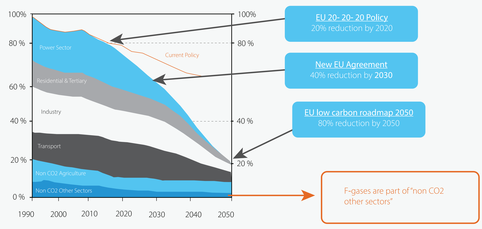
DAIKIN

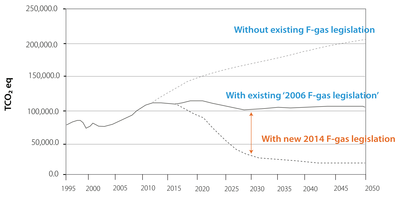
R-32
The Future of Refrigerants

As we move into the new decade, do you know that the EU's policy on Global Warming is to reduce greenhouse gas emissions by 20% in 2020, by 40% in 2030 and by 80% in 2050 based on the low carbon roadmap?

EU's policy on Global Warming



Are you aware that the revised 2014 F-gas regulation aims to cut emissions of F-gases by two-thirds in 2030?



Are you aware that in 2025 the EU will ban single split air conditioners with a charge below 3kg running on refrigerants with GWP > 750?

Single Split

For SINGLE split air conditioners with a charge BELOW 3 kg: GWP must be <750 from 2025

R-32 ✔ R-410A ✖

Single Split > 3 kg, Multisplit Sky Air, VRV

R-32 ✔ R-410A ✔

- All HFCs used will be subject to the HFC "phase down"
- Manufacturers are recommended to switch to alternatives as soon as possible

How do we face the future?

The future of refrigerants is here with the R-32 refrigerant, the component in the blend R-410A that accounts for its efficiency and thermodynamic qualities.

What exactly is R-32?

R-32 is the future of refrigerants, thanks to its global warming potential (GWP) of 675, one-third lower than R-410A and its zero ozone depletion potential (ODP).

- R-32 = HFC= CH^2F^2 "difluoromethane", a single component HFC
- Already used as a component of the blend R-410A

R-410A = 50% R-32 + 50% R-125

- 50% R-32: Component added for good efficiency and thermodynamic properties
- 50% R-125: Component added to suppress flammability

R-410A = 50% R-32 + 50% R-125

675 | 2087.5 (2088) | GWP | 3500

Note: GWP values based on the 4th assessment of IPCC.

Is R-32 really flammable?

R-32 is classified as class 2L refrigerant with low flammability due to a burning velocity of 6cm/s.

Flammability classification of R - 32

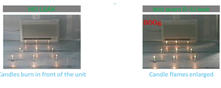
	Class 1	Class 2L	Class 2	Class 3
	Not flammable	Low flammability = Class 2 AND burning Velocity ≤10 cm/s	Flammable	High flammability
Class A lower toxicity	R- 744 (Co2)	R- 1234yf / ze	R- 152a	R-290
	R- 410A	R-32		
Class B higher toxicity		R- 717 (Ammonia)		

In reality, flammability of R-32 and other 2L refrigerants is very low.
The burning velocity (≤ 10 cm/s) is too slow to cause horizontal flame propagation or explosion.
Classification according to ASHRAE34 & ISO817.

Burning Velocity: Characteristics of a flammable refrigerant

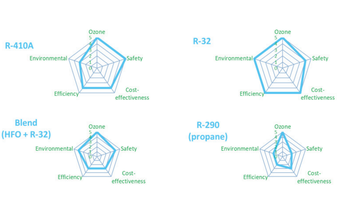
- Burning velocity of R-32 is very low: 6,7 cm/s (=4m/min or 0.24km/h)
- When a flammable concentration of R-32 comes into contact with a flame, it will simply burn away in a relatively confined fire. It will not explode like propane.

Test with refrigerant leak



Candles burn in front of the unit — Candle flames enlarged

How does R-32 compare to other refrigerants in air to air residential heat pumps?



What is the environmental benefit of R-32?

R-32 is the most eco-friendly refrigerant, with up to 75% reduction in environmental impact as compared to R410A.

CO2eq of the current FTXS20K (R-410A) and the new FTXM20M (R-32)