

BRIEFING ON THE IEC STANDARDS PROPOSAL FOR AIR CONDITIONING

Introduction

Timely updates to outdated safety standards and building codes are essential to enable a safe transition from climate-warming hydrofluorocarbons (HFCs) to climate-friendly refrigerants. With global stock of household air conditioners (ACs) expected to triple by 2050, continued use of HFCs in ACs is fueling the climate crisis.

The International Electrotechnical Commission (IEC) is considering an updated safety standard IEC 60335-2-40, which covers household ACs, heat pumps and dehumidifiers. The proposed updated safety requirements will enable safe, energy efficient and cost-effective design of ACs using flammable low-global warming potential (GWP) refrigerants, including propane (R290) and other refrigerants classified as either A2L, A2, or A3. **Our organizations urge member countries on IEC's sub-committee 61D to submit positive votes and comments on 61D/455/CDV Fragment 1 by the October 30th deadline** in support of advancing the draft proposal for a final round of voting and publication in 2021.

This briefing contains key information on the proposal, IEC's standards process and timeline and the climate benefits of enabling a timely transition to low-GWP refrigerants in the AC sector.

Proposal Summary

The proposal document, *61D/455/CDV Fragment 1*, is posted on the IEC's website for sub-committee 61D on air conditioning under the documents tab.¹ The proposal allows for using a larger charge of flammable A2L, A2 and A3 refrigerants (up to 988 grams of R290 in a standard split AC system), in new equipment designed according to certain additional safety requirements to ensure the same high level of safety as equipment using non-flammable refrigerants. These additional safety requirements include:

- sufficient airflow and/or installed gas detector to ensure detection of leaks;
- safety shutoff valves to limit the amount of refrigerant that can be released in the event of a leak;
- refrigerating systems shall use only permanent joints indoors except for site-made joints directly connecting the indoor unit to the refrigerant piping, or factory-made mechanical joints in compliance with ISO 14903;
- refrigerant containing parts in indoor units shall be protected from damage in the event of catastrophic failure of moving parts, e.g. fans, belts;
- indoor heat exchangers shall be protected from damage in the event of freezing;
- refrigerant pipes in the occupied space must be installed in such a way that as to be protected against accidental damage;
- the refrigerating system of each indoor unit shall be tightness tested at the factory, with no leak detected in order to pass the test;
- updated requirements for testing to ensure equipment can withstand vibrations during transport;
- limits to vibrations allowed in the refrigerant containing parts in the occupied space under normal operation.

IEC Standards Process and Timeline

The current proposal, that has been introduced for comments and voting by an October 30th deadline, was reached after a rigorous multi-year process required by IEC.

A working group composed of technical experts from around the world conducted regular meetings every few months over the past five years to develop the proposal. It is now in the Committee Draft for Vote (CDV) stage, where it will receive comments and the first of two rounds of votes from the full IEC sub-committee (SC) 61D, composed of representatives of national committees from 50 countries.ⁱⁱ To be advanced, it must receive positive votes from at least two-thirds of the Participating (P) members of the 61D SC and must not receive negative votes from more than one-quarter of total SC 61D members, including both P and Observer (O) members. If advanced, the proposal may be further amended to incorporate any substantive comments from country committees before moving to the last stage for a final vote and inclusion in Edition 7 of the IEC 60335-2-40 standard, with a target publication date in late 2021.

Once adopted in the IEC standard, the revisions must also be adopted through harmonization into many key regional and national safety standards and building codes to take full effect.

Climate Benefits

In 2016, concurrent with passage of the Kigali Amendment, countries adopted Decision XXVIII/4 under the Montreal Protocol, recognizing the importance of timely standards updates to realizing the full potential climate benefits of an HFC phase-down. The decision urged countries to “*consult and work with their industries and standards bodies to support the timely completion of the processes for developing new standards*” and called for strengthening connections and cooperation between national and regional standards committees and national ozone units.

Adoption of the revised standard is critical to ensure effective implementation of the phase-out of HCFCs and phase-down of HFCs under the Montreal Protocol. Developing countries will have the opportunity to leapfrog HFC-410A and HFC-32 and transition directly to climate-friendly refrigerants, avoiding the costs, market disruption and climate impact of an additional transition.

By enabling a global transition to low-GWP refrigerants in room air conditioners by 2025, timely adoption of the proposal may avoid over 5.6 billion tonnes of CO₂ equivalent consumption of HFCs globally by 2050, according to an EIA commissioned analysis by Oko Recherche.ⁱⁱⁱ This does not include potential additional climate benefits from increased energy efficiency.

ⁱ Proposal 61D/455/CDV Fragment1, available under ‘Documents’ tab at:

https://www.iec.ch/dyn/www/?p=103:23:5769342763676:::FSP_ORG_ID,FSP_LANG_ID:1351,25

ⁱⁱ The list of 50 national committees represented on IEC SC 61D is available under the “Structure” tab at:

https://www.iec.ch/dyn/www/?p=103:29:5769342763676:::FSP_ORG_ID,FSP_LANG_ID:1351,25

ⁱⁱⁱ Oko Recherche (2020), “Explanatory note on modelling climate benefits of charge size changes for air conditioning equipment in relation to the revision of the product standard IEC 60335-2-40” available at:

<https://eia-international.org/wp-content/uploads/Oko-Recherche-AC-Standard-Climate-Benefits-June-2020.pdf>