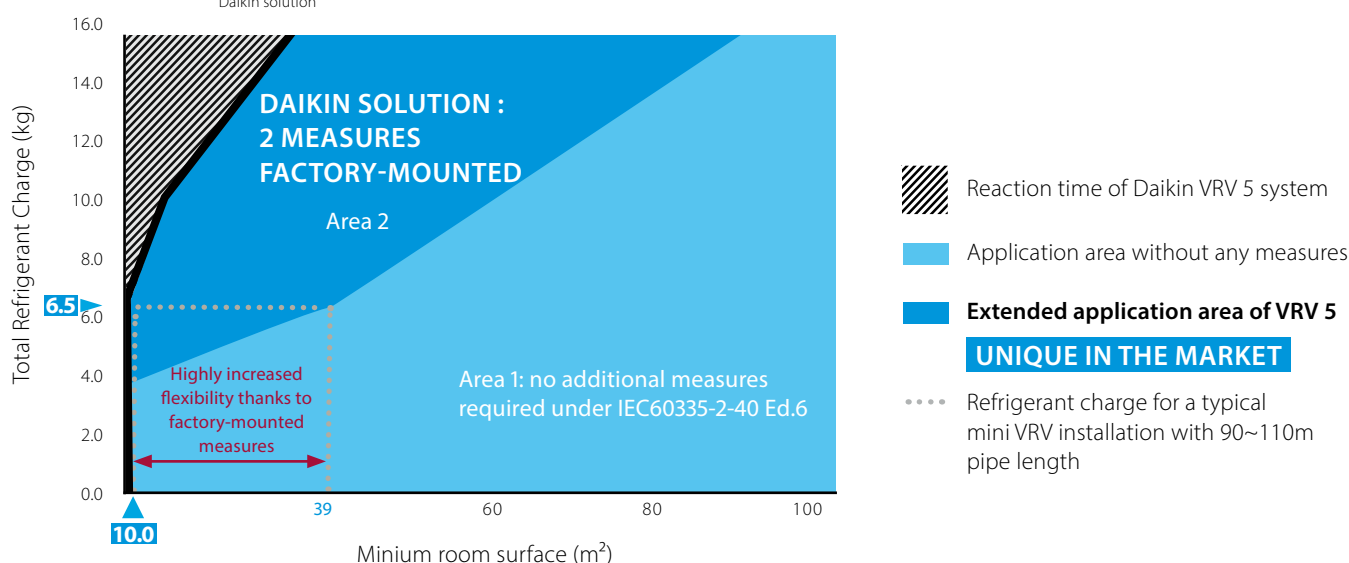
Flammability

- › The product standard IEC60335-2-40 (Ed.6) specifies all information regarding the total refrigerant amount and minimum room surface, depending on the additional measures taken.
- › **Area 1:** Application area without any measures
 - Typically split and Sky Air systems fall in this area thanks to very low refrigerant charges.
 - A typical mini VRV installation, with 6.5kgs of refrigerant would require a minimum room surface of **39m²** (1)
- › **Area 2:** Extended application area of VRV 5 including 2 factory-mounted measures.
 - The Daikin way, enabling to **use the VRV system to it's full potential**, with a minimum room surface down to **10.0m²** (1)

(1) for indoor units installed at minimum 1.8m height and above the lowest underground floor.



Overview of application surface in function of applied measures under IEC60335-2-40 (Ed.6) , considering units are installed at minimum 1.8m height and above the lowest underground floor.



The representation above is Daikin's interpretation of IEC60335-2-40 (Ed.6) and has no intention to replace in anyway existing legislation.

Possible measures towards flammability

- › Manufacturers have the choice to implement zero, one or two measures
- › 3 types of measures are allowed:

- Ventilation (natural or mechanical)
- Shut-off valves
- Alarm (local and maybe central)

DAIKIN SOLUTION, UNIQUE IN THE MARKET

The most flexible solution by Daikin

- › **The most flexible solution: two measures, system integrated**
 - No additional costs or calculations needed to implement measures in the field
 - No hassle or additional time needed when installing
 - No risk in errors thanks to Xpress selection software
- › **Third party tested and approved**

