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## Recommended List of Alternatives to Hydrochlorofluorocarbons in China

(Draft for comments)

serial number	use type	alternative name	Ozone depletion potential (ODP)	100 Years Worldwide Heating potential (GWP)	Main application areas (products)	Replaced names of hydrochlorofluorocarbons (HCFCs)
1	The refrigerant	propane (R290)	0	3	Room air conditioners, domestic heat pump water heaters, commercial Independent refrigeration system, industrial refrigeration system	Chlorodifluoromethane (HCFC-22)
2	The refrigerant	Isobutane (R600a)	0	3	Commercial Freestanding Refrigeration Equipment	Chlorodifluoromethane (HCFC-22)
3	The refrigerant	carbon dioxide (R744)	0	1	Domestic heat pump water heaters, industrial or commercial heat pumps Water heaters, industrial or commercial refrigeration equipment, Storage refrigeration equipment	Chlorodifluoromethane (HCFC-22)
4	The refrigerant	ammonia (R717)	0	0	Industrial refrigeration equipment, refrigeration equipment for cold storage, Compression condensing unit	Chlorodifluoromethane (HCFC-22)

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5	The refrigerant	Difluoromethane (HFC-32)	0	675	Unitary air conditioners, chilled water (heat pump) units, Industrial or commercial heat pump water heaters, multi-zone Adjusting (heat pump) unit	Chlorodifluoromethane (HCFC-22)
6	The refrigerant	Trans-1,3,3,3-tetrafluoropropene (HFO-1234ze(E))	0	<1	Large and medium-sized chiller (heat pump) unit	Chlorodifluoromethane (HCFC-22)
7	The refrigerant	Trans-1-chloro-3,3,3-trichloropropene (HFO-1233zd(E))	0	1	Large and medium-sized chiller (heat pump) unit	Chlorodifluoromethane (HCFC-22)
8	The refrigerant	Trans-1,3,3,3-tetrafluoropropene and 1,1,1,2,3,3,3-Heptafluoropropane mixed Compound (R515B, HFO-1234ze(E)/HFC-227ea, Mass score 91.1/8.9)	0	287	Large and medium-sized chiller (heat pump) unit	Chlorodifluoromethane (HCFC-22)
9	The refrigerant	2,3,3,3-tetrafluoropropene and 1,1,1,2-Tetrafluoroethane mixture (R513A, HFO-1234yf/HFC-134a, Quality score 56/44)	0	631	Large and medium-sized chiller (heat pump) unit	Chlorodifluoromethane (HCFC-22)
10	foaming agent	carbon dioxide	0	1	Extruded polystyrene foam, polyurethane spray foam	Chlorodifluoromethane (HCFC-22); Dichloro-1-fluoroethane (HCFC-141b); 1-Chloro-1,1-difluoroethane (HCFC-142b)

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11	foaming agent	cyclopentane, n-pentane, isopentane	0	5	Polyurethane foam (except spray foam)	1,1-Dichloro-1-fluoroethane (HCFC-141b)
12	foaming agent	water	0	0	Polyurethane for pipe insulation, shoe soles, imitation wood, etc. Foam, solar water heater	1,1-Dichloro-1-fluoroethane (HCFC-141b)
13	foaming agent	Hexafluorobutene (HFO-1336mzz)	0	9	Polyurethane foam	1,1-Dichloro-1-fluoroethane (HCFC-141b)
14	foaming agent	1-Chloro-3,3,3-trifluoropropene (HFO-1233zd)	0	5	Polyurethane foam	1,1-Dichloro-1-fluoroethane (HCFC-141b)
15	foaming agent	1,3,3,3-tetrafluoropropene (HFO-1234ze)	0	7	Extruded polystyrene foam	Chlorodifluoromethane (HCFC-22); 1-Chloro-1,1-difluoroethane (HCFC-142b)
16	detergent	1-Chloro-3,3,3-trifluoropropene (HFO-1233zd)	0	5	detergent	1,1-Dichloro-1-fluoroethane (HCFC-141b)
17	detergent	1,1,2,2,3,3,4-Heptafluorocyclopentane (HFE-447)	0	243	Cleaning agent, silicone oil thinner	1,1-Dichloro-1-fluoroethane (HCFC-141b)
18	detergent	Trans-1,2-Dichloroethylene (HCC-1130(E))	0	1	Cleaning agent, silicone oil thinner	1,1-Dichloro-1-fluoroethane (HCFC-141b)
19	detergent	isopropyl alcohol	0	0	Cleaning agent, silicone oil thinner	1,1-Dichloro-1-fluoroethane (HCFC-141b)
20	detergent	Ethanol	0	0	Cleaning agent, silicone oil thinner	1,1-Dichloro-1-fluoroethane (HCFC-141b)

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twenty	detergent	Hydrocarbon solvent	0	<20	Cleaning agent, silicone oil thinner	1,1-Dichloro-1-fluoroethane (HCFC-141b)
twenty	detergent	Chlorinated hydrocarbon solvent	0	0	Cleaning agent, silicone oil thinner	1,1-Dichloro-1-fluoroethane (HCFC-141b)
twenty	thinner	Alcohol-soluble silicone oil, solvent-free silicone oil	0	0	Siliconized needle tip and syringe	1,1-Dichloro-1-fluoroethane (HCFC-141b)
twenty	flattergent	Alcohol ether solvent	0	<20	1,1-Dichloro-1-fluoroethane (HCFC-141b) is used as a cleaning agent in the metal and electronic industries	