

Position Paper on Preparatory Study for Eco Design Requirements for EuPs Lot 1 - Refrigerating and Freezing Equipment – Task 1, working document - May 2009.

The European Fluorocarbon Technical Committee – EFCTC represents the interests of producers of fluorocarbons in Europe.¹ Fluorocarbons are widely used because of their intrinsic properties that deliver safe, energy efficient solutions in refrigeration, air-conditioning, insulation and other applications. In particular fluorocarbons:

- have a low toxicity profile
- are non-corrosive
- have excellent thermodynamic properties, permitting the formulation of mixtures that deliver the best performance at specific temperature ranges
- are non-flammable or mildly flammable
- have a negligible POCP²
- are chemically stable and can be recycled for re-use

EFCTC Members are actively involved in ensuring that their products deliver optimal performance with a low environmental footprint.

In this respect, we take the view that the scoping study may provide misleading information on fluorocarbons as refrigerants. For example, table 1-4 is based on outdated information (2000) and omits e.g. the POCP values and the atmospheric lifetime. Similarly, the GWP values of hydrocarbons are significant and do not justify the qualification “very low”³. Moreover, the table omits emerging fluorocarbon technology such as hydrofluoro-olefins (HFOs), which, have a much shorter atmospheric lifetime than HFCs and therefore a low GWP, in a range similar to hydrocarbons. In addition it is expected that refrigerant blends containing HFCs and HFOs will also be developed to meet specific refrigeration requirements.

Simple comparisons of properties, including thermodynamic properties, can be misleading. Actual results or more complex models are necessary taking into account for example, pressure drops and heat transfer properties at relevant conditions. It is the overall refrigerant properties, including flammability and toxicity that dictate design, cost and performance. EuP1 covers a wide range of equipment. While some equipment could use system charge of less than 150 g with HC, other equipment requires a greater system charge where HCs are not appropriate. For these systems HFCs and HFOs offer a range of refrigerants having non-flammability, marginal

¹ EFCTC Members are: Arkema, Du Pont, Ineos Fluor, Honeywell Fluorine Products and Solvay Fluor

² Photochemical Ozone Creation Potential – a major source of smog, tropospheric ozone

³ Collins, W.J., et al., 2002: *Clim. Change*, **52**, 453–479

flammability, or moderate flammability. For even larger systems, where non-flammability is required, HFCs remain appropriate. While CO₂ is ideal as the low stage of a cascade system or for use as a secondary fluid, or indeed as a heat pump fluid where hot water is required, it does not perform as well as HFCs at medium or high temperature for refrigeration, particularly in warm or hot climates.

Therefore focusing on the GWP of a substance is of relatively limited value, as proper containment technology can prevent emission and thereby the actual impact on climate change. Proper containment allows the cost effective design of energy efficient systems that can select the most appropriate refrigerant including HFCs and HFOs. This is, in fact, recognised in the report, where it discussed the TEWI and LCCP assessment. While EFCTC strongly supports the use of these assessment tools, they are insufficient to assess the full impact of the use of a refrigerant. Other considerations are cost, safety and re-use at end of life.

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