**Time scale for including the Working Group WG4 proposal into the IEC 60335-2-89:**

**WG Task:** The risk with more than 150g flammable refrigerant must be the same as we have with the current limit of 150 g
### Voting Result:

**Document 61C/792/FDIS**

**Project: IEC 60335-2-89 ED3**

IEC 60335-2-89 ED3: Household and similar electrical appliances - Safety - Part 2-89: Particular requirements for commercial refrigerating appliances and ice-makers with an incorporated or remote refrigerant unit or motor-compressor

<table>
<thead>
<tr>
<th>Reference</th>
<th>Circulation date</th>
<th>Closing date</th>
<th>Downloads</th>
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<tbody>
<tr>
<td>61C/792/FDIS</td>
<td>2019-03-01</td>
<td>2019-04-12</td>
<td>962 kB</td>
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<tr>
<td></td>
<td></td>
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<td>991 kB</td>
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**Compilation of Comments**

- 34 Votes Cast
- 8 Votes Against
New IEC Charge Limit For Flammables

- **Max** refrigerant charge for each circuit **13*LFL**, but not more than **1.2kg**

  eg.

<table>
<thead>
<tr>
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<th>LFL [kg/m³]</th>
<th>13*LFL</th>
<th>IEC Approved</th>
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<tr>
<td>R290</td>
<td>0.038</td>
<td>0.494 kg</td>
<td>0.494 kg</td>
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<tr>
<td>R32</td>
<td>0.307</td>
<td>3.991 kg</td>
<td>1.2 kg</td>
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- **Requirements** for systems **below 150 g** are not changing
- **Commercial Ice Makers** are now part of the standard **scope**
- **Remote Systems** with more than 150 g of flammables **are excluded** from the scope of this new edition
Main new requirements above 150g of charge:

- Refrigeration circuit has to be **hermetically sealed**
- Refrigerant-containing parts shall be **protected** and **not** be an **accessible** part
- Appliance shall be constructed to **not cause excessive vibration or resonance**
- Appliance shall be **marked** with the **minimum room floor area** in which the appliance is permitted to be installed (*With some exceptions*)

\[ \geq A \ m^2 \]
New IEC Charge Limit For Flammables

Main new requirements above 150g of charge:

- **Air-flow** is the main factor to minimize the risk of flammable cloud around the appliance
- Appliance shall be constructed to pass the Annex CC test to prevent flammable refrigerant concentration
- Testing includes doors/drawers opening test after full charge release inside closed cabinet.
Applications To Benefit
Higher Charge Limit

- MULTI-DECK CABINETS
- GLASS DOOR MERCHANDISER
- SERVE-OVER CABINETS
- BLAST FREEZERS
- ICE MAKERS
- RECH-IN CABINETS
- GONDOLA CABINETS
- GELATO COUNTERS
What’s Next?

Committees & Standards
International and Regional

International Level
- ISO
  - TC 86 SC1
  - ISO 5149

European Level
- CEN
  - TC182 WG6
  - EN 378

United States Level
- ASHRAE
  - SSPC 15
  - ASHRAE 13

Japan Level
- High Pressure Act
  - Electrical Safety Act

General Standard
- IEC
  - TC61 SC61C
  - IEC 60335-2-24
  - IEC 60335-2-89
  - TC61 SC61D
  - IEC 60335-2-40

Product Standard
- CENELEC
  - CLC61
  - EN 60335-2-24
  - EN 60335-2-89
  - EN 60335-2-40

UL
- STP’s
  - UL250
  - UL60335-2-24
  - UL471
  - UL60335-2-89
  - UL474, UL484
  - UL60335-2-40

JIS
- C 9335-2-24
- C 9335-2-89
- C 9335-2-40

What's Next?
• New Edition of **IEC 60335-2-89 ed.3** was published on **June 20 2019**

**What next?**

• European **EN** version of IEC 60335-2-89 was **not voted in parallel** because of IEC60335-1 updates.

• **CENELEC TC61** is working on the conversion of an IEC standard to an EN IEC standard. As standard is intended to become a harmonized standard it has to be reviewed in relation to the respective directives.

• Other nations/regions are working for introduction of Ed. 3 amendments. For example: USA and Canada formed recently a working group with **CANENA** for update of equivalent standards with UL and CSA.
Thank You