

KORASILON® Fluids TT

Short description Low viscous, linear polydimethylsiloxanes particularly suitable as environmentally friendly cold- and heat transfer media.

Product properties **KORASILON® Fluids TT** belong to a range of special linear polydimethylsiloxanes for the use as heat transfer media showing the following technical characteristics:

- Highly environmentally friendly
- Low toxicity
- Low pour points and vapour pressures
- High flash points
- Good thermal stability
- Low chemical reactivity and good resistance to ageing
- Non-corrosive
- Odorless

Application Due to the viscosity behavior of **KORASILON® Fluids TT 3** and **TT 5** can be used in cooling systems down to approximately -70 °C, **KORASILON® Fluid TT 2** down to approximately -120 °C. By using specially designed equipment even lower application temperatures are possible with respect to the low pour point.

Due to slightly higher viscosities of **KORASILON® Fluids TT 10** and **TT 20** and with respect to slightly higher pour points, these fluids can easily be used down to -50 °C.

KORASILON® Fluids TT 2, TT 3 and **TT 5** can be used in pressureless systems up to 150 °C, whereas **KORASILON® Fluids TT 10** and **TT 20** can be used up to 180 °C.

At higher temperatures, **KORASILON® Fluids TT** can likewise be chemically altered by oxidizing media, such as air. An increase in fluid viscosity, and finally even gelling of the fluid owing to cross linking reactions may be observed.

Due to the chemically structure of geled fluids they are no longer soluble in common solvents suitable for polydimethylsiloxanes. Therefore the fluids should be exchanged early enough if viscosity increase is observed in order to avoid serious damage of the system.

In closed systems or in systems utilizing inert gas atmospheres application temperatures up to 300 °C may be achieved. However, it should be noted that under these conditions a de-polymerization of the fluids is possible. Besides the decrease of viscosity of the fluids the formation of low-molecular decomposition products is observed, leading to an increase of vapour pressure and a decrease of the flash point of the fluid

Contact with strong oxidizing media, acids, caustic solutions or contact with catalytically active substances has to be avoided.

Impurities

KORASILON® Fluids TT are shipped with a maximum water content of 50 ppm (< 50 mg water/kg **KORASILON® Fluids TT**) but due to their hygroscopicity they can absorb about 200 ppm water at room temperature. Contact with air moisture and water should be strongly avoided. With increasing water content, the cryonic temperature effect of the **KORASILON® Fluids TT** will be lost significantly. Absorbed

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moisture is precipitated with decreasing temperature (possibility of ice formation) of the fluids which can lead to a gradual thickening of the cold fluid and deterioration of the heat transfer. Apart from a degradation of the heat transition this may lead under unfavorable conditions to a complete blockage of the plant.

Any water absorbed by **KORASILON® Fluids TT** may be removed using suitable molecular sieves. Either the molecular sieve can be integrated as drying cartridge into the plant, or the fluid can be regenerated alternatively in regular intervals with the help of a suitable drying cartridge.

Monitoring KORASILON® Fluids TT

In the interest of the working reliability of the refrigerant plants we offer appropriate check measurements for the **KORASILON® Fluids TT** as service.

Thereby parameters like viscosity, refractive index, flash point and water content are measured. In case of interest in such monitoring measurements, please contact our sales department.

Based on the results of the monitoring measurements even a reprocessing of the **KORASILON® Fluids TT** may be discussed.

Effect on materials

KORASILON® Fluids TT are highly compatible to typical metals and alloys. Additionally they are compatible with a wide range of sealing or tubing materials; sealing or tubing material commonly used in cold and heat transfer installations are virtually not affected by the fluid at all.

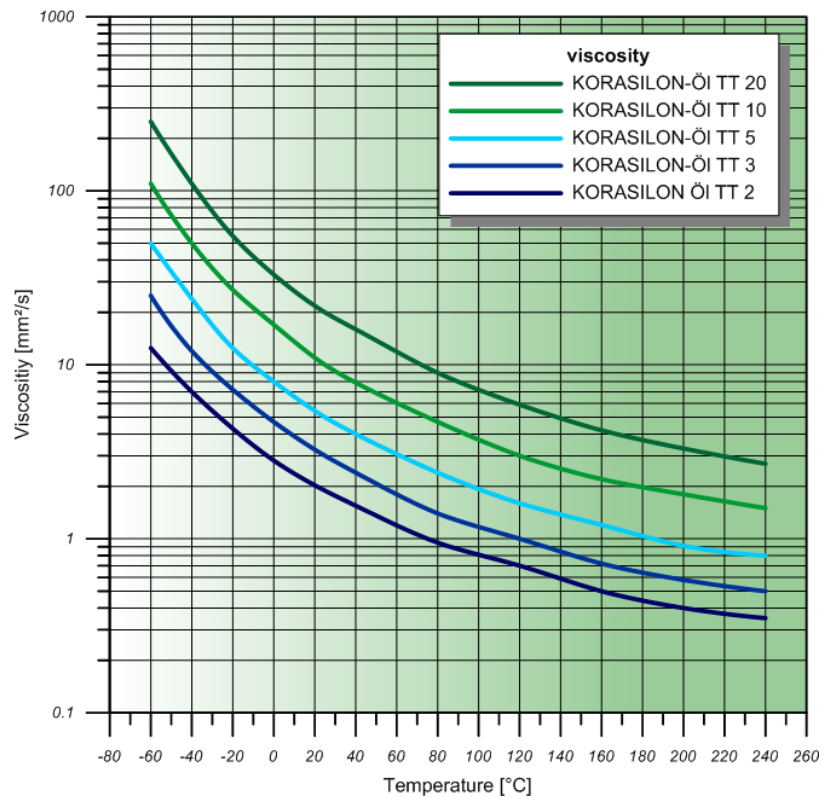
The only exceptions are seals or tubes manufactured from silicone rubber which are subjected to severe swelling and therefore not suitable for the use with silicone fluids.

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Technical data*

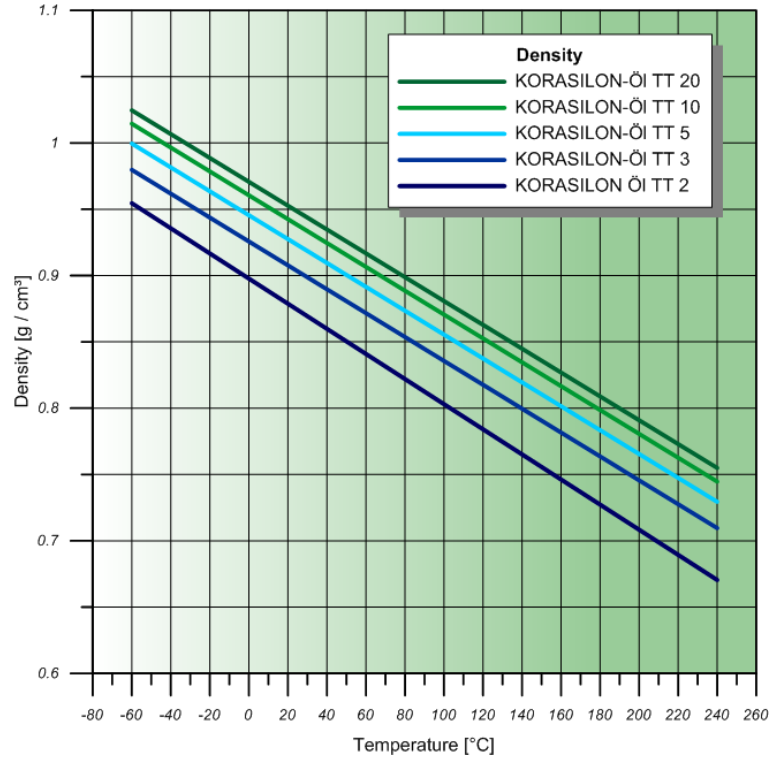
KORASILON® Fluids					
	TT 2	TT 3	TT 5	TT 10	TT 20
Chemical name	Linear polydimethylsiloxane				
Appearance	Colourless, clear fluid				
Water content	< 50 mg / kg silicon fluid				
Refractive index / 25 °C	1,391	1,394	1,396	1,398	1,401
Viscosity 25 °C / cSt	2	3	5	10	20
Pour point / °C	<-120	< -100	< -100	< -90	< -70
Flash point / °C	>+90	> +62	> +120	> +170	> +240
Burning point / °C	Approx. +110	Approx. +110	Approx. +160	Approx. +230	Approx. +290
Ignition temperature / °C	> +400	> +400	> +400	> +400	> +400
Mean coefficient of cubic expansion	124 [10 ⁻⁵ /K]	111 [10 ⁻⁵ /K]	108 [10 ⁻⁵ /K]	103 [10 ⁻⁵ /K]	101 [10 ⁻⁵ /K]

Viscosity as a function of temperature

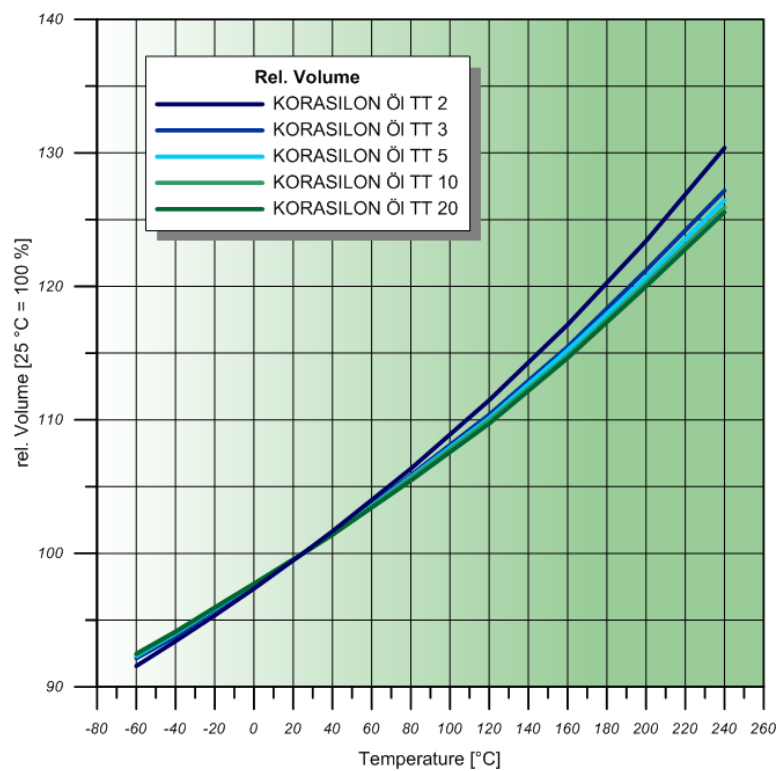


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Density as function of temperature

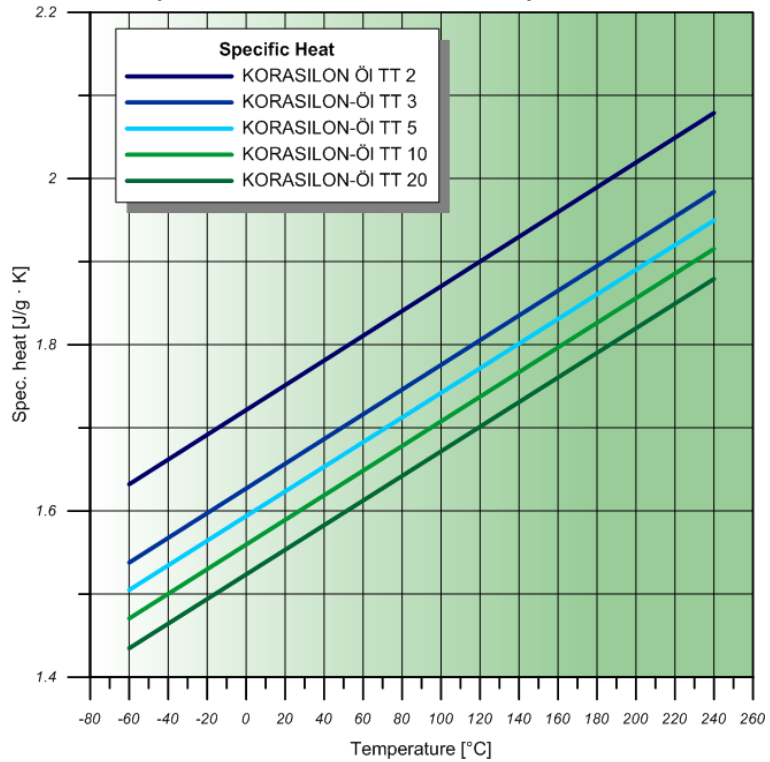


Relative volume as function of temperature

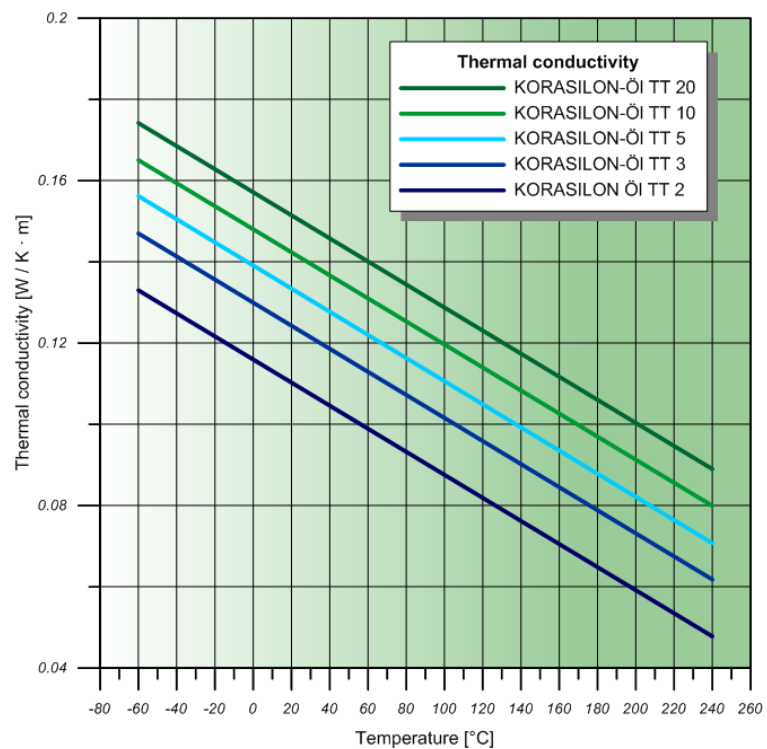


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Specific heat as function of temperature



Thermal conductivity as function of temperature



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Density as function of temperature

KORASILON® Fluids					
	TT 2	TT 3	TT 5	TT 10	TT 20
T/ °C	Density in g/mL				
-60	0,955	0,980	1,000	1,015	1,025
-40	0,936	0,963	0,982	0,997	1,007
-20	0,917	0,943	0,963	0,978	0,988
0	0,898	0,925	0,945	0,960	0,970
25	0,873	0,903	0,923	0,938	0,948
40	0,860	0,890	0,910	0,925	0,935
80	0,822	0,853	0,873	0,888	0,899
120	0,784	0,818	0,838	0,853	0,864
160	0,746	0,782	0,801	0,817	0,827
200	0,708	0,745	0,765	0,780	0,790
240	0,670	0,710	0,730	0,745	0,755

Viscosity as function of temperature

KORASILON® Fluids					
	TT 2	TT 3	TT 5	TT 10	TT 20
T/ °C	Viscosity in cSt				
-60	12,5	25	50	110	250
-40	7	12	24	50	110
-20	4,3	7,2	12,5	27	55
0	2,8	4,7	8,0	17	33
25	2,0	3,0	5,0	10	20
40	1,55	2,4	4,0	7,9	16
80	0,95	1,4	2,4	4,7	9,0
120	0,70	1,0	1,6	3,0	5,9
160	0,50	0,72	1,2	2,2	4,2
200	0,40	0,58	0,91	1,8	3,3
240	0,35	0,50	0,80	1,5	2,7

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Miscellaneous

On request, we offer the **KORASILON® Fluids TT** also in intermediate viscosities. Also the manufacturing of dyed variants is possible on request.

If interested, please ask our sales team.

Storage

KORASILON® Fluids TT have a shelf life of minimum **24** months if stored in tightly sealed original container at storage temperatures between **+5 °C** and **+40 °C**.

Storage beyond the date specified on the label does not necessarily mean that the product is no longer usable. In this case however, the properties required for the intended use must be checked for quality assurance reasons.

Further information on product safety and handling is given in the Material Safety Data Sheet.

This information and our technical advice – whether verbal, in writing or by way of trials – are given in good faith but without warranty, and this also applies where proprietary rights of third parties are involved. Our advice does not release you from the obligation to check its validity and to test our products as to their suitability for the intended processes and uses. The application, use and processing of our products and the products manufactured by you on the basis of our technical advice are beyond our control and, therefore, entirely your own responsibility. Our products are sold in accordance with our General Conditions of Sale and Delivery; this is not valid for our trial products

*Informative properties not intended to be used as product specification

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