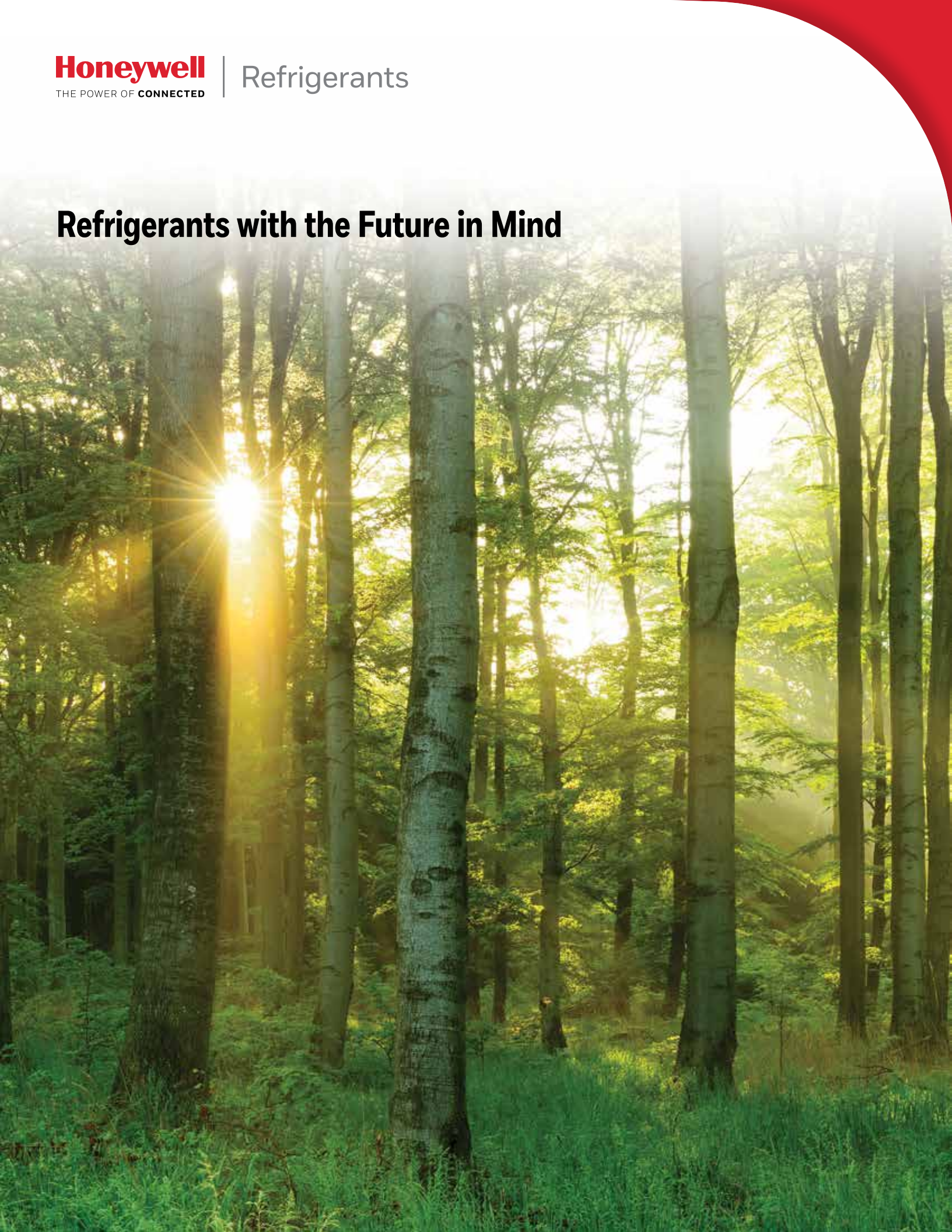


## Refrigerants with the Future in Mind



# Honeywell Refrigerants Application Guide

COMMERCIAL REFRIGERATION						
ASHRAE #	GWP <sup>3</sup>	Trade Name	Replaces	Blend Composition / ASHRAE Classification <sup>2</sup>	Typical Lubricant <sup>4</sup>	Comments
	AR5		ASHRAE #			
R-1234yf	1	Solstice yf	134a	HFO (single component fluid)	Alkylbenzene, Synthetic (POE, PAG)	Ultra-low GWP and higher capacity solution for vending machines, plug in cabinets, and water chillers. New equipment only
				ASHRAE A2L		
R-1234ze	1	Solstice ze	134a	HFO (single component fluid)	Alkylbenzene, Synthetic (POE, PVE, PAG)	Ultra-low GWP and high efficiency solution for vending machines, plug in cabinets, and water chillers. New equipment only
				ASHRAE A2L		
R-455A	146	Solstice L40X	R-404A R-507	R-32/R-1234yf/CO2	Synthetic (POE)	Low GWP blend for low, medium, and high temperature systems Excellent option for self-contained units Close performance match to R-404A New equipment only
				ASHRAE A2L		
R-450A	547	Solstice N13	R-134a R-401A R-401B R-409A	R-134a/R-1234ze	Synthetic (POE)	GWP is 58% lower than R-134a >90% capacity with similar efficiency (101-103% vs R-134a) New equipment and retrofits
				ASHRAE A1		
R-448A	1273	Solstice® N40	R-404A R-402A R-408A R-22 R-507 R-502	R-32/R-125/ R-134a/R-1234ze/R-1234yf	Synthetic (POE)	Global warming potential ( GWP) is 68% lower than R-404A 5% - 16% lower energy consumption vs R-404A Best capacity and efficiency alternative to R-22 and R-404A New equipment and retrofits
				ASHRAE A1		
R-134a	1300	Genetron® 134a	R-12	R-134a	Synthetic (POE, PVE)	Similar energy efficiency and good capacity match compared to R-12 Performs well in small hermetic systems
				ASHRAE A1		
R-407F	1674	Genetron Performax® LT	R-22 R-404A R-402A R-408A R-507	R-32/R-125/ R-134a	Synthetic (POE, PVE)	Good capacity match to R-22 Lower discharge temperature vs R-22 Cost-effective alternative New equipment and retrofits
				ASHRAE A1		
R-452A	1945	Solstice 452A	R-404A R-507	R-1234yf/ R-32/R-125	Synthetic (POE)	Low and medium temperature alternative for R-404A Discharge temperature similar to R-404A Transport, condensing units, self-contained units New equipment and retrofits
				ASHRAE A1		
Service Gas Refrigerants						
R-404A	3943	Genetron 404A		R-125/R-143a/ R-134a	Synthetic (POE, PVE)	R-404A and R-507 are HFC blends with high GWP. These refrigerants are subject to future regulations on usage. Honeywell recommends utilizing HFO blends such as Solstice N40 for new equipment and as a replacement for R-404A and R-507 in existing equipment
				ASHRAE A1		
R-507	3985	Genetron AZ-50®		R-125/R-143a	Synthetic (POE, PVE)	
				ASHRAE A1		
R-22	1760	Genetron 22		R-22	Mineral oil	Phaseout Schedule: January 1, 2020: No new R-22 refrigerant can be manufactured or imported into the U.S. or Canada. Any servicing must use stockpiled or reclaimed material <sup>1</sup> . 100% reduction in HCFC consumption required by Montreal Protocol
				ASHRAE A1		

COMMERCIAL AIR CONDITIONING / CHILLERS						
ASHRAE #	GWP <sup>3</sup>	Trade Name	Replaces	Blend Composition / ASHRAE Classification <sup>2</sup>	Typical Lubricant <sup>4</sup>	Comments
	AR5		ASHRAE #			
R-1234ze	1	Solstice ze	R-134a	HFO (Single component fluid)	Alkylbenzene Synthetic (POE, PVE, PAG)	Ultra-low GWP solution, best performance match to R-134a New equipment (chillers, small systems )
				ASHRAE A2L		
R-1233zd	1	Solstice zd	R-123	HFO (Single component fluid)	Alkylbenzene Mineral oil Synthetic (POE, PVE)	Ultra-low GWP solution for low pressure chillers New equipment only
				ASHRAE A1		
R-450A	547	Solstice N13	R-134a, R-409A, R-401A, R-401B	R-134a/R-1234ze	Synthetic (POE)	GWP is 58% lower than R-134a >90% capacity with similar efficiency (101-103% vs R-134a) New equipment and retrofits
				ASHRAE A1		
R-466A (provisional)	733	Solstice N41	R-410A	R-32 / R-125 / R-1311	Synthetic (POE)	Nonflammable GWP is 60% lower than R-410A New Equipment Only
				ASHRAE A1 (preliminary)		
R-245fa	858	Genetron 245fa	R-11 R-123	HFC (Single component fluid)	Synthetic (POE, PVE)	Equipment redesign, Organic Rankine Cycle heat transfer fluid New equipment only
				ASHRAE B1		
R-134a	1300	Genetron 134a	R-12	HFC (Single component fluid)	Synthetic (POE, PVE)	Similar energy efficiency and good capacity match to R-12 New equipment and retrofits
			R-500	ASHRAE A1		
R-407C	1624	Genetron 407C	R-22	R-32/R-125/R-134a	Synthetic (POE)	Best retrofit alternative to R-22. Close performance match with slightly higher operating pressures New equipment and retrofits
			R-500	ASHRAE A1		
R-410A	1923	Genetron AZ-20®	R-22	R-32/R-125	Synthetic (POE)	High pressure, high efficiency New equipment only
				ASHRAE A1		
Service Gas						
R-123	79	Genetron 123	R-11 (HCFC)	HFC (Single component fluid)	Alkylbenzene Mineral oil Synthetic (POE, PVE)	Due for phase out in 2020 Limited availability in the U.S. as of January 2018
				ASHRAE B1		

RESIDENTIAL/LIGHT COMMERCIAL AIR CONDITIONING/HEAT PUMP						
ASHRAE #	GWP <sup>3</sup>	Trade Name	Replaces	Blend Composition / ASHRAE Classification <sup>2</sup>	Typical Lubricant <sup>4</sup>	Comments
	AR5		ASHRAE #			
R-466A (provisional)	733	Solstice N41	R-410A	R-32 / R-125 / R-1311	Synthetic (POE)	Nonflammable GWP is 60% lower than R-410A New Equipment Only
				ASHRAE A1 (preliminary)		
R-134a	1300	Genetron 134a	R-12	HFC (Single component fluid)	Synthetic (POE) Alkylbenzene	Similar energy efficiency and good capacity match compared to R-12 New equipment and retrofits
			R-500	ASHRAE A1		
R-407C	1624	Genetron 407C	R-22	R-32/R-125/R-134a	Synthetic (POE)	Best retrofit alternative to R-22. Close performance match with slightly higher operating pressures New equipment and retrofits
			R-500	ASHRAE A1		
R-410A	1923	Genetron AZ-20	R-22	R-32/R-125	Synthetic (POE)	High pressure, high efficiency New equipment only
				ASHRAE A1		
R-422D	2477	Genetron 422D	R-22	R-125/R-134a/R-600a	Mineral Oil	Use of Synthetic (POE) will enhance oil return, if required Retrofits
				ASHRAE A1	Synthetic (POE)	

MOBILE AIR CONDITIONING / AUTOMOTIVE						
ASHRAE #	GWP <sup>3</sup>	Trade Name	Replaces	Blend Composition/ ASHRAE Classification <sup>2</sup>	Typical Lubricant <sup>4</sup>	Comments
	AR5		ASHRAE #			
R-1234yf	1	Solstice yf	R-134a	HFO (Single component fluid)	Synthetic (POE, PAG)	Ultra-low GWP solution New equipment only (small systems)
				ASHRAE A2L		
R-134a	1300	Genetron 134a	R-12	HFC (Single component fluid)	Synthetic (POE, PVE)	Similar energy efficiency and good capacity match to R-12
				ASHRAE A1		

#### <sup>1</sup>R22 Phaseout Schedule for Air Conditioning and Refrigeration

January 1, 2004: 35% reduction in HCFC consumption required by Montreal Protocol.

January 1, 2010: No new R-22 can be manufactured for new equipment manufactured or imported in US or Canada. 65% reduction in HCFC consumption required by Montreal Protocol.

January 1, 2015: 90% reduction in HCFC consumption required by Montreal Protocol.

January 1, 2020: No new R-22 refrigerant can be manufactured or imported into the US or Canada. Any servicing must be done using stockpiled or reclaimed material. 100% reduction in HCFC consumption required by Montreal Protocol.

#### <sup>2</sup>ASHRAE Classification Guide:

ASHRAE A1: Nonflammable, low toxicity

ASHRAE A2L: Mildly flammable, low toxicity

ASHRAE B1: low flammability, higher toxicity

#### Notes

<sup>3</sup>Listing of GWP Values as per Report IPCC WG1 AR5 (100-yr time horizon)

(a) CFC=Chlorofluorocarbon; HCFC=Hydrochlorofluorocarbon; HFC=Hydrofluorocarbon; H=Hydrocarbon; FC=Fluorocarbon; HFO = Hydrofluoro-olefin

<sup>4</sup>Check with the compressor manufacturer for their recommended lubricant

#### For More Information

[www.honeywell-refrigerants.com](http://www.honeywell-refrigerants.com)

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