




REFRIGERANT ROUTE PLANNER

NATIONAL REFRIGERANTS

YOUR HELPFUL GUIDE TO LOWER GWP REFRIGERANT
REPLACEMENTS

 NATIONALREF.COM

 01455 630 790



THIS GUIDE HAS BEEN DEVELOPED TO HELP NAVIGATE THE CURRENT OPTIONS AVAILABLE FOR MEDIUM AND LONG TERM REFRIGERANT REPLACEMENTS.

A / C


GWP VALUES BASED ON IPCC 4th REVISION

Market Sector	Equipment	Not long term sustainable GWP >750			Medium to long term sustainable GWP 750 - 150			Long term sustainable GWP <150		
		Refrigerant	GWP	Class	Refrigerant	GWP	Class	Refrigerant	GWP	Class
	Automotive	R134a	1,430	A1	R456A	687	A1	R1234yf	4	A2L
								CO2	1	A1
	Chiller	R134a	1,430	A1	R513A	631	A1	R1234ze	7	A2L
					R515B	293	A1	R1234yf	4	A2L
	Split/VRV				R32	675	A2L	R1234ze	7	A2L
		R410A	2,088	A1	-	-	-	R452B	698	A2L
								R454B	466	A2L
								R290 (propane) (Splits Only)	3	A3

HEAT PUMPS

Market Sector	Equipment	Not long term sustainable GWP >750			Medium to long term sustainable GWP 750 - 150			Long term sustainable GWP <150		
		Refrigerant	GWP	Class	Refrigerant	GWP	Class	Refrigerant	GWP	Class
	Monobloc							R290 (propane)	3	A3
					R32	675	A2L	R1234yf	4	A2L
		R410A	2,088	A1				R454C	148	A2L
					R454B	466	A2L	R455A	148	A2L
	Split/Multi-split							R1234yf	4	A2L
					R32	675	A2L	R454C	148	A2L
		R410A	2,088	A1	R454B	466	A2L	R455A	148	A2L
								R290 (propane) (Splits Only)	3	A3

DATA CENTRE


Market Sector	Equipment	Not long term sustainable GWP >750			Medium to long term sustainable GWP 750 - 150			Long term sustainable GWP <150			
		Refrigerant	GWP	Class	Refrigerant	GWP	Class	Refrigerant	GWP	Class	
	Chiller				R32	675	A2L				
		R134a	1,430	A1	R513A	631	A1	R1234ze	7	A2L	
					R515B	293	A1				
			R410A	2,088	A1	-	-	-	R454B	466	A2L




REFRIGERATION

TRANSPORT


GWP VALUES BASED ON IPCC 4th REVISION

Market Sector	Equipment	Not Long Term Sustainable GWP > 750			Medium-Long Term Sustainable GWP 750-150			Long Term Sustainable GWP < 150		
		Refrigerant	GWP	Class	Refrigerant	GWP	Class	Refrigerant	GWP	Class
	Transport Small	R134a	1,430	A1	R513A	631	A1	R1234yf	4	A2L
		R452A	2,140	A1	R454A	239	A2L	R454C	148	A2L
	Transport Large	R452A	2,140	A1	R454A	239	A2L	R455A	148	A2L
		R452A	2,140	A1	R454A	239	A2L	R455A	148	A2L

COMMERCIAL (RETAIL)

Market Sector	Equipment	Not Long Term Sustainable GWP > 750			Medium-Long Term Sustainable GWP 750-150			Long Term Sustainable GWP < 150		
		Refrigerant	GWP	Class	Refrigerant	GWP	Class	Refrigerant	GWP	Class
	Multi Compressor >40kw	R448A	1,387	A1				R744 (CO2)	1	A1
		R449A	1,397	A1	-	-	-	R454C	148	A2L
		R449A	1,397	A1				R455A	148	A2L
	Single Compressor <40kw	R448A	1,387	A1				R454C	148	A2L
		R448A	1,387	A1	R454A	239	A2L			
		R449A	1,397	A1				R455A	148	A2L


COMMERCIAL & LIGHT INDUSTRIAL (NON-RETAIL)

Market Sector	Equipment	Not Long Term Sustainable GWP > 750			Medium-Long Term Sustainable GWP 750-150			Long Term Sustainable GWP < 150			
		Refrigerant	GWP	Class	Refrigerant	GWP	Class	Refrigerant	GWP	Class	
	Medium Temperature Condensing Unit	R134a	1,430	A1	R513A	631	A1	R1234ze	7	A2L	
		R448A	1,387	A1	R450A	605	A1	R1234yf	4	A2L	
		R449A	1,397	A1	R454A	239	A2L	R454C	148	A2L	
		R449A	1,397	A1	R454A	239	A2L	R455A	148	A2L	
		R449A	1,397	A1	R454A	239	A2L	R454C	148	A2L	
		R452A	2,140	A1	R454A	239	A2L	R455A	148	A2L	
	Low Temp Condensing Unit	R448A	1,387	A1	R513A	631	A1	R454C	148	A2L	
		R449A	1,397	A1	R454A	239	A2L	R455A	148	A2L	
		Blast Chiller	R448A	1,387	A1	R454A	239	A2L	R454C	148	A2L
			R449A	1,397	A1	R454A	239	A2L	R455A	148	A2L
		Blast Freezer	R448A	1,387	A1	R454A	239	A2L	R454C	148	A2L
			R449A	1,397	A1	R454A	239	A2L	R455A	148	A2L

INDUSTRIAL

Market Sector	Equipment	Not Long Term Sustainable GWP > 750			Medium-Long Term Sustainable GWP 750-150			Long Term Sustainable GWP < 150		
		Refrigerant	GWP	Class	Refrigerant	GWP	Class	Refrigerant	GWP	Class
	Chillers Condensing Units	R448A	1,387	A1				R454C	148	A2L
					R454A	239	A2L	R455A	148	A2L
		R449A	1,387	A1				R744 (CO2)	1	A1
		R134a	1,430	A1	R513A	631	A1	R1234ze	7	A2L
					R515B	293	A1	R1234yf	4	A2L
	Flooded Systems	R410A	2,088	A1	R454B	466	A2L	R1234ze	7	A2L
					R513A	631	A1	R1234ze	7	A2L
		R134a	1,430	A1	R515B	293	A1	R1234yf	4	A2L
					-	-	-	R717 (ammonia)	0	B2L
								R1234ze	7	A2L
	R507	3,985	A1	-	-	-	-	-	-	

ULTRA LOW TEMPERATURE

Lowest GWP available for new and existing equipment						
Ultra Low Temperature	Refrigerant	GWP	Class	Refrigerant	GWP	Class
 Freeze Dryers Medical Storage Test Chambers	R23	14,800	A1			
	R508	13,396	A1	R473A	1,831	A1

ASHRAE DESIGNATION KEY

Under ASHRAE Standard 34, refrigerants are classified by toxicity and flammability:

↑ INCREASING FLAMMABILITY	HIGH FLAMMABILITY	A3	B3
	FLAMMABLE	A2	B2
	LOW FLAMMABILITY	A2L	B2L
	NO FLAME PROPAGATION	A1	B1
		→ INCREASING TOXICITY	

A indicates lower toxicity, B indicates higher toxicity.

1, 2, and 3 represent increasing levels of flammability;

1: No flame propagation (non-flammable)

2: Limited flammability

3: High flammability

GWP KEY

GWP	
R23	14,800
R508	13,396
R507	3,985
R404A	3,922
2,500	
R452A	2,140
R407A	2,107
R410A	2,088
R473A	1,831
R407F	1,824
R407C	1,774
R134a	1,430
R449A	1,397
R448A	1,387

GWP	
750	
R452B	698
R456A	687
R32	675
R513A	631
R450A	605
R454B	466
R515B	293
R454A	239

GWP	
150	
R454C	148
R455A	148
R152A	124
R1234ze	7
R1234yf	4
R290 (Propane)	3
R744 (CO2)	1
R717 (Ammonia)	0