

## Refrigerant and Heat Transfer Media

### Short description

Kurt Obermeier GmbH & Co. KG offers a wide range of different products for the use as heat transfer media which are tailored to the respective application.

### Product properties

#### Low temperature range

For low temperature range applications we recommend the use of the **KORASILON® fluids TT**. They belong to a range of special low viscosity linear polydimethylsiloxanes suited to be used at temperatures up to -90 °C due to their special characteristics. Please find more detailed information in the product information for this product range.

#### Medium temperature range

##### Open systems

**KORASILON® fluids of the M-product range** offer an ideal combination of pour points significantly below 0 °C with a long term thermal stability up to 150 °C without deterioration of the fluid. **KORASILON® fluids M** are clear, water-light, widely chemically inert, odorless, non-flammable and toxicologically harmless fluids. In delivered condition **KORASILON® fluids M** show good electrical insulating properties and are therefore especially suited for safety-critical equipment.

In general **KORASILON® fluids M** are suited to be used even at temperatures above 150 °C, but the use of these fluids above this temperature will lead to a gelling process due to the reaction with oxygen being indicated by an increase in viscosity. Operating these fluids for a longer period at elevated temperatures in open systems, leads to the formation of a glass-like solid being insoluble in most common acids or bases. As a guideline for realistic operation intervals the stability data of the **KORASILON® fluid M 100** in open systems can be used. This fluid can be used for 240 h at application temperatures of 250 °C whereas at 300 °C application temperature the period of use is lowered down to 24 h. An application temperature of 350 °C leads to a period of use of less than 1 h. For the use in open systems and elevated temperatures we recommend the use of **KORASILON® fluids HT** or of the **AM** as described below.

Experience has shown that under certain conditions partially gelling can also be observed although applying **KORASILON® fluids M** at temperatures well below 150 °C. The reasons for such behavior may be due to the contact with strong oxidizing agents, acids and alkalis, or with certain catalytic substances. Another reason may be significantly increased contact temperatures close to the heating units. It is therefore strongly recommended to limit the surface temperatures of the heating elements in order to prevent premature gelation of the fluid.

The application temperature can be increased up to 250 °C if the **KORASILON® fluids M** are used in closed systems or in systems operated under inert gas cover. However, it should be noted that at elevated temperatures a stepwise depolymerization may occur due to thermal stress under the exclusion of oxygen which is indicated by a decreasing viscosity. At the same time there is a risk that due to the formation of fragments of low molecular weight the flash-point of the fluid is lowered significantly. In the interest of sufficient operational safety it is advisable to check the viscosity and the flash-point in regular intervals. For the **KORASILON® fluids M** we offer these control measurements as customer service. In case of interest please contact our sales staff.

## Refrigerant and Heat Transfer Media

### Elevated temperature range

#### Open systems

The **KORASILON® fluids HT** are specially designed for use in open systems and at application temperatures of up to 300 °C. The **KORASILON® fluids HT** are based on the **KORASILON® fluids M**. In addition they contain a special additive to improve the thermal stability. The **KORASILON® fluids HT** are characteristically brown colored and are transparent to slightly cloudy fluids.

As an example, the increase in performance will be shown for a silicone fluid with a viscosity of 100 cSt. The period of use at 250 °C increases from 250 h to 400 h by using a stabilized **KORASILON® fluids HT** instead of a non-stabilized **KORASILON® fluid M**. At 300 °C the period of use increases from 24 h to 100 h by using the stabilized **KORASILON® fluid HT**. If interested in the **KORASILON® fluids HT**, please request additional information for this product line from our sales staff.

As an alternative to the **KORASILON® fluids HT**, **KORASILON® fluids AM** can be used at elevated temperatures. For example, **KORASILON® fluid AM 302** can be used in open systems and at temperatures of 200 °C without any problems and even at 250 °C a period of use of about 1500 h can be achieved. For the use as heat transfer media, we recommend the use of **KORASILON® fluids AM** with a high content of aryl-groups. For more detailed information please refer to the separately available information about the products of the **fluids AM**. Unlike the products of **KORASILON® fluids HT**, the **AM fluids** are odorless, colorless, water-light, clear liquids, which are characterized by their improved resistance to strong oxidizing agents and improved resistance against radiation.

Based on selected products of the **KORASILON® fluids AM**, we offer for specialized applications the **KORASILON® fluids HT-A**. These fluids are stabilized and characteristically brown-colored. These fluids show the highest thermal stability of the **KORASILON®** heat transfer media product range when used in open systems as shown in figure 1.

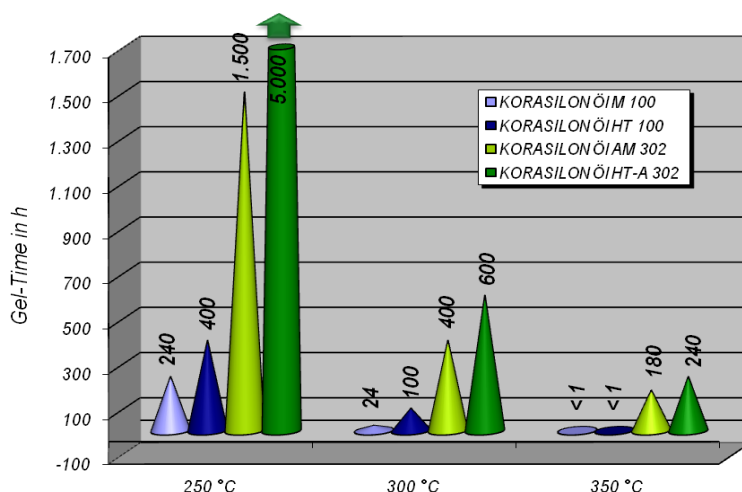


Figure 1: Thermal stability of the **KORASILON® fluids**

More details are available in the information material about the products of the **KORASILON® fluids HT** which is available on request from our sales staff.

## Refrigerant and Heat Transfer Media

### Closed Systems

The **KORASILON® fluids AM** can be used at temperatures up to 400 °C in closed systems or with thermal systems protected by inert gas. Preferably for this temperature range is the use of **KORASILON® fluids AM** with high aryl content. For a detailed product description please refer to the separately available product data sheet. However, it should be noted that a stepwise depolymerization can occur due to thermal stress under the exclusion of air which is indicated by a decreasing viscosity. At the same time there is a risk that due to the formation of fragments of low molecular weight the flash-point of the fluid is lowered significantly. In the interest of sufficient operational safety it is advisable to check the viscosity and the flash-point in regular intervals. For the **KORASILON® fluids AM**, we offer these control measurements as customer service. In case of interest please contact our sales staff.

### High Temperature Applications

#### Closed Systems

As an addition to the heat transfer media described above, we offer the Diphyl-range from Lanxess for the use in closed pressurized systems or closed pressureless systems. These products are silicone free and are based on different mixtures on the basis of complex Phenylsystems and corresponding phenyl ethers. The recommended uses for the products of the Diphyl-range are listed in table 1.

Table 1: Recommended uses for the products of the Diphyl-range

	Composition	Pour Point approx. in °C	Boiling Point approx. in °C	flash-point <sup>1)</sup> approx. in °C	Operating conditions approx. in °C	Max. film temp. in °C
<i>Diphyl® DT</i>	Ditolylether	-54	290	135	-30 to +330 <sup>2)</sup>	ca. 340 °C <sup>2)</sup>
<i>Diphyl® THT</i>	Terphenyl Polyphenyle (part. hydrated) Terphenyl (hydrated)	-33	352	190	0 to +345	ca. 370 °C <sup>2)</sup>
<i>Diphyl®</i>	Diphenyl+Diphenyloxid 1:3	13	257	115	13 to +400 <sup>2)</sup>	ca. 410 °C <sup>2)</sup>

1) A use in closed systems with inert gas cover is recommended due to the flash-points

2) The maximum application temperature can only be achieved by using overpressure or if the use of vaporous heat transfer media is applicable

Please contact our sales staff for more detailed product information for this product range.

### Selection guide – Open systems

Table 2: Selection guide – Open systems

	<0° C <sup>1)</sup>	<150 °C	<250 °C	>250 °C
KORASILON TT-range	+++	+++	#	#
KORASILON M-range	++	+++	++	+
KORASILON AM-range	++	+++	+++	++
KORASILON HT-range	+	+++	+++	++
KORASILON HT-A-range	+	+++	+++	+++
Diphyl-range	#	#	#	#

#### Legend:

+++ - recommended

++ - limited recommended (possibility of less stability)

+ - limited recommended (possibility of much less stability)

# - not recommended

1) The actually achievable temperatures are depending on the viscosity of the product

## Refrigerant and Heat Transfer Media

### Selection guide – Closed systems

Table 3: Selection guide – Closed systems

	< 0° C <sup>1)</sup>	<150 °C	<250 °C	>250 °C
KORASILON TT-range	+++	+++	++	#
KORASILON M-range	++	+++	+++	++
KORASILON AM-range	++	+++	+++	+++
KORASILON HT-range	2)	2)	2)	2)
KORASILON HT-A-range	2)	2)	2)	2)
Diphyl-range	+	++	+++	+++

- Legend:
- +++ - recommended
  - ++ - limited recommended (possibility of less stability)
  - + - limited recommended (possibility of much less stability)
  - # - not recommended
  - 1) The actually achievable temperatures are depending on the viscosity of the product
  - 2) There is currently no experience data for this application

### Application

Notes on the material compatibility and appropriate handling instructions can be found in the product data sheets for the various product groups.

### Safety recommendations

Please also observe the available product information and the corresponding material safety data sheets for individual products.

### Product data

See individual data sheets.

### Shelf Life and storage conditions

See individual data sheets.

### Miscellaneous

Apart from a large range of standard products for use as heat transfer media, we also provide customized solutions on request. If interested, please contact our sales staff.

## Refrigerant and Heat Transfer Media

**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

**Kurt Obermeier GmbH, Berghäuser Str. 70, D-57319 Bad Berleburg Tel.: +49 2751/524-0,  
Fax.: +49 2751/5041, email: [info@obermeier.de](mailto:info@obermeier.de) [www.obermeier.de](http://www.obermeier.de)**