



Nonfood Compounds
Program Listed (HT1)

PEKASOL® FG

Food Grade Quality

Heat transfer fluid on basis of 1,2 propylene glycol specifically for the food industry

Physical Parameters [®]PEKASOL FG concentrate

Density (at 20°C)	1,06 g/cm ³
Appearance	clear, colorless liquid
Boiling point (concentrate)	approx. 185 °C
pure point (concentrate)	< - 50 °C
pH-Value (at 20°C)	8,5 – 10
Specific heat (at 20°C)	approx. 2,5 kJ/kg*K
thermal conductivity (at 20°C)	approx. 0,22 W/m*K
Viscosity (at 20°C)	approx. 56 mPa*s
Electric conductivity (at 20°C)	ca. 4.000 µS/cm
Dilution 1:2	
Refractive index	1,431

Dilution table [®]PEKASOL FG with dm-water

Frost proof down to °C	%by vol.	Density (20 °C)	Refractive index	NSF registration no. HT1
-10	26	1,026	1.362	152492
-15	32	1,032	1.367	152493
-20	40	1,039	1.377	152494
-25	43	1,042	1.381	152495
-30	47	1,045	1.384	152496
-40	54	1,051	1.391	152497
-50	60	1,055	1.397	152498
<-50	100	1,060	1.431	152491

Material compatibility of plastics

The following plastics are resistant to [®]PEKASOL FG

ABS	Acryl Nitrile butadiene styrene
PE	Polyethylen
PP	Polypropylen
PTFE	Polytetrafluorethylen
PVC	Polyvenyl Chloride
IIR	Isobutylene-isoprene Rubber
CR	Chloroprene Rubber
NBR	Nitrile Butadiene Rubber
UP	Unsaturated Polyester Resins
Centellen NP (WS 3860)	(trade name)
Hemp	
POM	Polyacetal
PB	Polybutene
FPM (Viton)	Fluor Rubber
EPDM	ethylene propylene diene monomer (up to 150 °C)

Product Description

[®]PEKASOL FG is a colourless and odourless heat transfer fluid on a non-toxic, environmentally friendly propylene glycol basis specifically for the food industry and any application where food-grade quality is important. The inhibitors safely protect all materials typically used in plant engineering from sludge and corrosion. The various ready to use diluted versions of [®]PEKASOL FG are HT1 certified by NSF and are only offered by us in these concentrations. All ingredients are FDA listed and approved food additives.

Food products accidentally becoming contaminated with the anti-freeze is therefore does not give rise to concern and unintentional consumption poses no health hazard. [®]PEKASOL FG contains no nitrite, amine, borate, silicate or nitrate.

Certification

The concentrate as well as the ready-mixes specified in the dilution table are NSF certified. Only every ready to use dilution specified in the dilution table offered by us is NSF approved.

Each and every concentration has a different registration number (see dilution table), which you can also find on the NSF website at www.nsfwhitebook.org using the company name or the product name.

Directions for Use

[®]PEKASOL FG can be used in both heating and cooling systems. Depending on the concentration it may be used in temperatures from -40°C up to +120°C. All ready to use dilutions are made with demineralized water. To ensure adequate corrosion protection, do not use concentrations of less than 26% by vol.. Only refill and concentrate with [®]PEKASOL FG. Do not mix [®]PEKASOL FG with other products, as this will void the NSF approval.

We recommend flushing any system before filling systems with this product for the first time. Flushing is absolutely necessary for any newly constructed systems with steel to remove any flash rust, swarf and other contaminants. Flushing the system with an 8-10% PEX FG cleaning solution will prepare it optimally for [®]PEKASOL FG. The rinsing solution may be disposed in the sewage system.

When switching to [®]PEKASOL FG from a different product, the entire system must first be drained and the old brine properly disposed of. The system should then be flushed with a 8-10% PEX FG cleaning solution to remove any contaminants from the existing system. After flushing, add [®]PEKASOL FG to the system quickly to prevent additional corrosion. Be sure to bleed the entire system. For more information about PEX FG Cleaner please visit our website at prokuehlsole.de.

PEKASOL® FG

Every brine system should have a suitable filter installed. A 50-80 µm mesh size is recommended. ®PEKASOL FG is suitable as an anti-freeze for heating systems per Directive VDI 2035.

Material Compatibility

®PEKASOL FG contains additives which protect metal materials typically used in plant construction from corrosion. Please see the chart at the right for the wear data determined by the independent test institute Institute of Air Handling and Refrigeration (ILK) in Dresden. Please refer to the table on page 2 for the plastics which may be used for system components and seal materials. Please note the respective thermal and material-resistant application conditions for all metal and plastic materials. In this case, compatibility with glycol products is crucial.

®PEKASOL FG is suitable for use in press fit systems by Geberit-Mapress and Viega.

Safety Notices

Follow the typical safety precautions for chemicals when handling ®PEKASOL FG. Please refer to the current EU safety data sheet for additional information and regulations.

Ecology and Toxicology

®PEKASOL FG is non-toxic and readily biodegradable. ®PEKASOL FG is HT1 certified by NSF and not subject to labelling per GHS.

Water hazard class (WGK):
1, low hazard to water (per VwVwS)

Shipping, Storage and Disposal

®PEKASOL FG is shipped in the adjacent containers. All containers are returnable. Please empty completely before returning. Do not fill with other products! ®PEKASOL FG and all dilutions have a good storage stability. Store in a dry location. Keep away from sunlight. ®PEKASOL FG dilutions will not separate, even after being stored for long periods. Please observe the applicable regulations on disposal.

General Corrosion and Wear Data

®PEKASOL FG dilution 1:2 (33,3%) according to ASTM D 3306-08a

Material	wear data, values in mg/ test piece	permitted wear data
Copper (E-Cu F30)	4	10
Soft solder (L-Pb30)	1	30
Brass (CuZn37)	1	10
Steel (S235JR)	0	10
Grey cast iron (EN-GJL-250)	10	10
Cast aluminum (G-ALSi5Cu3)	0	30

The wear date of ®PEKASOL FG were measured by ILK (Institute of Air Handling and Refrigeration, Dresden).

Packaging units ®PEKASOL FG concentrate

Package	Filling Weight
30-liter-can	30 kg
60-liter-can	60 kg
220-liter-drum	220 kg
1000-liter-IBC	1000 kg
Tank truck	upon request

SERVICE

Free laboratory	Please send us a sample of 500 ml about 6 weeks after filling of the system and then once a year. We will provide you an analysis certificate with advises and recommendations free of charge.
Filling pump rental	We provide our customers a pump package incl. hoses and connection armatures. A refundable security deposit is required.
Personal consultation	We are pleased to arrange a personal meeting at your company or directly at the construction site to discuss the system-specific application of our products.
Measuring	We prepared a measuring kit with all necessary materials to test our heat carriers. This kit enables you and your staff to measure the required standard values directly at the facility.

Frost-proof °C	Concentrate % by vol.	Temperature °C	Density g/cm³	Thermal conductivity W/m²K	Specific heat kJ/kg K	dynam. viscosity mPa*s	cinemat. viscosity mm²/s	Prandtl number	relative pressure loss	rel. heat transfer coefficient
-10	26	-10.0	1.037	0.398	3.758	14.92	14.38	140.9	1.89	0.215
		0.0	1.034	0.414	3.812	6.62	6.40	60.93	1.54	0.323
		10.0	1.03	0.43	3.86	3.75	3.64	33.69	1.33	0.432
		20.0	1.026	0.444	3.902	2.47	2.4	21.7	1.2	0.537
		30.0	1.022	0.456	3.937	1.78	1.74	15.38	1.1	0.636
		40.0	1.016	0.468	3.967	1.36	1.34	11.56	1.02	0.732
		50.0	1.011	0.478	3.99	1.08	1.07	9.01	0.96	0.826
		60.0	1.005	0.486	4.007	0.87	0.87	7.17	0.91	0.92
		70.0	0.998	0.494	4.018	0.71	0.71	5.77	0.86	1.019
		80.0	0.991	0.5	4.023	0.58	0.58	4.66	0.81	1.123
		90.0	0.983	0.505	4.022	0.47	0.48	3.76	0.77	1.236
		100.0	0.975	0.508	4.014	0.38	0.39	3.02	0.72	1.359
		110.0	0.967	0.511	4.001	0.31	0.32	2.42	0.68	1.495
120.0	0.958	0.512	3.981	0.25	0.26	1.93	0.64	1.645		
-15	32	-10.0	1.045	0.389	3.636	18.25	17.47	170.84	2.00	0.191
		0.0	1.041	0.402	3.698	8.29	7.96	76.27	1.64	0.284
		10.0	1.037	0.414	3.754	4.66	4.50	42.23	1.41	0.379
		20.0	1.032	0.426	3.803	3.02	2.92	26.95	1.26	0.474
		30.0	1.027	0.436	3.846	2.14	2.09	18.89	1.16	0.565
		40.0	1.021	0.446	3.883	1.62	1.58	14.07	1.07	0.653
		50.0	1.015	0.455	3.913	1.27	1.25	10.90	1.01	0.739
		60.0	1.009	0.462	3.937	1.01	1.01	8.63	0.95	0.827
		70.0	1.002	0.469	3.954	0.82	0.82	6.92	0.89	0.918
		80.0	0.995	0.475	3.965	0.67	0.67	5.56	0.84	1.015
		90.0	0.987	0.480	3.970	0.54	0.54	4.44	0.79	1.124
		100.0	0.979	0.484	3.968	0.43	0.44	3.52	0.75	1.246
		110.0	0.970	0.487	3.960	0.34	0.35	2.75	0.70	1.389
120.0	0.961	0.489	3.945	0.26	0.27	2.11	0.65	1.557		
-20	40	-20.0	1.059	0.362	3.391	67.94	64.16	636.43	2.81	0.098
		-10.0	1.055	0.372	3.469	25.42	24.10	236.89	2.19	0.158
		0.0	1.050	0.382	3.541	11.97	11.40	110.94	1.81	0.229
		10.0	1.045	0.391	3.606	6.66	6.38	61.43	1.56	0.307
		20.0	1.039	0.400	3.664	4.19	4.04	38.43	1.38	0.387
		30.0	1.033	0.408	3.715	2.88	2.79	26.26	1.25	0.467
		40.0	1.027	0.415	3.760	2.11	2.06	19.11	1.15	0.546
		50.0	1.021	0.422	3.798	1.61	1.58	14.52	1.07	0.625
		60.0	1.014	0.429	3.829	1.27	1.25	11.33	1.00	0.704
		70.0	1.007	0.435	3.854	1.01	1.01	8.98	0.94	0.787
		80.0	0.999	0.440	3.872	0.81	0.81	7.14	0.89	0.876
		90.0	0.991	0.445	3.883	0.65	0.65	5.65	0.83	0.976
		100.0	0.983	0.450	3.887	0.51	0.52	4.40	0.78	1.092
110.0	0.974	0.453	3.884	0.39	0.40	3.35	0.73	1.233		
120.0	0.966	0.456	3.875	0.29	0.30	2.47	0.67	1.411		
-25	43	-20	1.063	0.356	3.323	74.56	70.17	696.02	2.88	0.092
		-10	1.058	0.365	3.405	29.27	27.67	273.06	2.27	0.146
		0	1.053	0.374	3.480	13.97	13.27	130.16	1.88	0.209
		10	1.047	0.382	3.548	7.75	7.40	72.03	1.62	0.280
		20	1.042	0.389	3.609	4.82	4.62	44.65	1.43	0.355
		30	1.036	0.397	3.663	3.26	3.15	30.14	1.29	0.431
		40	1.029	0.403	3.711	2.36	2.29	21.67	1.19	0.508
		50	1.023	0.410	3.751	1.78	1.74	16.29	1.10	0.584
		60	1.016	0.416	3.785	1.39	1.36	12.62	1.03	0.661
		70	1.008	0.421	3.812	1.10	1.09	9.94	0.97	0.740
		80	1.001	0.427	3.832	0.88	0.88	7.87	0.91	0.826
		90	0.993	0.431	3.845	0.70	0.70	6.20	0.85	0.922
		100	0.985	0.436	3.851	0.54	0.55	4.81	0.80	1.034
110	0.976	0.440	3.850	0.42	0.43	3.64	0.74	1.172		
120	0.967	0.443	3.843	0.31	0.32	2.66	0.68	1.347		

PEKASOL® FG

Frost-proof °C	Concentrate % by vol.	Temperature °C	Density g/cm³	Thermal conductivity W/m² K	Specific heat kJ/Kg K	dynam. viscosity mPa*s	cinemat. viscosity mm²/s	Prandtl number	relative pressure loss	rel. heat transfer coefficient
-30	47	-30	1.072	0.339	3.14	249.5	232.71	2308.15	3.92	0.05
		-20	1.067	0.347	3.233	86.12	80.69	802.37	3	0.084
		-10	1.062	0.354	3.318	35.76	33.66	334.94	2.40	0.129
		0	1.057	0.361	3.397	17.33	16.40	162.99	1.99	0.184
		10	1.051	0.368	3.469	9.55	9.08	89.99	1.71	0.247
		20	1.045	0.375	3.534	5.83	5.58	55.03	1.50	0.315
		30	1.039	0.381	3.591	3.87	3.73	36.50	1.35	0.386
		40	1.032	0.387	3.642	2.74	2.65	25.78	1.23	0.458
		50	1.025	0.393	3.686	2.03	1.98	19.08	1.14	0.531
		60	1.018	0.398	3.722	1.56	1.53	14.60	1.06	0.605
		70	1.011	0.403	3.752	1.22	1.21	11.39	0.99	0.681
		80	1.003	0.408	3.774	0.97	0.97	8.96	0.93	0.762
		90	0.995	0.413	3.790	0.77	0.77	7.03	0.87	0.853
		100	0.986	0.417	3.798	0.60	0.61	5.44	0.82	0.959
110	0.978	0.421	3.799	0.45	0.46	4.10	0.76	1.089		
120	0.969	0.425	3.794	0.33	0.34	2.97	0.69	1.257		
-40	54	-40	1.086	0.318	2.866	845.17	778.31	7614.09	5.37	0.027
		-30	1.081	0.323	2.972	300.97	278.52	2768.85	4.14	0.044
		-20	1.075	0.328	3.072	118.57	110.29	1110.32	3.26	0.069
		-10	1.069	0.333	3.164	52.06	48.69	494.75	2.65	0.103
		0	1.063	0.338	3.249	25.44	23.93	244.73	2.20	0.146
		10	1.057	0.343	3.326	13.75	13.00	133.49	1.88	0.197
		20	1.051	0.347	3.396	8.13	7.74	79.49	1.64	0.254
		30	1.044	0.352	3.459	5.19	4.98	51.06	1.46	0.316
		40	1.037	0.356	3.514	3.54	3.42	34.94	1.32	0.381
		50	1.029	0.361	3.562	2.55	2.47	25.15	1.21	0.448
		60	1.022	0.365	3.603	1.91	1.87	18.81	1.12	0.516
		70	1.014	0.370	3.636	1.47	1.45	14.44	1.04	0.586
		80	1.006	0.374	3.662	1.15	1.14	11.25	0.97	0.659
		90	0.998	0.378	3.681	0.90	0.91	8.80	0.91	0.740
100	0.989	0.382	3.692	0.71	0.71	6.81	0.85	0.831		
110	0.981	0.387	3.696	0.54	0.55	5.16	0.79	0.943		
120	0.972	0.392	3.370	0.45	0.46	3.56	0.72	1.050		
-50	60	-40	1.093	0.302	2.716	1272.5	1164.05	11428.16	5.98	0.021
		-30	1.087	0.306	2.827	444.47	408.77	4113.67	4.58	0.034
		-20	1.081	0.309	2.932	170.4	157.59	1618.37	3.58	0.055
		-10	1.075	0.312	3.028	72.48	67.43	703.71	2.89	0.084
		0	1.069	0.315	3.117	34.26	32.07	338.83	2.38	0.120
		10	1.062	0.319	3.199	17.91	16.87	179.85	2.02	0.164
		20	1.055	0.322	3.272	10.27	9.73	104.34	1.75	0.215
		30	1.048	0.325	3.338	6.38	6.09	65.47	1.54	0.270
		40	1.040	0.329	3.397	4.25	4.09	43.90	1.39	0.329
		50	1.033	0.333	3.448	3.00	2.90	31.08	1.26	0.390
		60	1.024	0.336	3.491	2.21	2.16	22.96	1.16	0.452
		70	1.017	0.340	3.527	1.69	1.66	17.50	1.08	0.515
		80	1.009	0.344	3.555	1.31	1.30	13.60	1.01	0.581
		90	1.000	0.347	3.575	1.04	1.04	10.67	0.95	0.650
100	0.992	0.351	3.588	0.82	0.82	8.34	0.88	0.728		
110	0.983	0.355	3.593	0.64	0.65	6.43	0.83	0.819		
120	0.974	0.359	3.591	0.48	0.50	4.83	0.77	0.931		

These data are derived from the pro KÜHLSOLE GmbH calculation program. Minor differences to values from other tables or diagrams of this data sheet may be the result of minor rounding deviations of the implemented calculation formula.

further products

for food-producing applications

prokuehlsole.de

Cleaning Additive

PEX FG

Anti-corrosion Additive

KOROSIN FG



pro KÜHLSOLE GmbH

Am Langen Graben 37
D-52353 Düren – Germany
Telefon +49 24 21/5 91 96-0
Telefax +49 24 21/5 91 96-10
eMail: info@prokuehlsole.de
www.prokuehlsole.de



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