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## RS's SERIES REFRIGERANTS



# RS-53 (R-470A)



## PHYSICAL PROPERTIES

Property		RS-53	R410A
Molecular Mass		84.43	72.6
Boiling point (1 atm) (1)	°C	-62.7	-51.4
	°F	-80.8	-60.5
Critical Temperature	°C	88.7	71.3
	°F	191.7	160.4
Critical Pressure	bara	55.91	49.00
	psia	810.8	710.6
Liquid Density (25°C) (1)	kg/m <sup>3</sup>	1101	1059
Density of saturated vapour (25°C) (1)	kg/m <sup>3</sup>	61.47	64.87
Latent Heat of Vaporisation at boiling point (3)	kJ/kg	268.5	273.0
Heat capacity constant volume Cv (25°C & 1bara)	kJ/kg.K	0.749	0.700
Heat capacity constant pressure Cp (25°C & 1bara)	kJ/kg.K	0.854	0.823
Cp/Cv (25°C & 1 bara)		1.141	11.755
Vapour Pressure (25°C) (1)	bara	18.43	16.57
	psia	267.3	240.4
Vapour Viscosity (25°C & 1 bara)	cP	0.0130	0.0133
Liquid Viscosity (25°C) (1)	cP	0.139	0.118
Liquid Thermal Conductivity (25°C)	W/m.K	0.0846	0.0892
Surface Tension (25°C) (1)	N/m	0.00623	0.00521
Specific heat of liquid (25°C) (1)	kJ/kg.K	1.58	1.71
Global Warming Potential AR5	GWP	909	1924
Flammability limit in air (1 atm)	vol%	none	none
Inhalation exposure (8 hour day & 40 hour week)	ppm	1000	1000

## FEATURES

- Zeotropic mixture of HFC's / HFO / CO<sub>2</sub>
- R410A Drop-in
- Compatible POE lubricants
- Similar discharge pressure to R410A
- Similar cooling and heating capacity to R410A
- No changes in hardware needed for retrofitting
- GWP 909 (AR5)
- ODP = 0
- Non flammable

## APPLICATIONS



Air conditioning



Commercial refrigeration



Industrial refrigeration



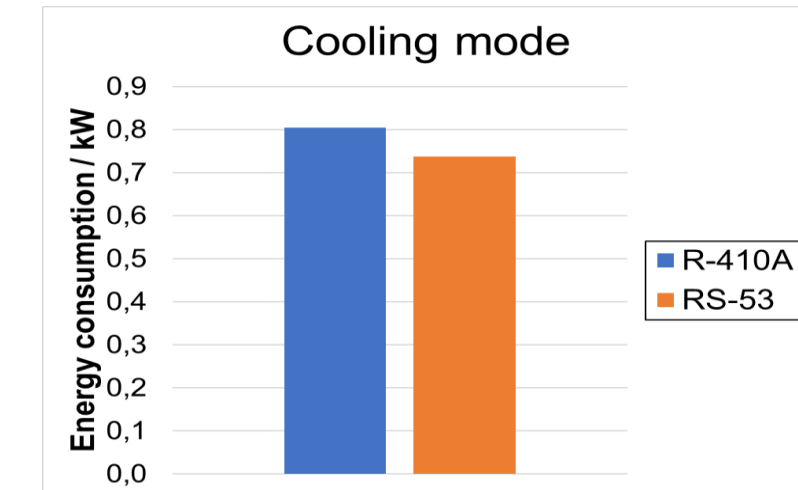
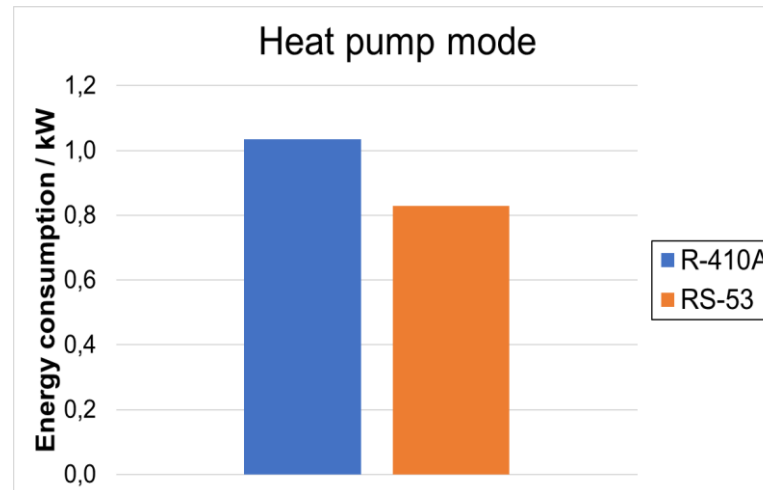
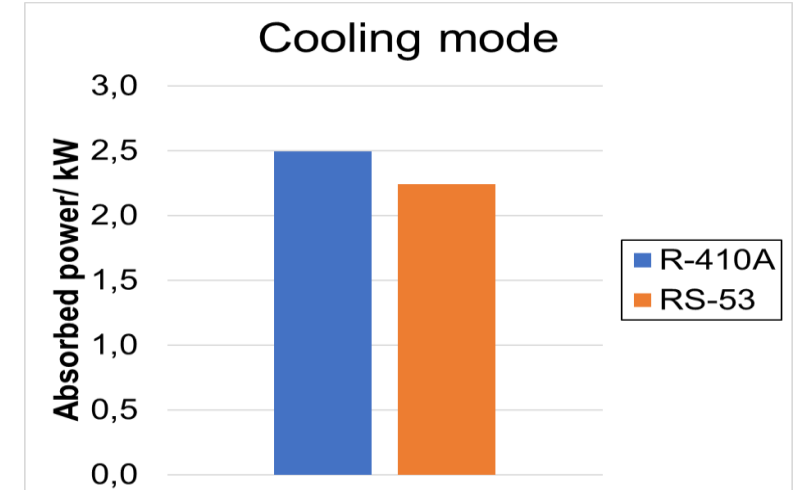
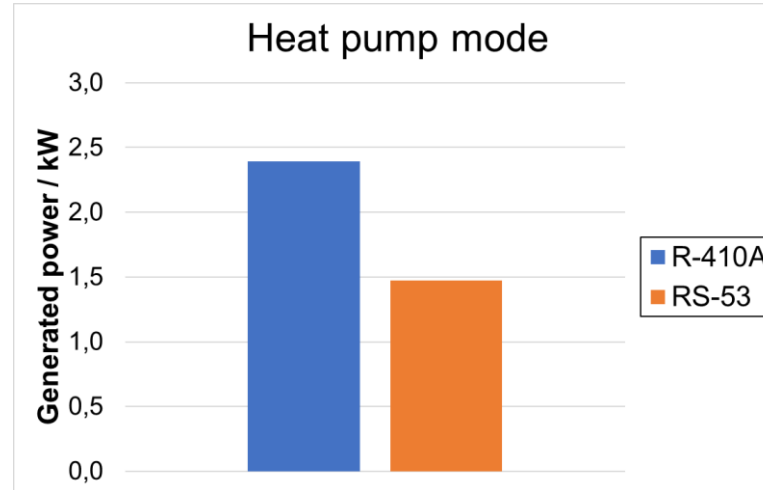
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## CASE STUDY R410A SPLIT A/C RETROFIT (Barcelona)

Benefits shown after the case study:

- Any change needed to do the retrofit. Just change the gas and start working
- Similar working conditions
  - Suction / discharge pressure
  - Temperatures
  - Same oil
- RS-53 has lower heating and cooling capacity but its consumption is lower than R410A
- Equipment working with RS-53 since summer 2019 without any maintenance issues



Test done at 15°C (59°F) ambient temperature

Test done at 30°C (86°F) ambient temperature



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**THANK YOU**

**GRACIAS GRÀCIES TACK DANKE  
OBRIGADO HVALA TAK GRAZIE MERCI  
KIITOS DÍK PALDIES KÖSZÖNÖM**