

Unacceptable Substitute Refrigerants

EPA reviews substitutes on the basis of environmental and health risks, including factors such as ozone depletion potential, global warming potential, toxicity, flammability, and exposure potential. Lists of acceptable and unacceptable substitutes are updated several times each year. Alternatives are listed as unacceptable where other available, or potentially available, substitutes pose a lower overall risk to human health and the environment.

Substitute (Name Used in the Federal Register)	ODS Being Replaced	End-uses	Reason
All flammable refrigerants, including OZ-12® (Hydrocarbon Blend A), HC-12a® (Hydrocarbon Blend B), and Duracool 12a except HFC-152a and HFO-1234yf in new MVACs	CFC-12	Motor vehicle air conditioning, retrofit and new	Lack of adequate assessment that characterizes incremental flammability risk
OZ-12® (Hydrocarbon Blend A), HC-12a® (Hydrocarbon Blend B), and Duracool 12a	CFC-12	All end-uses other than industrial process refrigeration, retrofit and new	Lack of adequate assessment that characterizes incremental flammability risk
R-141b	CFC-11	centrifugal chillers, new	High ODP; other substitutes with lower overall risk have been identified
R-176 (R-176 contains CFC-12, HCFC-22, and HCFC-142b. It is a different product from RB-276, typically sold under the name "Free Zone.")	CFC-12	All end-uses, retrofit and new	Contains CFC-12

R-403B	R-502	All end-uses, retrofit and new	Contains a that exhibits extremely high and very long lifetime
R-405A	CFC-12	All end-uses, retrofit and new	Contains a that exhibits extremely high and very long lifetime
MT-31	all CFCs and HCFCs	All end-uses, retrofit and new	Toxicity of a constituent
Hexafluoropropylene (HFP) and blends containing it	all CFCs and HCFCs	All end-uses, retrofit and new	HFP is toxic
NARM-22	HCFC-22	All end-uses, retrofit and new	Contains HCFC-22
Self-Chilling Cans using HFC-134a or HFC-152a	CFC-12, HCFC-22, R-502	Household Refrigeration, Transport Refrigeration, Vending Machines, Cold Storage Warehouses and Retail Food Refrigeration; retrofit and new	Unacceptably high greenhouse gas emissions from direct release of refrigerant to the atmosphere

Unacceptable Substitutes for ODS in Refrigeration and Air Conditioning