


FORANE®22

- Single-component HCFC refrigerant with low ozone depletion potential.
- Versatile refrigerant for any air conditioning and refrigeration applications.
- R-22 is going through a mandatory phase-out, according to the schedule set by the Montreal Protocol. End-users should consult their local wholesaler or refrigerant manufacturer for more information on the R-22 phase-out.

MAIN PROPERTIES

Composition	R-22 (100%) 
Type	HCFC Single component fluid
ASHRAE safety classification	A1 - non-toxic and non-flammable
GWP*	1810
ODP	0.055
Recommended lubricant	MO or AB

* GWP value for 100-year time horizons according to IPCC 2007 Fourth Assessment Report

MAIN APPLICATIONS

- Chillers
- Residential and commercial air conditioning
- Commercial and industrial refrigeration
- Transport refrigeration
- Other comfort cooling and refrigeration applications.

LUBRICATION

Forane® 22 works with mineral oil, alkylbenzene oil, or POE oil. End-users should check with the equipment manufacturers' guidelines for specific oil selection directions.

CHARGING

Charging with Forane® 22 can be done either as a vapor or a liquid. End-users should check with their equipment manufacturers' guidelines for specific charging instructions.

DELIVERIES

Forane® 22 can be delivered in various packaging:

- **bulk:** ISO container (18 tons).
- **pallet of 24 disposable cylinders** (22.7 kg each cylinder), or **pallet of 40 or 100 disposable cylinders** (13.6 kg each cylinder). This disposable packaging is commercialized according to local regulations.
- **other packaging available under requests.**

THERMODYNAMIC PROPERTIES

This information is based on values calculated using the NIST REFPROP Database (NIST Standard Reference Database 23, Version 9.0, Lemmon, E. W., Huber, M. L., and McLinden, M. O., Thermophysical Properties Division, 2010).

Critical temperature: 96°C

Saturation points (bubble and dew points at same composition).

Temperature (°C)	Pressure (bar)	Liquid Phase Density (kg/m ³)	Vapor Phase Density (kg/m ³)	Liquid Phase Enthalpy (kJ/kg)	Vapor Phase Enthalpy (kJ/kg)	Liquid Phase Entropy (kJ/(kg.K))	Vapor Phase Entropy (kJ/(kg.K))
-40	1,1	1407	5	155	388	0,82	1,82
-35	1,3	1392	6	160	390	0,85	1,81
-30	1,6	1377	7	166	393	0,87	1,80
-25	2,0	1362	9	171	395	0,89	1,79
-20	2,5	1347	11	177	397	0,91	1,78
-15	3,0	1331	13	183	399	0,94	1,77
-10	3,5	1315	15	188	401	0,96	1,77
-5	4,2	1298	18	194	403	0,98	1,76
0	5,0	1282	21	200	405	1,00	1,75
5	5,8	1264	25	206	407	1,02	1,74
10	6,8	1247	29	212	409	1,04	1,74
15	7,9	1229	33	218	410	1,06	1,73
20	9,1	1210	38	224	412	1,08	1,72
25	10,4	1191	44	230	413	1,10	1,72
30	11,9	1171	51	237	414	1,13	1,71
35	13,5	1150	58	243	415	1,15	1,70
40	15,3	1129	66	250	416	1,17	1,70
45	17,3	1106	75	256	417	1,19	1,69
50	19,4	1082	86	263	417	1,21	1,69
55	21,8	1057	98	270	418	1,23	1,68
60	24,3	1030	112	278	418	1,25	1,67
65	27,0	1001	127	285	417	1,27	1,66

The statements, technical information and recommendations contained herein are believed to be accurate as of the date hereof. Since the conditions and methods of use of the product and of the information referred to herein are beyond our control, ARKEMA expressly disclaims any and all liability as to any results obtained or arising from any use of the product or reliance on such information; NO WARRANTY OF FITNESS FOR ANY PARTICULAR PURPOSE, WARRANTY OF MERCHANTABILITY OR ANY OTHER WARRANTY, EXPRESS OR IMPLIED, IS MADE CONCERNING THE GOODS DESCRIBED OR THE INFORMATION PROVIDED HEREIN. The information provided herein relates only to the specific product designated and may not be applicable when such product is used in combination with other materials or in any process. The user should thoroughly test any application before commercialization. Nothing contained herein constitutes a license to practice under any patent and it should not be construed as an inducement to infringe any patent and the user is advised to take appropriate steps to be sure that any proposed use of the product will not result in patent infringement.

See MSDS for Health & Safety Considerations