Glysofor KF – Specification

Product features

Glysofor KF is an environmentally friendly, glycol-free low temperature cooling brine with an extremely low viscosity based on an aqueous potassium formate solution.

Glysofor KF serves as an antifreeze, corrosion protection agent and refrigerant (cooling brine) in industrial and food-related refrigeration circuits.

Glysofor KF is supplied as a ready-to-use brine (KF15 – KF50) with frost protection values from -15 to -50 degrees Celsius.

Its optimised viscosity enables energy costs of existing refrigeration systems to be reduced while at the same time increasing their refrigeration capacity; it also enables the dimensions of newly planned systems to be reduced.

environmentally friendly low temperature cooling brine based on an aqueous potassium formate solution

for industrial and food-related refrigeration circuits

optimised viscosity and thermal conductivity

Ready to use

Frost-proof up to -50 °C

Glysofor KF is free of nitrite, amine, phosphate, silicate and borate.

Product data

Chem. name	Mixture of potassium formate, aqua dest., anti-corrosion additive
Appearance	Colorless liquid
Packaging	Canisters / barrels / IBCs / tank vehicles
ADR	Kl 0 Ziff
EG-No.	209-677-9
CAS-No.	590-29-4
WHC	1
Applied concentration	undiluted (antifreeze -15 to -50 °C)
Operating temp. range	-50 to +60 °C
Areas of application	Refrigeration and deep-freeze facilities, antifreeze, and corrosion protection agents in water circuits, cooling brine in the food industry
Density (20 °C)	1,22 bis 1,36 g/cm³
pH-value	11 - 12
Boiling point (1013 mbar)	> 100 °C
Vapour pressure (20 °C)	ca. 20 mbar
Spec. heat (20 °C)	2,62 to 3,20 kJ/kg K
Thermal conductivity (20 °C)	0,47 to 0,55 W/m K
Dynamic viskosity (20 °C)	2,04 to 3,20 mPa s

Antifreeze

Based on potassium formate, Glysofor KF significantly lowers the freezing point of water and prevents the liquid from freezing, e.g. in cooling systems. Glysofor KF ensures that refrigeration systems remain functional even at sub-zero temperatures. Glysofor KF reliably avoids frost damage to the system caused by bursting effects.

Corrosion protection

Glysofor KF contains an up to the minute combination of corrosion inhibitors which are optimised for the metals normally used in plant and equipment (including copper and aluminium) as well as plastics. Galvanised components of industrial equipment and soft solder must be avoided.
Glysofor KF does not attack the materials normally used for seals and gaskets in refrigeration plants. According to our own experience and information in the literature, hemp and normal compressed asbestos seals are resistant as well as

- Butyl rubber (IIR)
- Hard and soft polyethylene (LDPE, HDPE)
- Ethylene propylene diene rubber (EPDM)
- Polyethylene, networked(VPE)
- Epoxide resins (EP)
- Polypropylene (PP)
- Fluorocarbon elastomers (FKM)
- Polytetrafluorethylene (PTFE)
- Nitrile rubber (NBR)
- Polyvinylchloride, hard (PVC h)
- Polyamide (PA)
- Styrene butadiene rubber (SBR)
- Polychlor butadiene rubber (CR)
- Unsaturated polyester resins(UP)

Polyurethane elastomers, phenol formaldehyde resins and soft PVC are non-resistant.

Application

Preparation: Any water in the system should be drained as completely as possible before filling the equipment. Small residual quantities and resultant slight dilution can be accommodated by Glysofor KF cooling brine.

Filling: Glysofor KF is supplied in five ready to use variants KF15 to KF50 and can be directly added to the equipment needing filling. The figures in the product name indicate the relevant cooling limit.

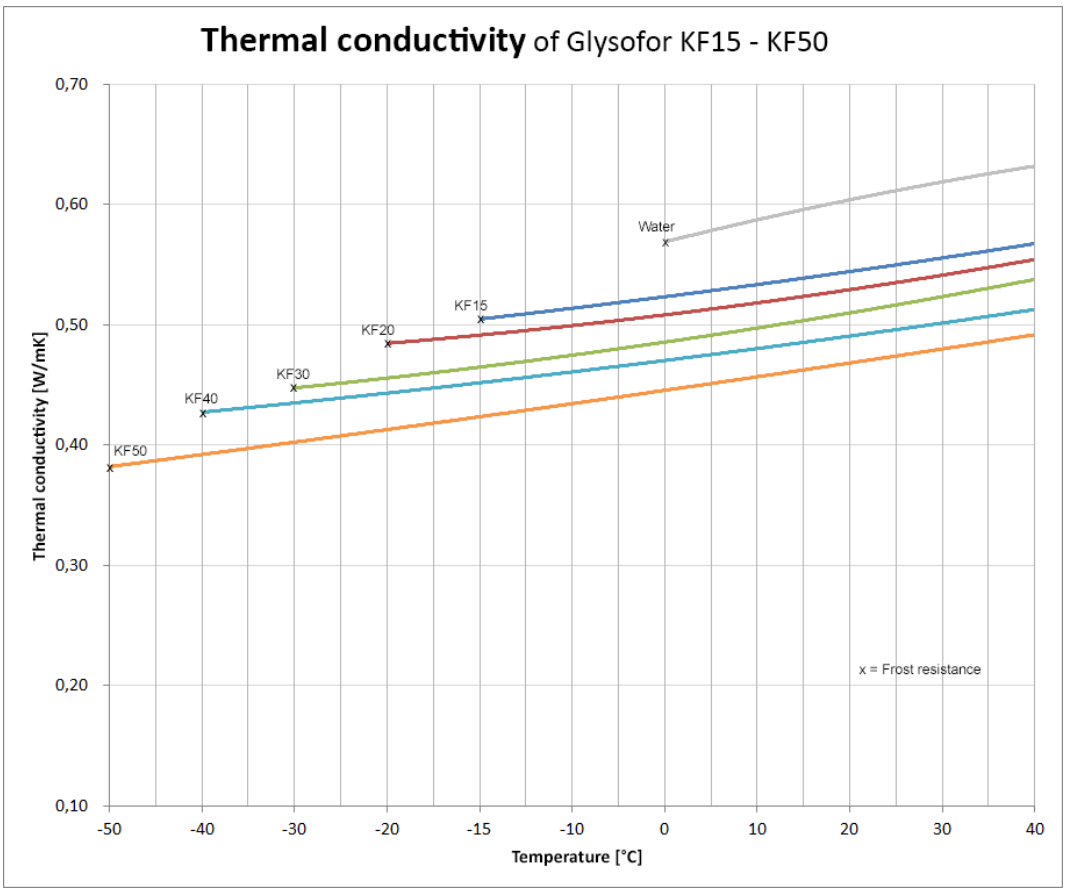
Topping up: Only Glysofor KF must be used if the system needs topping up. Glysofor KF must never be mixed with cooling brines based on chlorides or glycols.

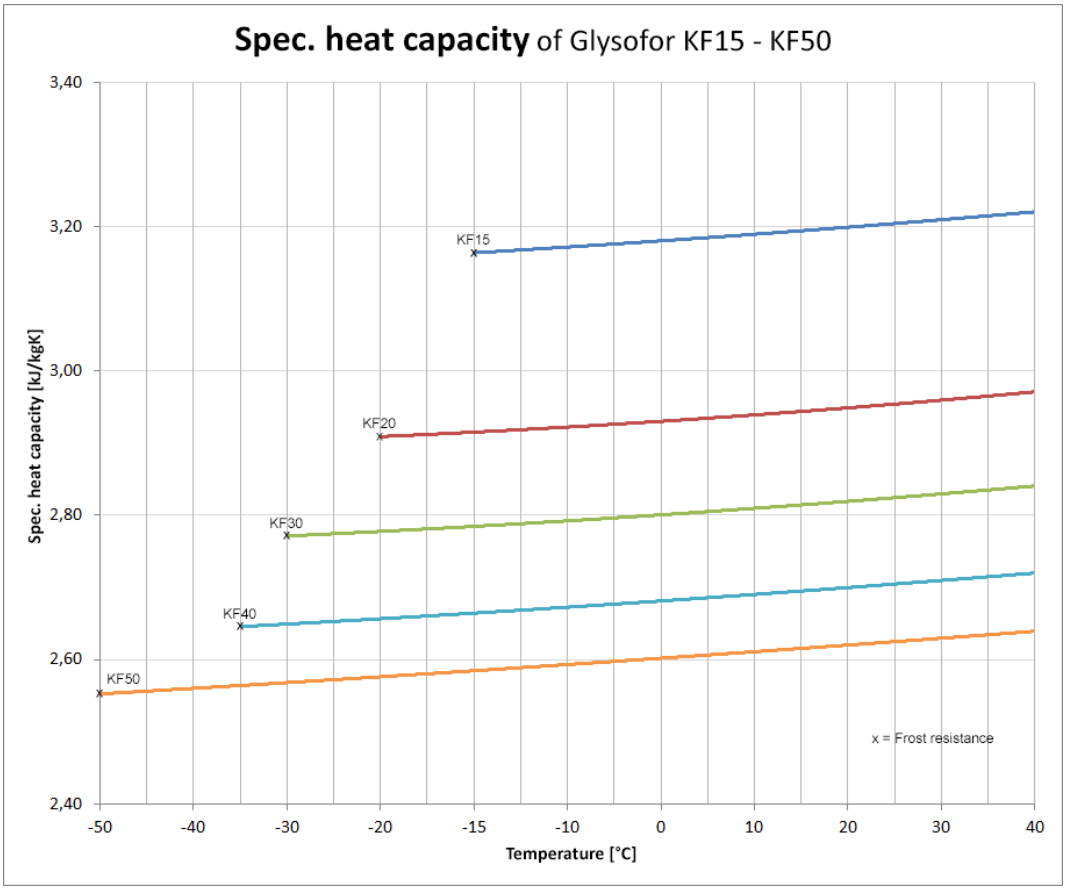
Packaging sizes

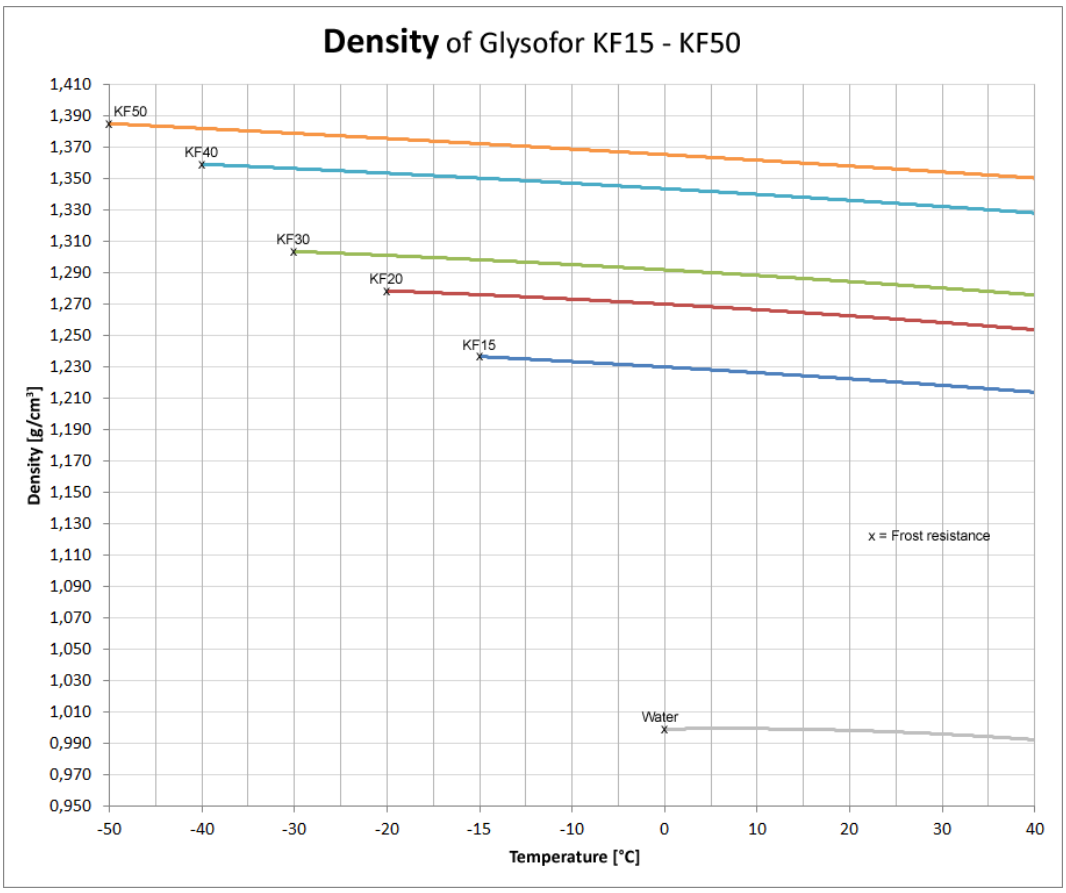
- 10 kg Canister
- 25 kg Canister
- 30 kg Canister
- 220 kg Barrel
- 1.000 kg IBC
- 24.000 kg Tank vehicle

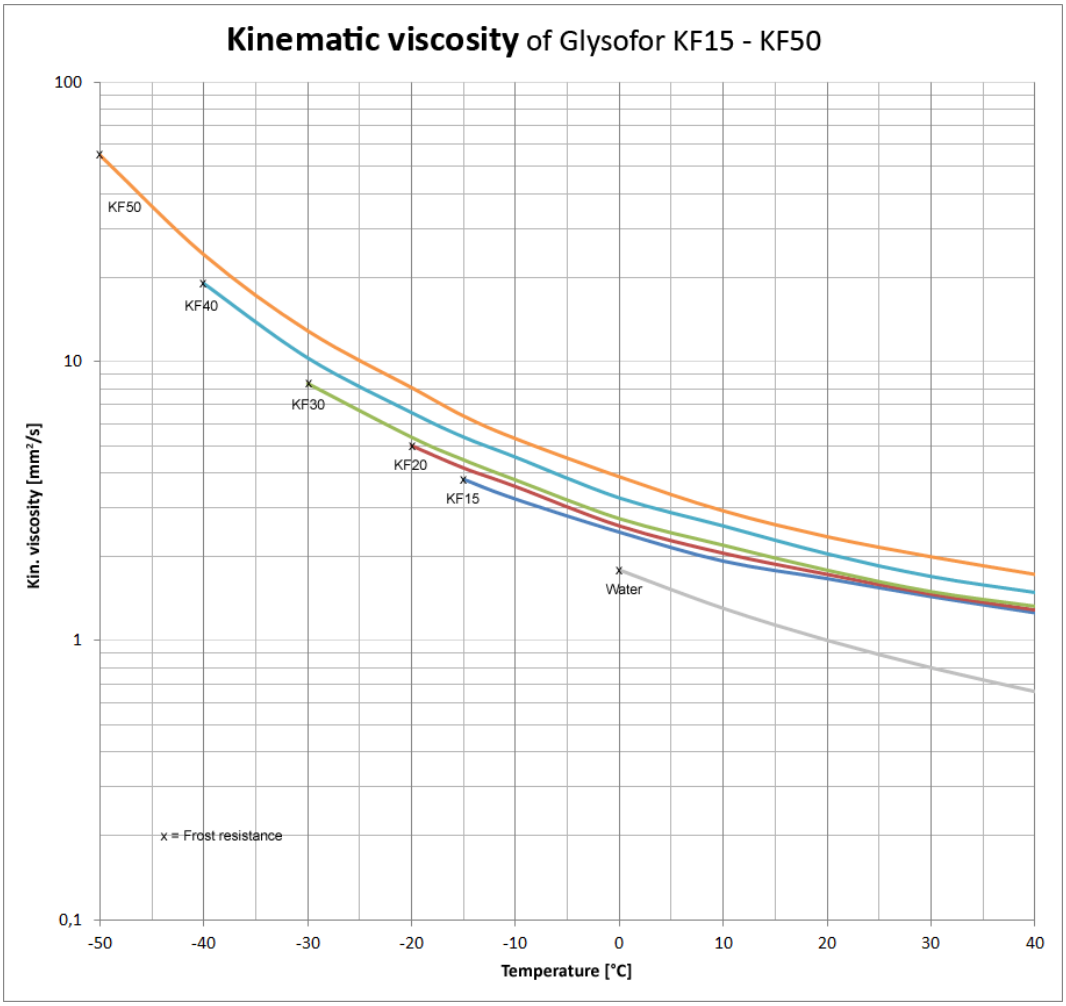
Technical data

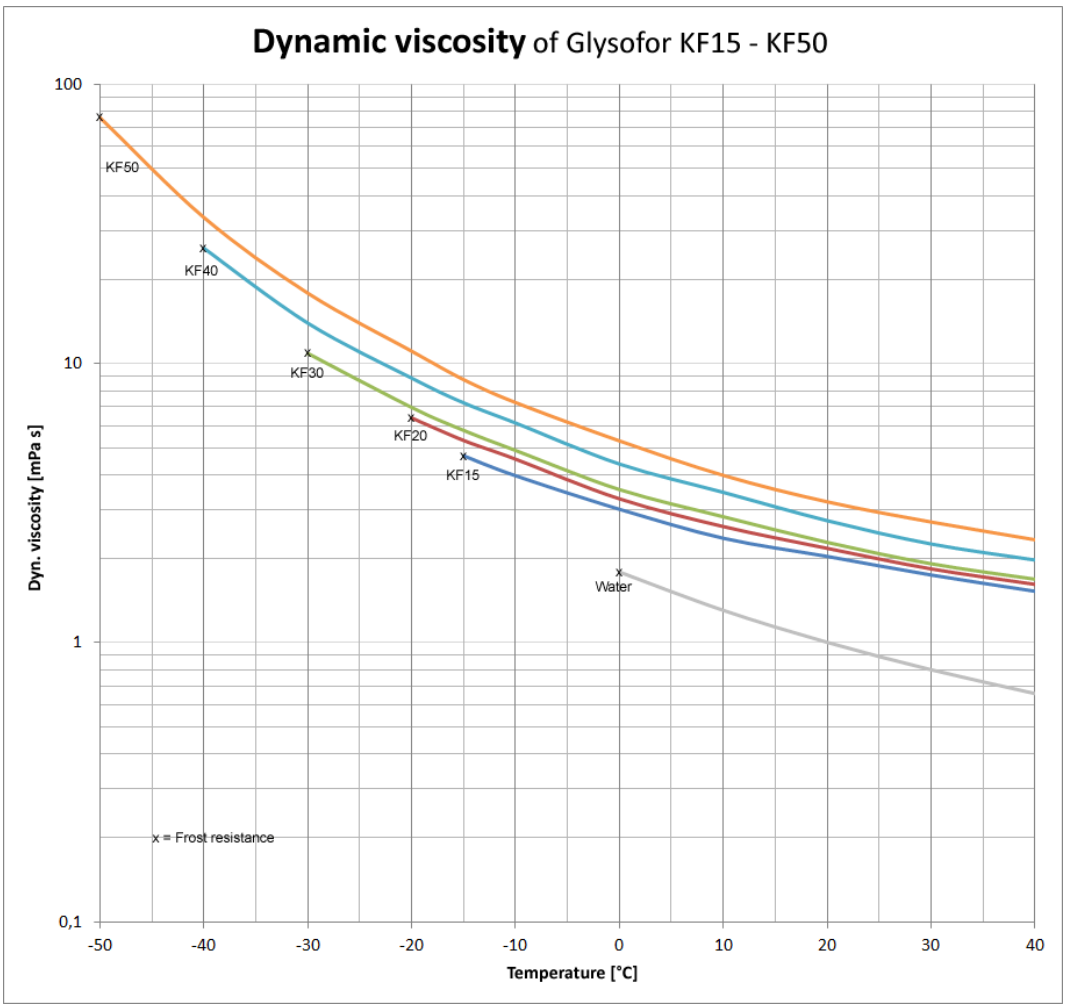
Product	Frost Resistance [°C]	Temp. [°C]	Thermal conductivity [W/m K]	Spec. heat capacity [kJ/kg K]	Density [g/cm³]	Kinemat. viscosity [mm²/s]	Dynamic viscosity [mPa s]
Glysofor **KF15**	-15	-50					
		-40					
		-30					
		-20					
		-15	0,507	3,17	1,236	3,78	4,67
		-10	0,513	3,17	1,234	3,21	3,96
		0	0,524	3,18	1,230	2,44	3,01
		10	0,535	3,19	1,226	1,92	2,36
		20	0,546	3,20	1,222	1,66	2,03
		30	0,557	3,21	1,218	1,43	1,74
		40	0,568	3,22	1,214	1,25	1,52
Glysofor **KF20**	-20	-50					
		-40					
		-30					
		-20	0,487	2,91	1,278	5,00	6,38
		-15	0,492	2,92	1,276	4,15	5,30
		-10	0,498	2,92	1,274	3,56	4,54
		0	0,509	2,93	1,270	2,57	3,27
		10	0,520	2,94	1,266	2,05	2,60
		20	0,532	2,95	1,262	1,72	2,17
		30	0,543	2,96	1,258	1,46	1,83
		40	0,554	2,97	1,254	1,28	1,61
Glysofor **KF30**	-30	-50					
		-40					
		-30	0,447	2,77	1,304	8,34	10,88
		-20	0,460	2,78	1,300	5,35	6,96
		-15	0,466	2,79	1,298	4,44	5,76
		-10	0,473	2,79	1,296	3,76	4,88
		0	0,486	2,80	1,292	2,73	3,53
		10	0,499	2,81	1,288	2,20	2,82
		20	0,512	2,82	1,284	1,78	2,28
		30	0,525	2,83	1,280	1,50	1,91
		40	0,538	2,84	1,276	1,32	1,68
Glysofor **KF40**	-40	-50					
		-40	0,426	2,64	1,360	19,05	25,91
		-30	0,437	2,65	1,356	10,30	13,97
		-20	0,448	2,66	1,352	6,56	8,87
		-15	0,454	2,67	1,350	5,36	7,23
		-10	0,459	2,67	1,348	4,54	6,12
		0	0,470	2,68	1,344	3,24	4,36
		10	0,481	2,69	1,340	2,57	3,45
		20	0,492	2,70	1,336	2,04	2,73
		30	0,503	2,71	1,332	1,70	2,25
		40	0,514	2,72	1,328	1,48	1,97
Glysofor **KF50**	-50	-50	0,380	2,55	1,386	54,95	76,16
		-40	0,393	2,56	1,382	24,18	33,42
		-30	0,406	2,57	1,378	12,88	17,88
		-20	0,419	2,58	1,374	8,06	11,08
		-15	0,426	2,59	1,372	6,38	8,76
		-10	0,432	2,59	1,370	5,29	7,25
		0	0,444	2,60	1,366	3,86	5,28
		10	0,456	2,61	1,362	2,91	3,97
		20	0,469	2,62	1,358	2,35	3,19
		30	0,482	2,63	1,354	2,00	2,70
		40	0,494	2,64	1,350	1,72	2,33


Thermal conductivity of Glysofor KF15 - KF50
Thermal conductivity [W/mK]
0,70
0,60
0,50
0,40
0,30
0,20
0,10
Water
KF15
KF20
KF30
KF40
KF50
x = Frost resistance
-50
-40
-30
-20
-15
-10
0
10
20
30
40
Temperature [°C]


Spec. heat capacity of Glysofor KF15 - KF50
Spec. heat capacity [kJ/kgK]
3,40
3,20
3,00
2,80
2,60
2,40
KF15
KF20
KF30
KF40
KF50
x = Frost resistance
-50
-40
-30
-20
-15
-10
0
10
20
30
40
Temperature [°C]


Density of Glysofor KF15 - KF50
Density [g/cm³]
1,410
1,390
1,370
1,350
1,330
1,310
1,290
1,270
1,250
1,230
1,210
1,190
1,170
1,150
1,130
1,110
1,090
1,070
1,050
1,030
1,010
0,990
0,970
0,950
KF50
KF40
KF30
KF20
KF15
Water
x = Frost resistance
-50
-40
-30
-20
-15
-10
0
10
20
30
40
Temperature [°C]


Kinematic viscosity of Glysofor KF15 - KF50
Kin. viscosity [mm²/s]
100
10
1
0,1
KF50
KF40
KF30
KF20
KF15
Water
x = Frost resistance
-50
-40
-30
-20
-10
0
10
20
30
40
Temperature [°C]



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