

**Heat Pump Association Statement
on the safety considerations for
residential air-to-water heat
pumps installed outside, which
contain a higher flammability
refrigerant, such as R290**

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1. Purpose

The purpose of this statement is to explain that manufacturers manuals may advise different approaches to mitigating the possible risks arising from residential air-to-water heat pumps installed outside which contain a higher flammability refrigerant such as R290. This statement is intended to explain that different approaches are permitted, and that installers, specifiers, designers, and system owners/operators must follow the guidance set out in the manufacturer's instruction.

2. Background

Manufacturers of heat pumps are required to comply with a broad range of product conformity legislation to ensure that their products are safe, efficient and provide the highest level of protection for consumers. Manufacturers have a key responsibility to ensure that their products meet all relevant safety legislation, as well as health and environmental protection requirements.

Existing regulation complemented by standards and manufacturers' technical recommendations and manuals, are intended to ensure the safety of products during installation and operation.

CE / UKCA marking is mandatory for Refrigeration, Air Conditioning and Heat Pump (RACHP) products, as all applications fall under the Ecodesign requirements and other requirements such as (but not limited to) the Low Voltage Directive, the Machinery Directive, The Pressure Equipment Directive, and the Electromagnetic Compatibility (EMC) Directive. Note that this list is not exhaustive.

The CE / UKCA mark and Declaration of Conformity can only be applied to the product once specific requirements have been met, **including** the provision of necessary technical documentation. In the context of CE marking, standards are voluntary, although they are widely used as a way of indicating the safety of products.

The correct use of the CE / UKCA marking is overseen in the UK by the Office of Product Safety.

3. HPA Statement on the safety considerations for the installation of residential air-to-water heat pumps located outside, which contain a higher flammability refrigerant such as R290

For residential air-to-water heat pumps which contain a higher flammability refrigerant, such as R290, installed outside the building, it must be ensured that in the event of a refrigerant leak, appropriate measures are put in place to reduce the risk of the refrigerant entering the building through openings, vents doors, or similar pathways, and that no people outdoors or in adjacent buildings are endangered.

For these purposes, the heat pump manufacturer may specify safety-relevant (i) protection mitigation measures, and/or (ii) protection areas / zones.

In all cases, the manufacturer instructions must be strictly followed regarding requirements for safety-relevant minimum clearances and any other mitigation measures which are intended to provide protection in the event of refrigerant leakage. In addition to following the manufacturer instructions, a thorough on-site risk assessment is recommended.

The definition of any protection area and its necessary dimensions, or of any required mitigation measures, are manufacturer-specific and can vary.

Where defined within the manufacturer safety-related protection area, there must be no:-

- permanent or temporary sources of ignition during normal operation, such as, but not limited to, open flames, electrical systems, sockets, lamps, and light switches, electrical housing connections, sparking tools, or objects with high surface temperatures, etc.
- building openings, such as windows, doors, light shafts, flat roof windows, and ventilation system inlets and openings,
- property boundaries or neighbouring properties, walkways and driveways and public access areas
- ground depressions, dips or low-lying recesses, and any water or sewage services, and no open pump shafts, etc.

Additional guidance is available in the EHPA "*Guideline on safe handling of self-contained air-to-water residential heat pumps with refrigerants with higher flammability installed outdoors in Europe*" which can be found here: https://skillsafe-eu.ehpa.org/wp-content/uploads/2025/05/SKILLSAFE-EU-Guideline-V1_compressed.pdf

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