



Practical and cost-effective approach to certifying A2L refrigerant system components

UL's Recognition for A2L system components assures OEMs that their component selection will streamline the overall certification of their product.

Low GWP refrigerant use in the HVAC/R industry

The use of refrigerants like R32 and R454B are increasing due to their low global warming potential (GWP), environmental impact and excellent thermodynamic performance. These hydrofluoroolefin (HFO) refrigerants are considered to have a lower flammable limit per ANSI/ASHRAE 34. Because of this flammability risk, care must be taken in the selection of components for use in equipment utilizing R32, R454B and other A2L HFO blends to help ensure that the components are Flame Arrest-Protected.

To assist the industry in the selection of components for use in systems utilizing these refrigerants, we have created a new service, "Flame Arrest-Protected Components for Use in Refrigeration and Air-Conditioning Equipment Employing A2L Refrigerants." This offering specifically addresses the need for a balanced approach to certification, provides critical material/design traceability without the need for full hazardous location (HazLoc) certification, and is more robust than a letter of test results. This approach is quicker, more cost effective and helps keep intellectual property private.

UL Recognized Component Mark

This offering will be used specifically for refrigeration/air-conditioning components (e.g., switches, relays, DC motors, etc.) evaluated as safe in the presence of A2L classified refrigerants. Currently, we are the only nationally recognized testing laboratory (NRTL) offering this solution for the refrigeration/HVAC industry.

Evaluation and Testing

- **Ordinary Location requirements** – Certification for risks associated with shock, fire and personal injury do not change and are covered by the existing UL component file.
- **Flame-Arrest protection requirements** – Testing conducted from a variety of standards including UL/IEC and CSA.



Components are tested to the standards in Annex DVA (Component Standards Cross Reference) of UL/IEC 60335-1 or UL/IEC 60335-2-40 and investigated in accordance with the following annexes of UL/IEC 60335-2-40, "Household and Similar Electrical Appliances - Safety - Part 2-40: Particular Requirements for Electrical Heat Pumps, Air-Conditioners and Dehumidifiers, under Heating and Cooling Equipment (LZFE)":

- **Annex FF** - Leak Simulation Tests
- **Annex JJ** - Allowable Opening of Relays and Similar Components to Prevent Ignition of A2L Refrigerants
- **Annex NN** - Flame Arrest Enclosure Verification Test for A2L Refrigerants



A UL/C-UL Recognition for flame-arrest components for use in flammable refrigerant systems offer confidence to the OEM that their component selection will streamline the overall certification of their product.

Why choose UL?

With more than 100 years of experience in explosion protection, we drive global research and standards to continually advance and meet evolving product safety, performance and security needs. Our global network of technical experts and state-of-the-art facilities, along with our longstanding relationships with regulatory authorities, partner laboratories and industry technical leaders, helps manufacturers gain the compliance credentials they need to compete in a complex global supply chain.

Knowledge you can trust

Our experienced staff advises you throughout the product development lifecycle through testing and production for your specific market.

Speed and efficiency

Leverage our flammable refrigerant experience early. We have technical expertise in all protection methods with comprehensive industry knowledge that translates into actionable business efficiencies to help you accelerate your time to market.

Global reach and access

Our global network of flammable refrigerant experts can help you understand the essential national and global requirements that affect your products. Leverage our active participation and leadership in the global standards writing process. You can benefit with a faster time to market, no matter where in the world that market may be, with our certification process. Not only do we understand the requirements — we helped develop them. In fact, we participate in more than 50 standard writing committees, including TC61 (IECEX), STP (North America), NFPA, ASHRAE and AHRI committees.



To learn more, visit us at [UL.com/lowgwp](https://www.ul.com/lowgwp) or email: HVACInfo@UL.com.



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CT26260513-0720