



REFRIGERANTS WITH THE FUTURE IN MIND

Honeywell

HONEYWELL REFRIGERANTS APPLICATION GUIDE

| COMMERCIAL REFRIGERATION | | | | | | |
|--------------------------|------------------|------------------------|---------------------------------------|--|---|---|
| ASHRAE # | GWP ³ | Trade Name | Replaces | Blend Composition / ASHRAE Classification ² | Typical Lubricant ⁴ | 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-471A | 146 | Solstice® N71 | R-404A | R-1234zeE, R-227ea , R-1336MZZe | Synthetic | Non-flammable HFO refrigerant blend for new equipment in medium temperature applications. |
| R-515B | 299 | Solstice® N15 | R-134a | R-1234ze/R-227ea | Synthetic (POE) | Lowered GWP replacement for 134a in new systems. GWP 77% lower than R134a. |
| 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 | | |

COMMERCIAL AIR CONDITIONING / CHILLERS

| ASHRAE# | GWP ³ | Trade Name | Replaces | Blend Composition / ASHRAE Classification ² | Typical Lubricant ⁴ | 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-515B | 299 | Solstice® N15 | R-134a / R-124 | R-1234ze/R-227ea | Synthetic (POE) | For use in chillers and for cooling systems for high ambient conditions. GWP 77% lower than R134a. 23% capacity gain over R-124 and similar efficiency in high ambient applications. |
| R-454B | 466 | Solstice® R-454B | R-410A | R-32 / R-1234yf (68.9% / 31.1%) | Synthetic | Non-ozone depleting zeotropic blend designed as a low GWP alternative to R-410A in comfort air cooling and reversible heating applications |
| 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 | | |



RESIDENTIAL/LIGHT COMMERCIAL AIR CONDITIONING/HEAT PUMP

| ASHRAE # | GWP ³ | Trade Name | Replaces | Blend Composition / ASHRAE Classification ² | Typical Lubricant ⁴ | Comments |
|----------------------|------------------|----------------|----------|--|--------------------------------|---|
| | AR5 | | ASHRAE # | | | |
| R-466A (provisional) | 733 | Solstice® N41 | R-410A | R-32 / R-125 / R-131i ASHRAE A1 (preliminary) | Synthetic (POE) | Nonflammable. GWP is 60% lower than R-410A. New Equipment Only |
| R-134a | 1300 | Genetron 134a | R-12 | HFC (Single component fluid) | Synthetic (POE) | Similar energy efficiency and good capacity match compared to R-12 |
| | | | R-500 | ASHRAE A1 | Alkylbenzene | New equipment and retrofits |
| 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 |
| | | | R-500 | ASHRAE A1 | | New equipment and retrofits |
| R-410A | 1923 | Genetron AZ-20 | R-22 | R-32/R-125 ASHRAE A1 | Synthetic (POE) | High pressure, high efficiency New equipment only |
| R-422D | 2477 | Genetron 422D | R-22 | R-125/R-134a/R-600a ASHRAE A1 | Mineral Oil Synthetic (POE) | Use of Synthetic (POE) will enhance oil return, if required Retrofits. |

MOBILE AIR CONDITIONING / AUTOMOTIVE

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

*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.

²ASHRAE Classification Guide:

ASHRAE A1: Nonflammable, low toxicity

ASHRAE A2L: Mildly flammable, low toxicity

ASHRAE B1: low flammability, higher toxicity

Notes

³Listing 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

⁴Check with the compressor manufacturer for their recommended lubricant

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