



# Klea<sup>®</sup> 473A

## Ultra Low Temperature Refrigerant

### High-performing replacement for R-23/R-508B

Orbia Fluor & Energy Materials has over **50 years of experience** delivering trusted solutions, with innovation, sustainability and customer focus driving our approach.

Our latest innovation, Klea<sup>®</sup> 473A is designed to achieve **high performance** with a significantly **lower global warming potential** to support the ever increasing demand across the industry.

#### Applications

- High value cold chain
- Medical
- Pharmaceutical
- Test Chambers

#### Expected Benefits

- Lower GWP
- 1.6K temperature glide
- Non-flammable
- Security of supply

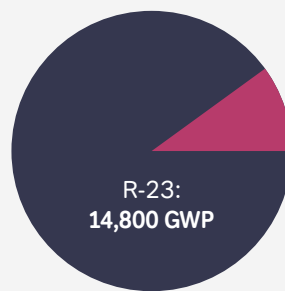
#### Expected Performance

- ✓ Effective to at least -75 °C
- ✓ Improved cooling capacity compared to R-23
- ✓ Improved energy efficiency compared to R-23
- ✓ Charge size reduction of up to 15%

## Details

Lower GWP. With a GWP of ca 1,800, this represents a **90% reduction** compared to R-23.

Meets US AIM Act and EU F-Gas regulations.



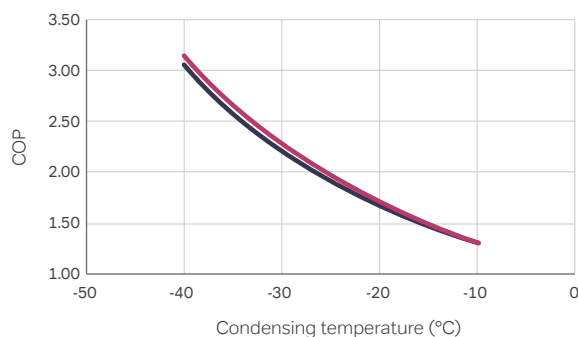
Klea® 473A:  
**1,800 GWP**

R-23:  
**14,800 GWP**

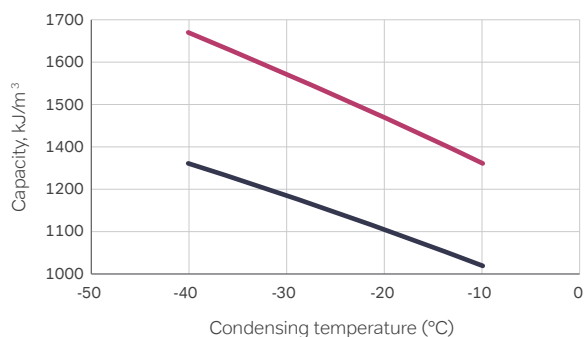
## Preliminary Performance Modelling

Key: R-23 — Klea® 473A —

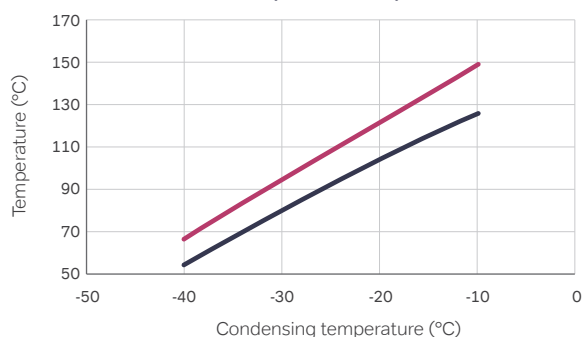
**COP of R-23 and Klea® 473A  
evaporator temperature -70°C**



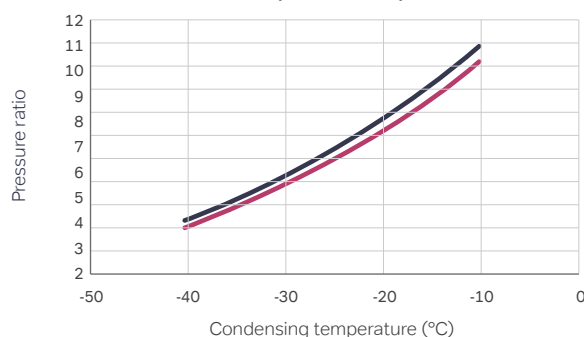
**Volumetric cooling capacity of R-23 and  
Klea® 473A evaporator temperature -70°C**



**Compressor exit temperature of R-23 and  
Klea® 473A evaporator temperature -70°C**



**Compressor pressure ratio of R-23 and  
Klea® 473A evaporator temperature -70°C**



### Non flammable

A1 ASHRAE safety  
classification



### Security of supply

Manufacturing available  
in UK, USA & Asia

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Klea®



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Materials