



LAUDA

HEAT TRANSFER LIQUIDS AND ADDITIVES

°FAHRENHEIT. °CELSIUS. °LAUDA.

# INTRODUCTION

LAUDA constant temperature equipment consists of highly precise machines that are optimally designed for temperature control. This includes precise control when approaching the setpoint, maintaining a constant value, and command of change when dynamically moving between setpoints. This precision can only be achieved in conjunction with a heat transfer liquid that harmonizes perfectly with the equipment and is also approved for the required temperature range.

The selection of the correct heat transfer liquid is also crucial for the efficiency of the heat transfer. In this respect, the working temperature range is usually the most important selection criterion. LAUDA heat transfer liquids can be used in a temperature range from -95 to 350 °C. Their heat transfer properties have been tested with LAUDA devices.

Apart from water, the product range includes water-glycol mixtures and polyethylene glycol, as well as mineral and silicone oils.

LAUDA offers optimized heat transfer liquids for both heating and cooling applications.

Heat transfer liquids for temperatures above 0°C are designated with the name ›Therm‹. Liquids that can also be used below 0°C bear the name ›Kryo‹. The suffixed number indicates the minimum temperature for ›Kryo‹ and the maximum temperature for ›Therm‹.



**Therm**



**Kryo**

Always follow the operating manual for the individual product lines to ensure smooth interaction between the heat transfer liquid and the device. Maintenance and fluid change intervals must be complied to guarantee optimum operation with reproducible results.

Please refer to the price list for the prices of individual temperature control media. Safety data sheets and technical product data sheets for our temperature control media can be found in the download center on our website at

[www.lauda.de](http://www.lauda.de)

LAUDA is certified in accordance with the DIN ISO 14001 environmental management system standard. LAUDA is committed to using heat transfer liquids with the lowest possible environmental impact and is constantly working on optimizing its product range according to the latest technologies.

# LAUDA PRODUCT LINES

The table below shows the appropriate heat transfer liquids for each product line. Not all heat transfer liquids can be used for all product lines. When selecting a heat transfer liquid, the working temperature, the information in the operating manual and application specific features need to be observed.

## Notes

- Never use contaminated heat transfer liquids. Contamination of the pump chamber can lead to blocking of the pump and thus to shutdown of the device.
- Never mix different heat transfer liquids together, even if the substance class or the chemical characterization is identical.

Product line	Aqua 90	Therm 160	Therm 180	Therm 250	Ultra 301	Ultra 350	Kryo 20	Kryo 30	Kryo 51	Kryo 60	Kryo 65	Kryo 70 A	Kryo 95	Refrifluid 1	Refrifluid 5
Alpha	●	-	-	-	-	-	-	●	-	-	-	-	-	-	-
ECO	●	●	●	●	●	-	●	●	●	-	-	-	-	-	-
PRO	●	●	●	●	●	-	●	●	●	●	-	-	●	-	-
Microcool	●	-	-	-	-	-	-	●	-	-	-	-	-	-	-
Ultracool	-	-	-	-	-	-	-	-	-	-	-	-	-	●	●
LOOP	●	-	-	-	-	-	-	●	-	-	-	-	-	-	-
Variocool	●	-	-	-	-	-	-	●	-	-	-	-	-	-	-
Integral T	●	-	-	-	●	●	●	●	●	-	-	-	-	-	-
Integral XT	-	-	-	-	●	●	-	●	-	-	●	●	-	-	-
Integral P	-	-	-	-	-	-	-	●	-	-	-	-	-	-	-

- = Approved for product line
- = Limited approval for the product line. Please check the specification
- = Not approved for product line

The following table gives an overview to our LAUDA Heat transfer liquids and water additives with available part numbers depending on volume.

When ordering the heat transfer liquid, please take into account the filling volume of the constant temperature equipment, as well as the volume of the external circuit, if applicable.

Attention: some media have different temperature ranges depending on the device (open or closed systems).

Heat transfer fluid / Chemical substance class	Temperature range for open/half-open systems						Temperature range for closed systems with cold oil overlay						Part Number 5 L / 10 L / 20 L	
	-100 °C	-50 °C	0 °C	100 °C	200 °C	300 °C	-100 °C	-50 °C	0 °C	100 °C	200 °C	300 °C		
<b>Aqua 90</b> Water Page 6			5 °C	■		90 °C								LZB 120 / 220 / 320
<b>Therm 160</b> Polyethylene glycol Page 8			60 °C	■		160 °C								LZB 106 / 206 / 306
<b>Therm 180</b> Silicone oil Page 10			0 °C	■		180 °C								LZB 114 / 214 / 314
<b>Therm 250</b> Silicone oil Page 12			50 °C	■		250 °C								LZB 122 / 222 / 322
<b>Ultra 301</b> Mineral oil Page 14			40 °C	■		230 °C			40 °C	■		300 °C		LZB 153 / 253 / 353
<b>Ultra 350</b> Mineral oil Page 16			30 °C	■		200 °C			30 °C	■		350 °C		LZB 107 / - / -

In open systems the heat transfer liquid is in direct contact with ambient air. Half-open systems are units with a bath opening and a bath cover (e. g. water baths, cooling thermostats).

In closed systems with cold oil overlay the thermally active heat transfer medium does not come into contact with ambient air (e. g. LAUDA Integral XT).

## Water additives

LAUDA offers additives for improving performance in combination with water. Refer to the table for the recommended dosage.

Additives:	Usage:	Dose recommendation:	Part Number
<b>Algizide Aquastab</b> Page 36	For the prevention and control of algae formation	5 ml / 10 L Water	LZB 929 (100 ml Btl.) LZB 429 (1 L bottle) LZB 129 (5 L can)
<b>Decalcifier</b> Page 36	Citric acid based decalcifier	100 g / 1 L Water	LZB 126 (5 kg can)
<b>HTFP Foodgrade Additive</b> Page 37	Antifreeze and corrosion inhibitor concentrate for the food and pharmaceutical industry	100 ml / 1 L Water	E7011860 (2 L bottle) E7011862 (8 L bottle)
<b>Refrifluid B</b> Page 37	Concentrated bactericide and anticorrosive additive	2 L / 100 L Water	E7011852 (2 L bottle) E7011854 (8 L bottle)



The recommended working temperature range gives you the lowest and the highest temperature for the use of the respective heat transfer medium.

At the lower limit of the temperature range of the heat transfer fluid, a degradation of the temperature control properties is to be expected due to the increasing viscosity. At the upper limit of the heat transfer fluid, increased thermal decomposition is to be expected.

Heat transfer fluid / Chemical substance class	Temperature range		Part Number 5L/10L/20L
	for open/half-open systems	for closed systems with cold oil overlay	
	-100°C -50°C 0°C 100°C 200°C 300°C	-100°C -50°C 0°C 100°C 200°C 300°C	
<b>Kryo 20</b> Silicone oil Page 18	-20°C — 170°C		LZB 116 / 216 / 316
<b>Kryo 30</b> Water/antifreeze Page 20	-30°C — 90°C	-30°C — 90°C	LZB 109 / 209 / 309 / LZB 809 (200 L barrel)
<b>Kryo 51</b> Silicone oil Page 22	-50°C — 120°C		LZB 121 / 221 / 321
<b>Kryo 60</b> Silicone oil Page 24	-60°C — 60°C		LZB 102 / 202 / 302
<b>Kryo 65</b> Mineral oil Page 26		-65°C — 140°C	LZB 118 / 218 / 318
<b>Kryo 70 A</b> Silicone oil Page 28		-70°C — 220°C	LZB 131 / 231 / 331
<b>Kryo 95</b> Silicone oil Page 30	-95°C — 60°C	-95°C — 160°C	LZB 130 / 230 / 330
<b>Refrifluid 1</b> Water/antifreeze Page 32	-7°C — 90°C		E7012402 (25 L) / E7012404 (50 L) / E7012406 (100 L)
<b>Refrifluid 5</b> Water/antifreeze Page 34	-10°C — 90°C		E7012502 (25 L) / E7012504 (50 L) / E7012506 (100 L)

In open systems the heat transfer liquid is in direct contact with ambient air. Half-open systems are units with a bath opening and a bath cover (e. g. water baths, cooling thermostats).

In closed systems with cold oil overlay the thermally active heat transfer medium does not come into contact with ambient air (e. g. LAUDA Integral XT).

# AQUA 90



## Features

- Water-based heat transfer liquid, stabilized against contamination
- Ideal for applications in open temperature control systems for non-flammable liquids

## Notes

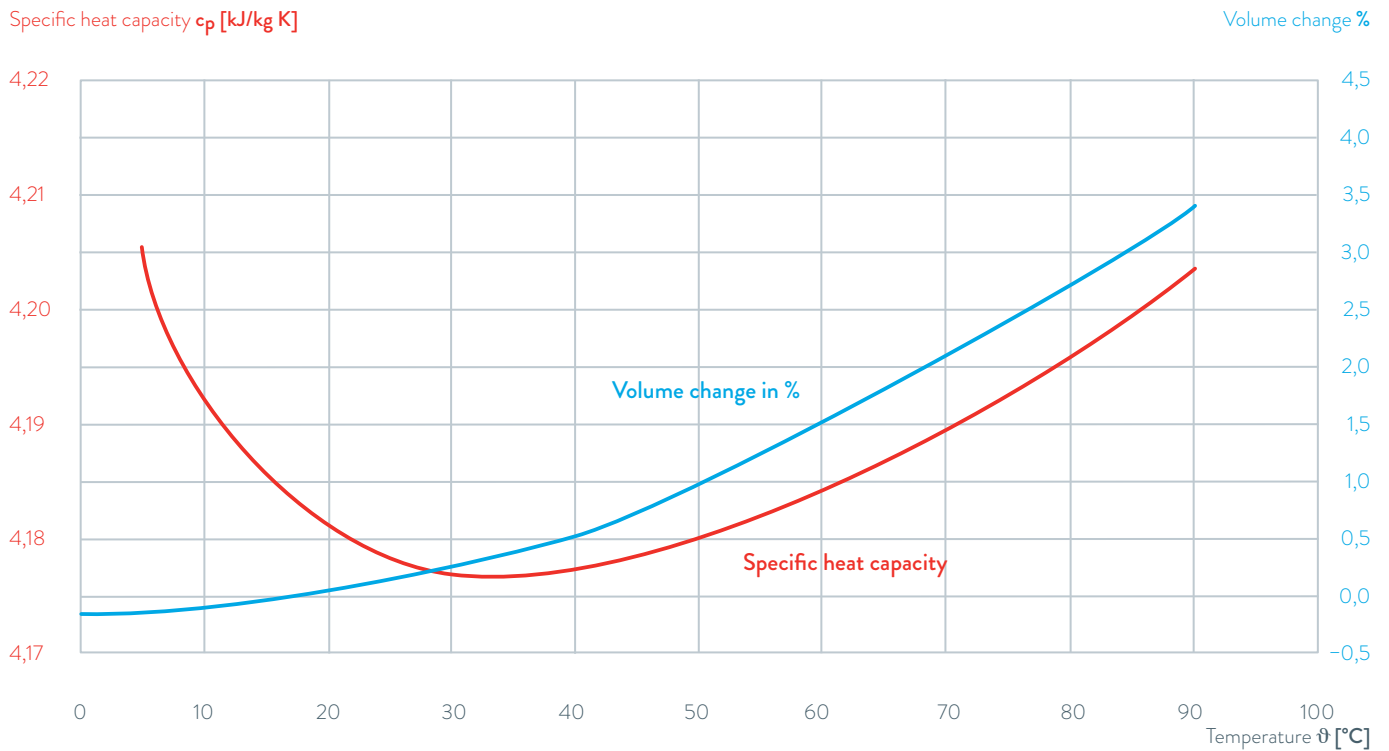
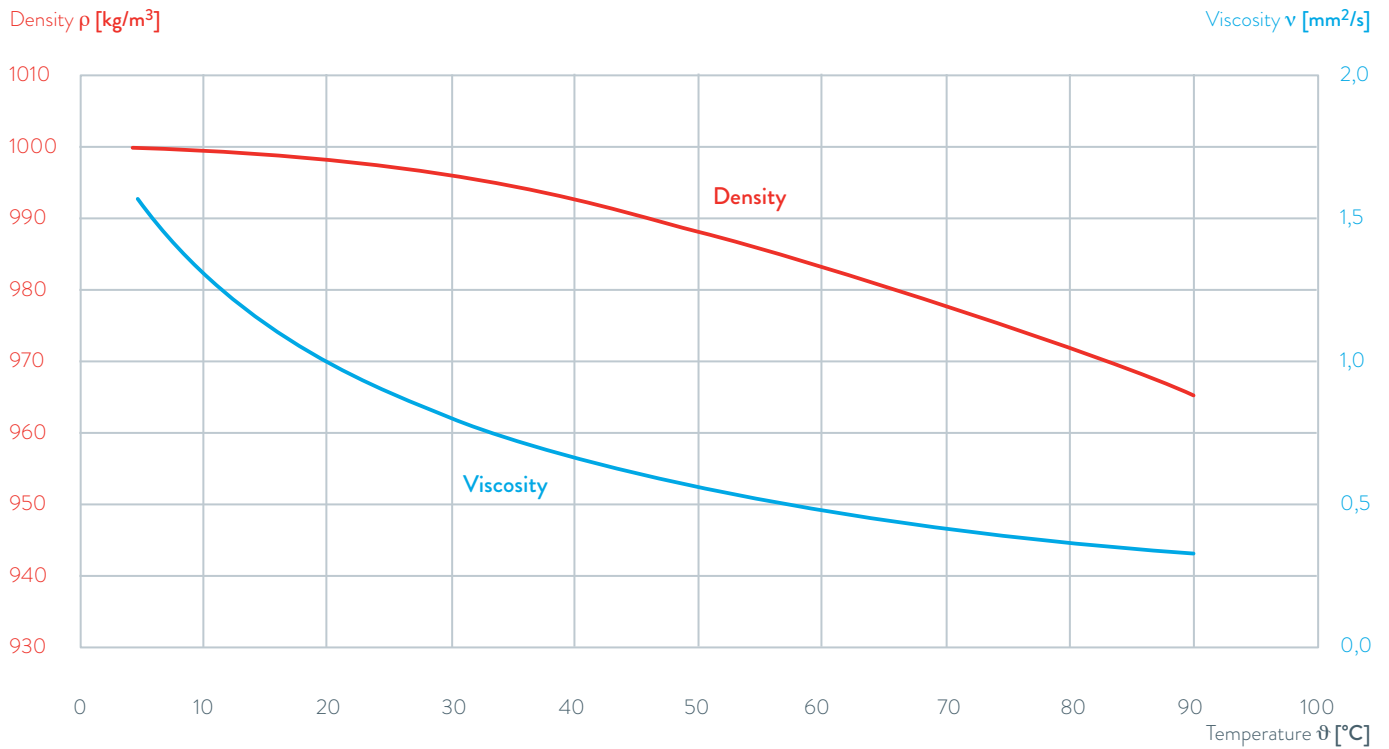
- Aqua 90 contains no corrosion inhibitors. Materials based on aluminum or galvanized surfaces can therefore be corroded by atmospheric oxygen.
- For our Integral product line, water or Aqua 90 are approved liquids only for models Integral IN 130 T and IN 230 T(W), there is no approval for any other Integral IN device.

## Technical Features

Recommended temperature range for open systems	5...90 °C
Chemical characterisation	Aqueous solution of organic, bacteriostatic and fungistatic compounds
Color	Blue, clear
Viscosity, kinematic at 20 °C	1 mm <sup>2</sup> /s
Density at 20 °C	998 kg/m <sup>3</sup>
Boiling point	100 °C
Water solubility	Completely soluble
Material incompatibility	No known incompatibility with other materials
Part Number 5 L	LZB 120
Part Number 10 L	LZB 220
Part Number 20 L	LZB 320

# AQUA 90

## Physical properties



Please pay attention to the safety precautions and hazard statements before use.

The concerning safety data sheet and the product data sheet can be downloaded under [www.lauda.de](http://www.lauda.de) or requested directly from us.

# THERM 160



## Features

- Heat transfer liquid for use in baths or open temperature control circuits
- Advantage of cold water solubility in measurement and calibration applications
- Conforms with REACH and RoHs

## Notes

- Cannot be used with bath vessels made of polycarbonate.

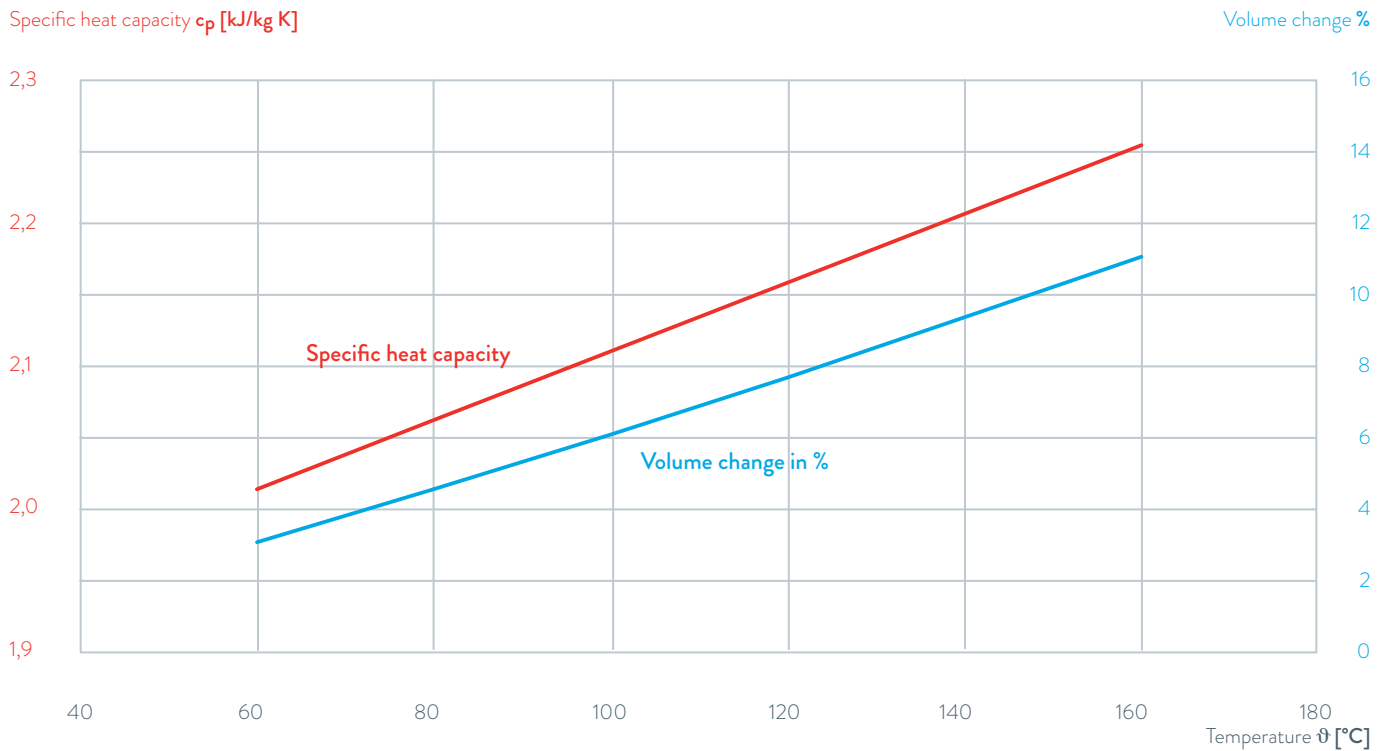
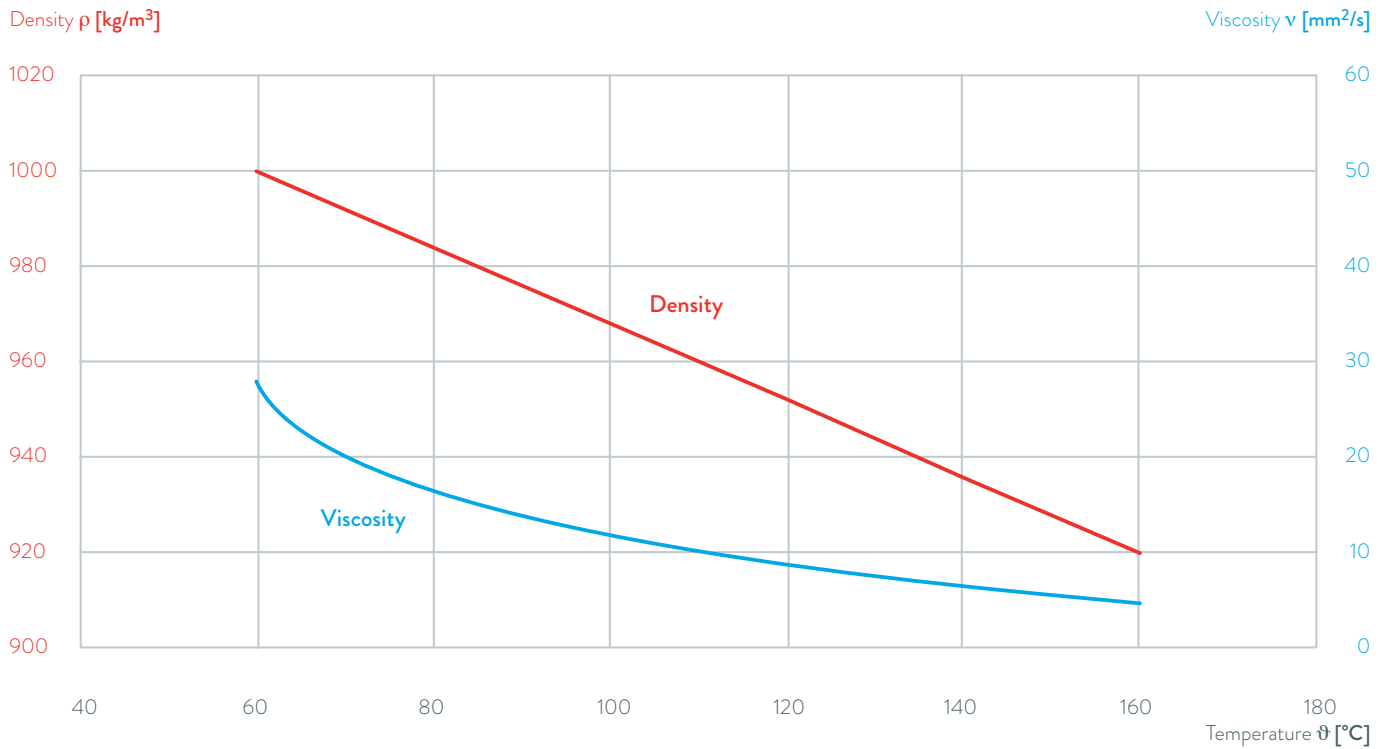
## Technical Features

Recommended temperature range for open systems	60...160 °C
Chemical characterisation	Polyalkylene glycol and additives
Color	Light green - colorless
Viscosity, kinematic at 20 °C	141 mm <sup>2</sup> /s
Density at 20 °C	1034 kg/m <sup>3</sup>
Solidifying point	< -36 °C
Flash point	> 260 °C
Boiling point	> 200 °C decomposition
Ignition temperature	> 320 °C
Water solubility	Soluble in cold water
Material incompatibility	Non-ferrous metals, Polycarbonate
Part Number 5 L	LZB 106
Part Number 10 L	LZB 206
Part Number 20 L	LZB 306



# THERM 160

## Physical properties



Please pay attention to the safety precautions and hazard statements before use.

The concerning safety data sheet and the product data sheet can be downloaded under [www.lauda.de](http://www.lauda.de) or requested directly from us.

# THERM 180



## Features

- Heat transfer liquid for use in baths or open temperature control circuits
- Colorless heat transfer liquid, enables visual control during temperature control
- Chemically inert and environmentally friendly synthetic silicone oil
- Noncorrosive
- Conforms with REACH and RoHs

## Notes

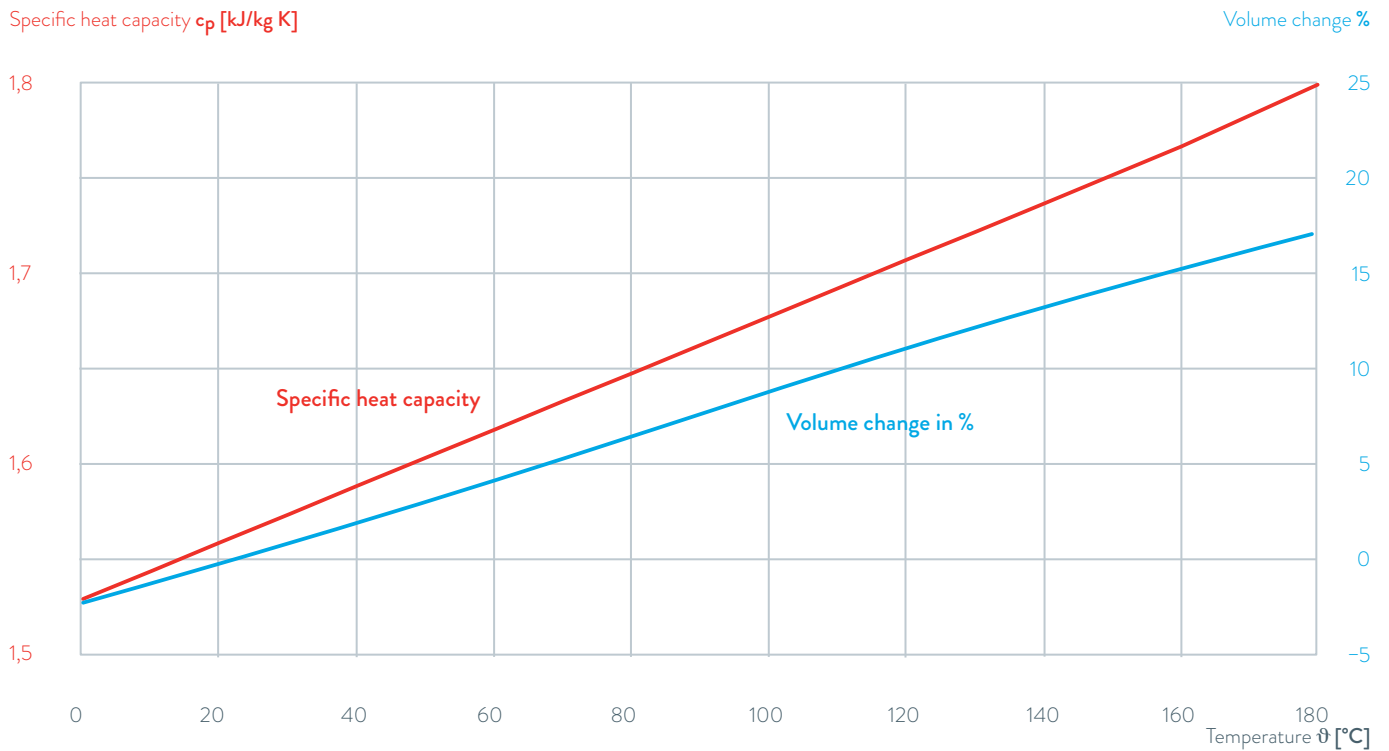
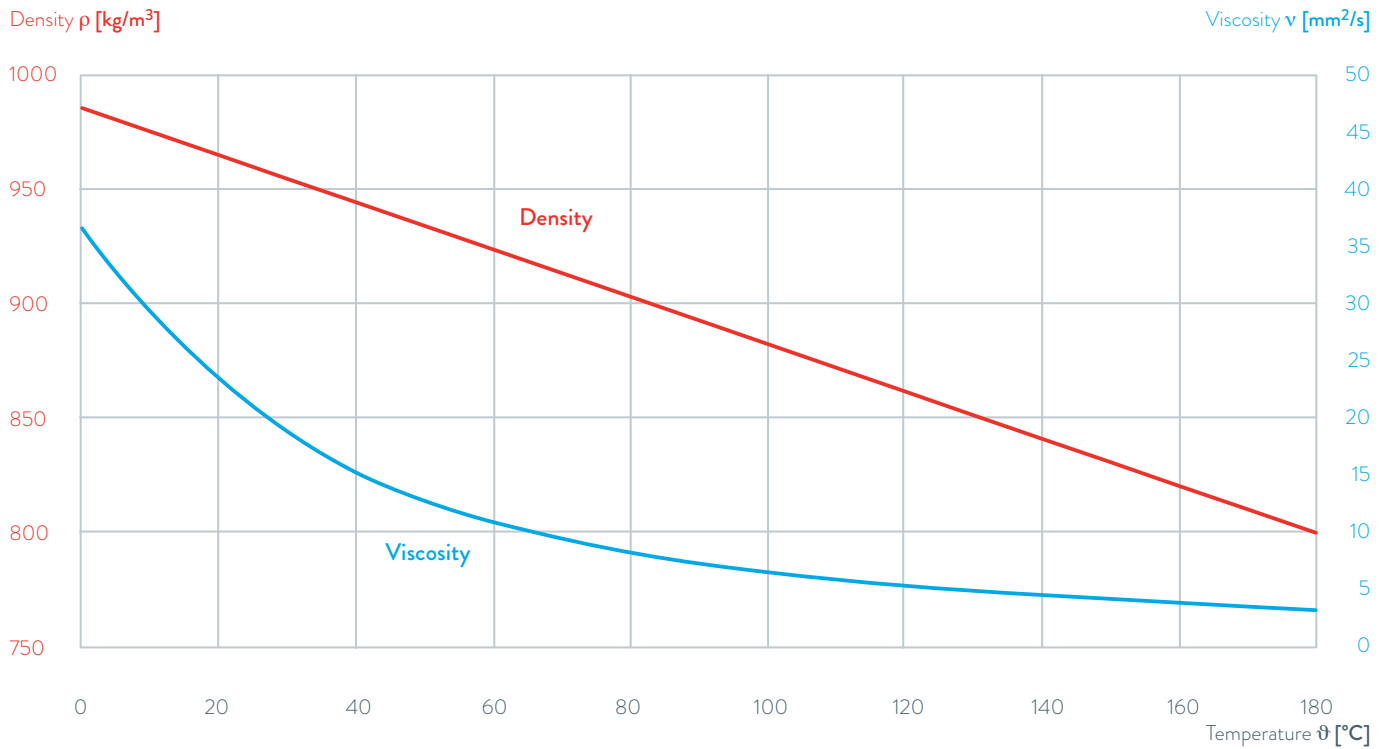
- IMPORTANT: silicone tubing is not allowed to use with silicone oils.

## Technical Features

Recommended temperature range for open systems	0 ... 180 °C
Chemical characterisation	Polydimethylsiloxane
Color	Colorless
Viscosity, kinematic at 20 °C	23 mm <sup>2</sup> /s
Density at 20 °C	950 kg/m <sup>3</sup>
Solidifying point	< -60 °C
Flash point	> 240 °C
Boiling point	≥ 200 °C
Ignition temperature	> 400 °C
Water solubility	Insoluble
Solvent	Petrol, Acetone, Alcohols
Material incompatibility	Silicone
Part Number 5 L	LZB 114
Part Number 10 L	LZB 214
Part Number 20 L	LZB 314

# THERM 180

## Physical properties



Please pay attention to the safety precautions and hazard statements before use.

The concerning safety data sheet and the product data sheet can be downloaded under [www.lauda.de](http://www.lauda.de) or requested directly from us.

# THERM 250



## Features

- Heat transfer liquid for use in baths or open temperature control circuits
- Thermally stabilized, for use at temperatures above 200 °C
- Chemically inert and environmentally friendly synthetic silicone oil
- Colorless heat transfer liquid, enables visual control during temperature control
- Noncorrosive
- Conforms with REACH and RoHs

## Notes

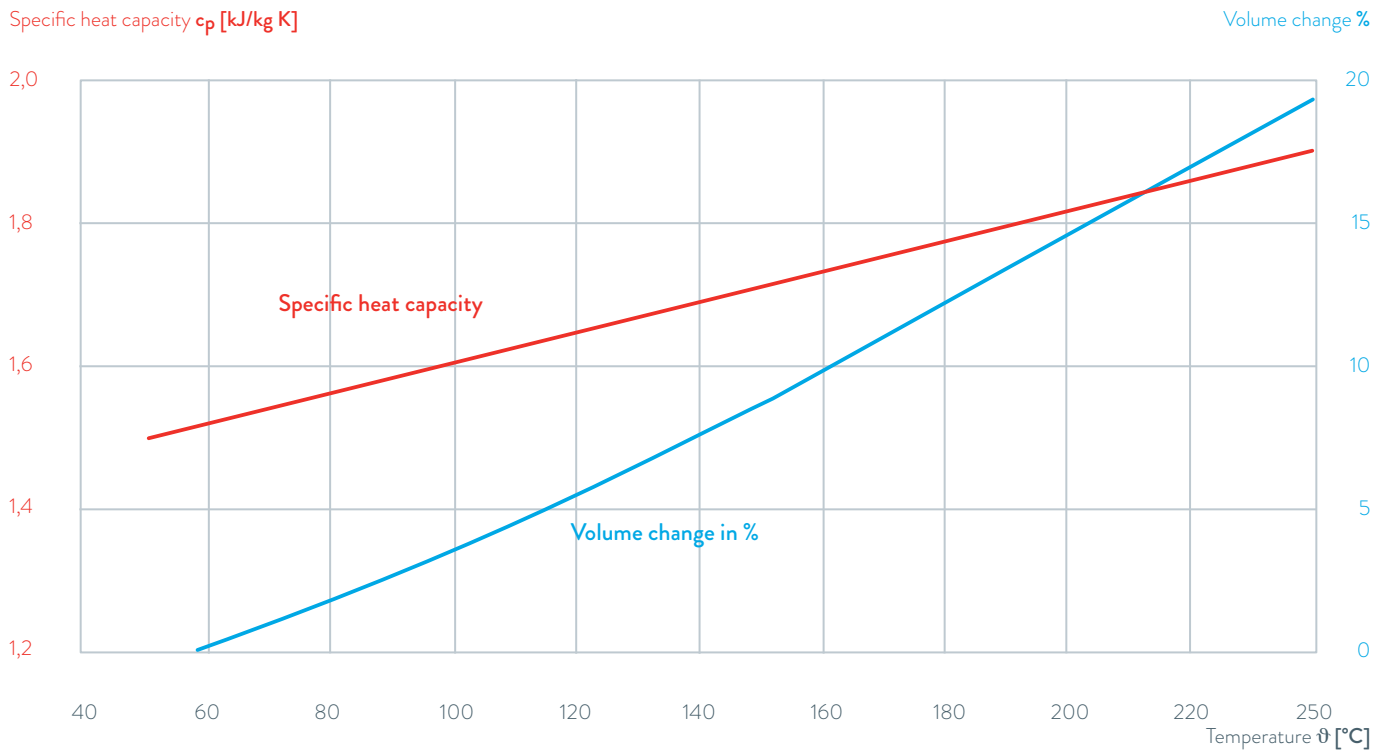
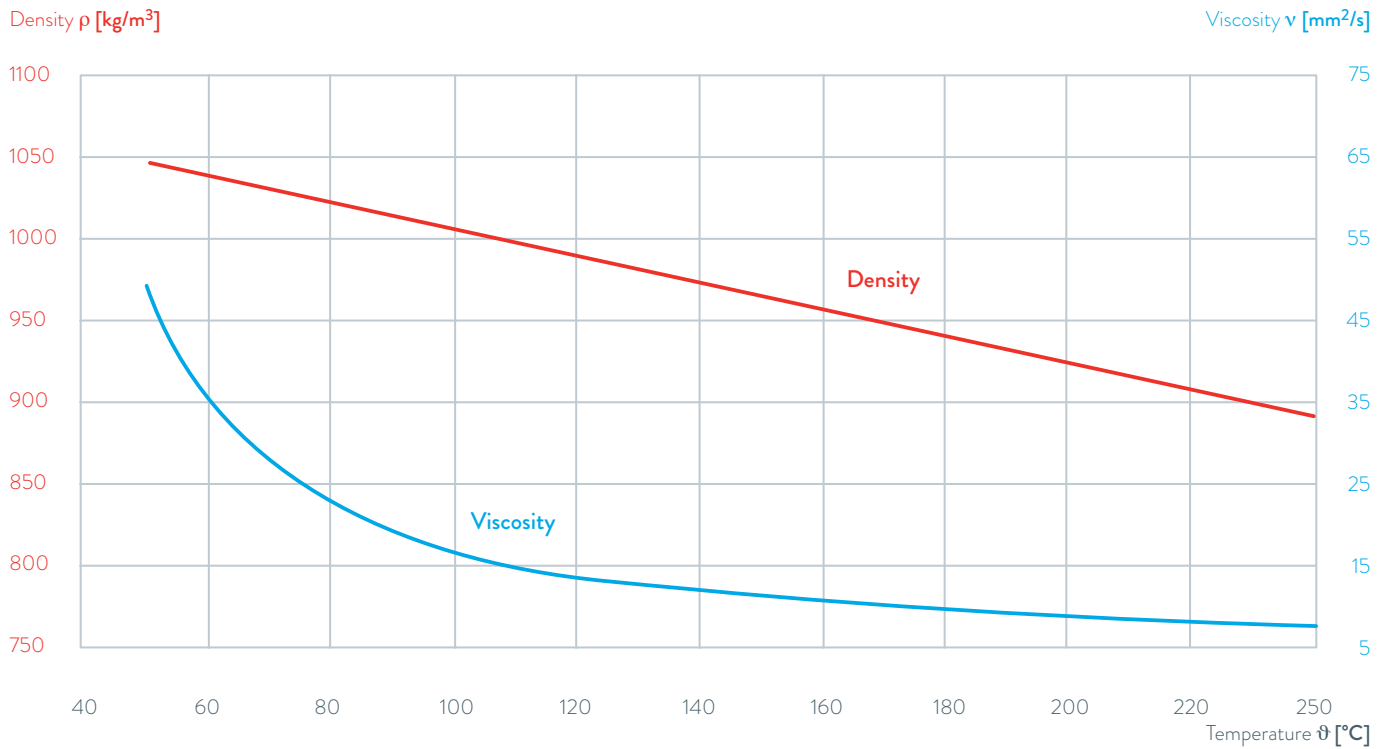
- IMPORTANT: silicone tubing is not allowed to use with silicone oils.

## Technical Features

Recommended temperature range for open systems	50...250 °C
Chemical characterisation	Polymethylphenylsiloxane
Color	Colorless
Viscosity, kinematic at 20 °C	158 mm <sup>2</sup> /s
Density at 20 °C	1065 kg/m <sup>3</sup>
Solidifying point	< -50 °C
Flash point	> 300 °C
Boiling point	≥ 260 °C
Ignition temperature	> 400 °C
Water solubility	Insoluble
Solvent	Petrol, Acetone, Alcohols
Material incompatibility	Silicone
Part Number 5 L	LZB 122
Part Number 10 L	LZB 222
Part Number 20 L	LZB 322

# THERM 250

## Physical properties



Please pay attention to the safety precautions and hazard statements before use.

The concerning safety data sheet and the product data sheet can be downloaded under [www.lauda.de](http://www.lauda.de) or requested directly from us.

# ULTRA 301



## Features

- Heat transfer liquid for temperatures up to over 300 °C
- Silicone-free liquid, ideal for surface-sensitive applications
- The safety data sheet must be observed for uses in bath thermostats

## Notes

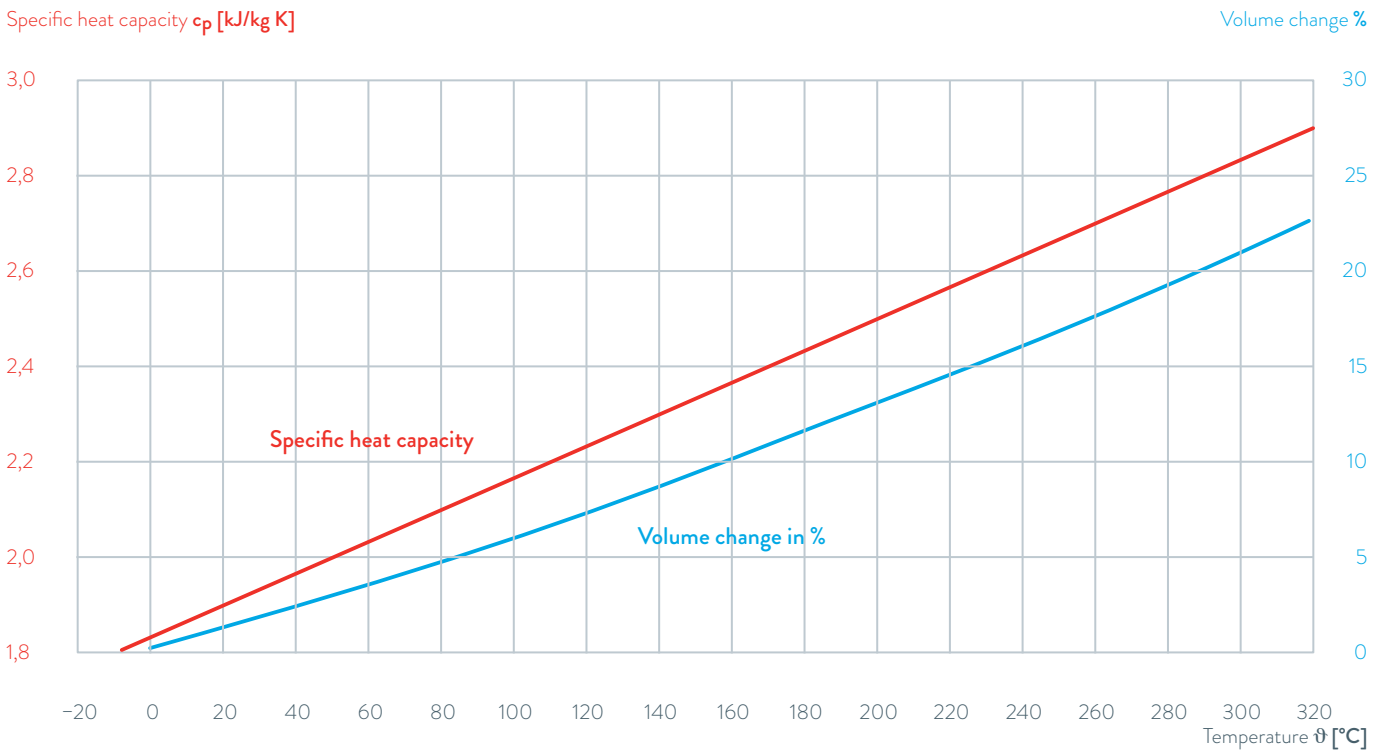
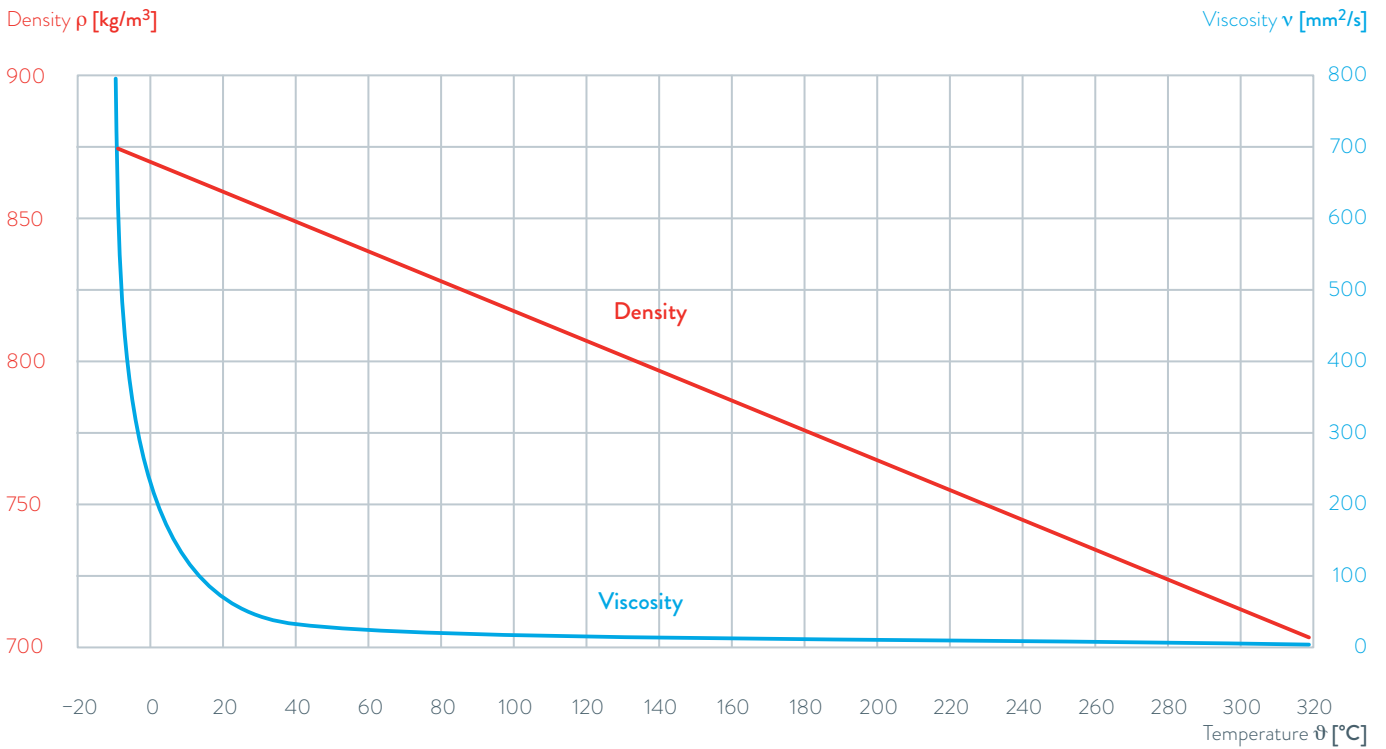
- Please note the different temperature ranges for open and closed systems.
- We recommend an overlay of nitrogen if using Ultra 301 in open systems.

## Technical Features

Recommended temperature range for open systems	40...230 °C
Recommended temperature range for closed systems	40...300 °C
Chemical characterisation	White mineral oil
Color	Colorless
Viscosity, kinematic at 20 °C	76.5 mm <sup>2</sup> /s
Density at 20 °C	858 kg/m <sup>3</sup>
Solidifying point	-18 °C
Flash point	245 °C
Ignition temperature	330 °C
Water solubility	Insoluble
Solvent	Petrol, Acetone
Material incompatibility	No known incompatibility with other materials
Part Number 5 L	LZB 153
Part Number 10 L	LZB 253
Part Number 20 L	LZB 353

# ULTRA 301

## Physical properties



Please pay attention to the safety precautions and hazard statements before use.

The concerning safety data sheet and the product data sheet can be downloaded under [www.lauda.de](http://www.lauda.de) or requested directly from us.

# ULTRA 350



## Features

- Heat transfer liquid for temperatures up to over 300 °C
- The liquid is a hazardous substance
- The safety data sheet must be observed for uses in bath thermostats

## Notes

- Use Ultra 350 for the Integral high-temperature thermostats.
- Please note the different temperature ranges for open and closed systems.
- IMPORTANT: EPDM tubing is not allowed to use with Ultra 350.

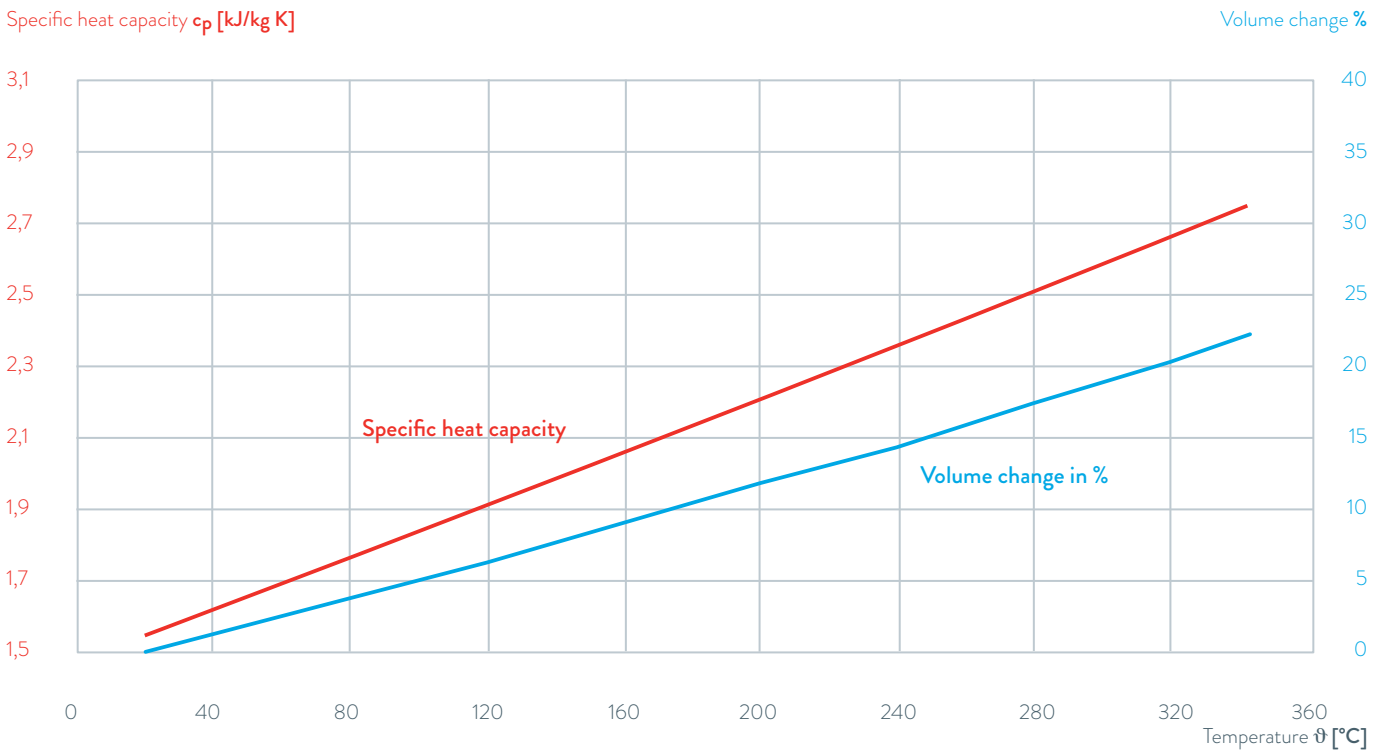
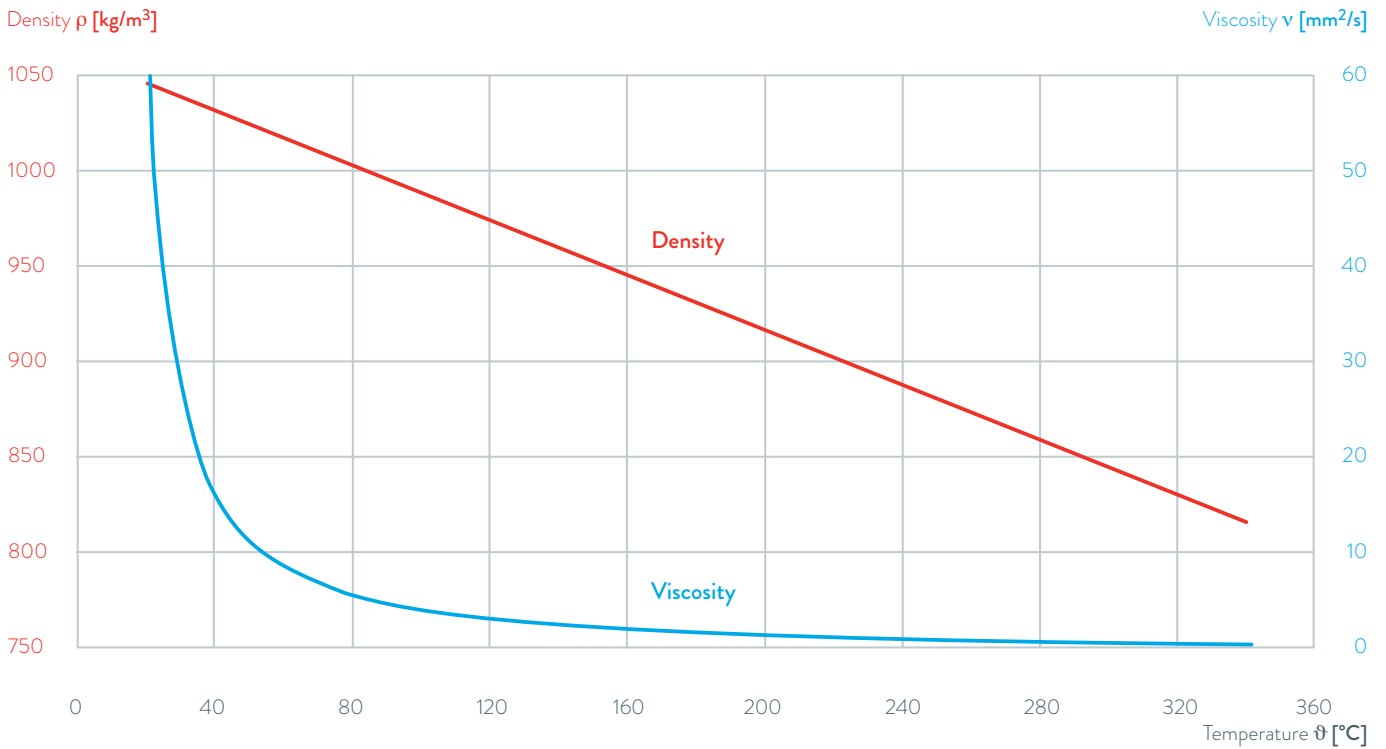
## Technical Features

Recommended temperature range for open systems	30...200 °C
Recommended temperature range for closed systems	30...350 °C
Chemical characterisation	Dibenzyltoluene
Color	Yellowish clear
Viscosity, kinematic at 20 °C	47 mm <sup>2</sup> /s
Density at 20 °C	1044 kg/m <sup>3</sup>
Solidifying point	< -34 °C
Flash point	> 212 °C
Boiling point	390 °C
Ignition temperature	500 °C
Water solubility	Insoluble
Solvent	Petrol, Acetone
Material incompatibility	Perbunan
Part Number 5 L	LZB 107



# ULTRA 350

## Physical properties



Please pay attention to the safety precautions and hazard statements before use.

The concerning safety data sheet and the product data sheet can be downloaded under [www.lauda.de](http://www.lauda.de) or requested directly from us.

# KRYO 20



## Features

- Heat transfer liquid for use in baths or open temperature control circuits
- Chemically inert and environmentally friendly synthetic silicone oil
- Noncorrosive
- Conforms with REACH and RoHs

## Notes

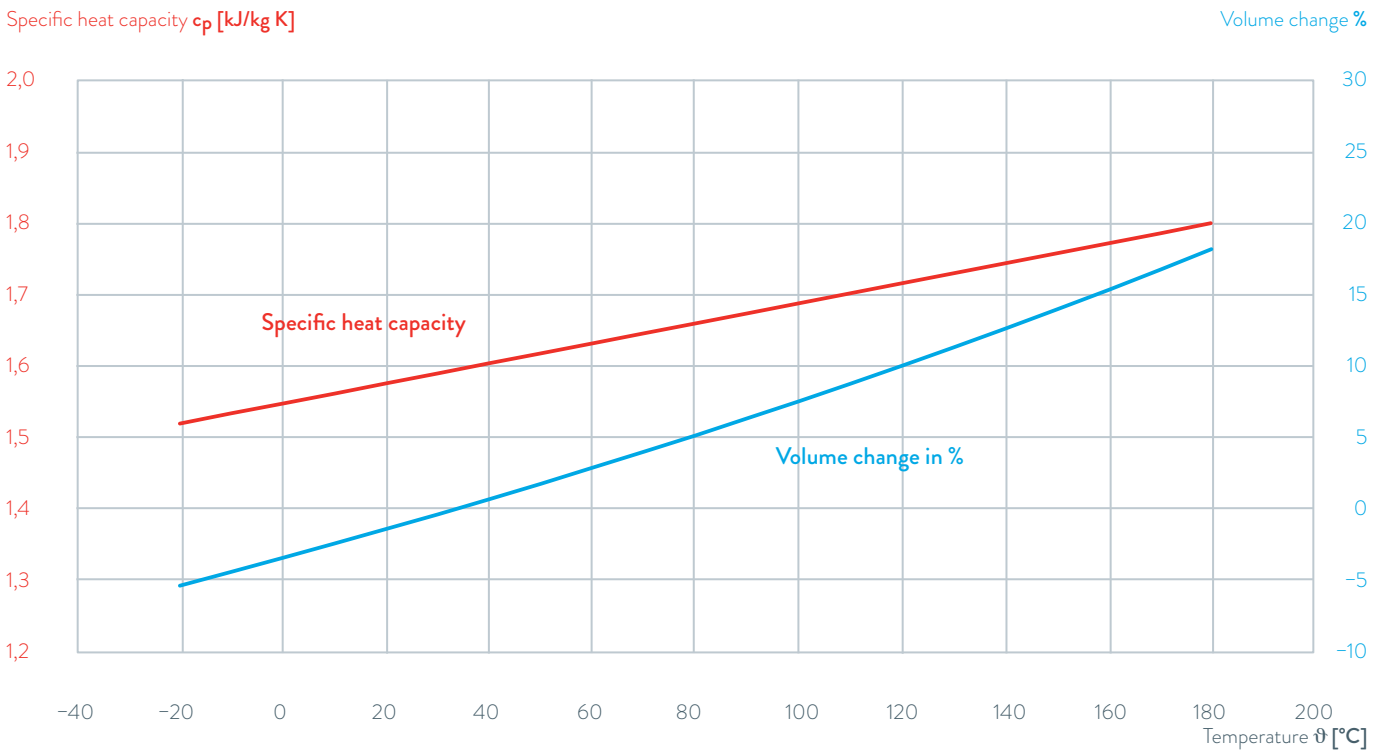
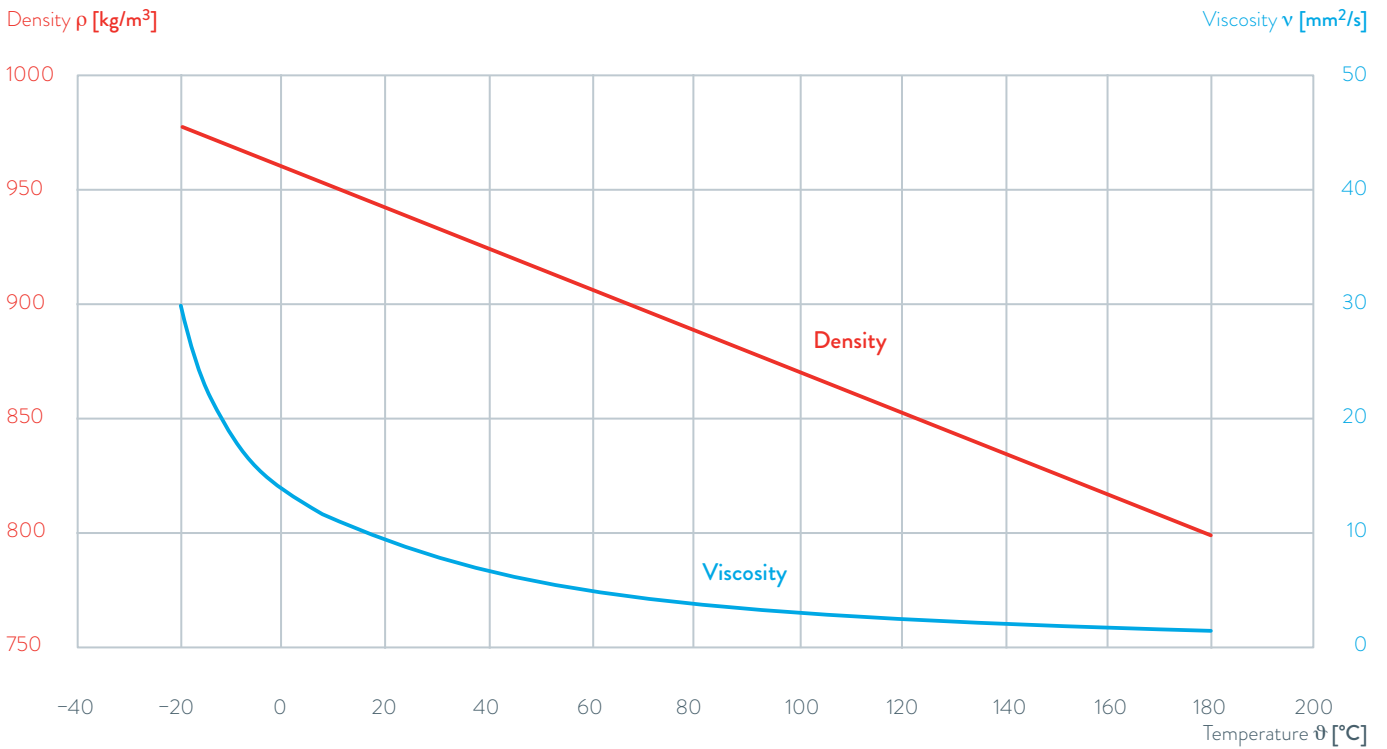
- IMPORTANT: silicone tubing is not allowed to use with silicone oils.

## Technical Features

Recommended temperature range for open systems	-20 ... 170 °C
Chemical characterisation	Polydimethylsiloxane
Color	Colorless
Viscosity, kinematic at 20 °C	11.4 mm <sup>2</sup> /s
Density at 20 °C	942 kg/m <sup>3</sup>
Solidifying point	< -90 °C
Flash point	> 170 °C
Boiling point	≥ 210 °C
Ignition temperature	> 400 °C
Water solubility	Insoluble
Solvent	Petrol, Acetone, Alcohols
Material incompatibility	Silicone
Part Number 5 L	LZB 116
Part Number 10 L	LZB 216
Part Number 20 L	LZB 316

# KRYO 20

## Physical properties



Please pay attention to the safety precautions and hazard statements before use.

The concerning safety data sheet and the product data sheet can be downloaded under [www.lauda.de](http://www.lauda.de) or requested directly from us.

# KRYO 30



## Features

- Heat transfer liquid with high specific heat capacity for open systems and systems with cold liquid overlay
- Optimized water-glycol mixture for temperatures down to  $-30\text{ }^{\circ}\text{C}$
- Conforms with REACH and RoHs

## Notes

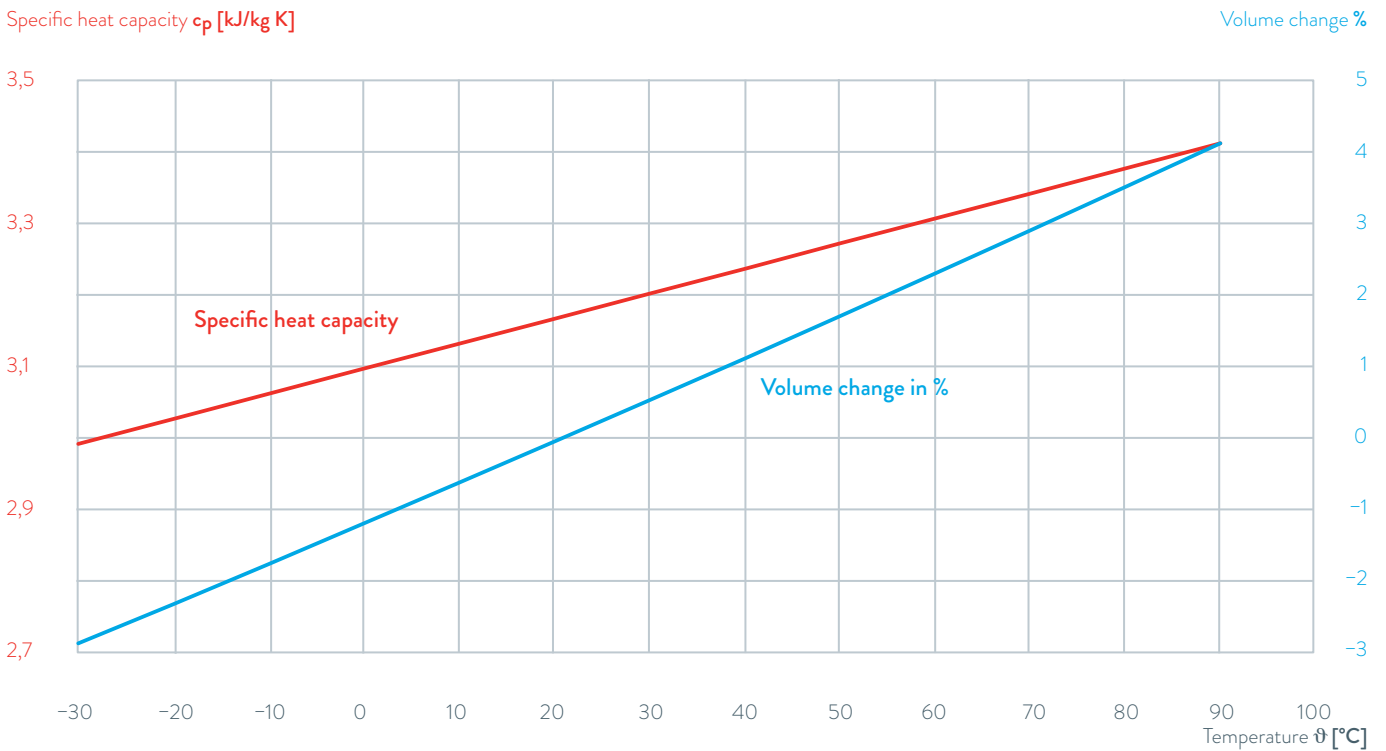
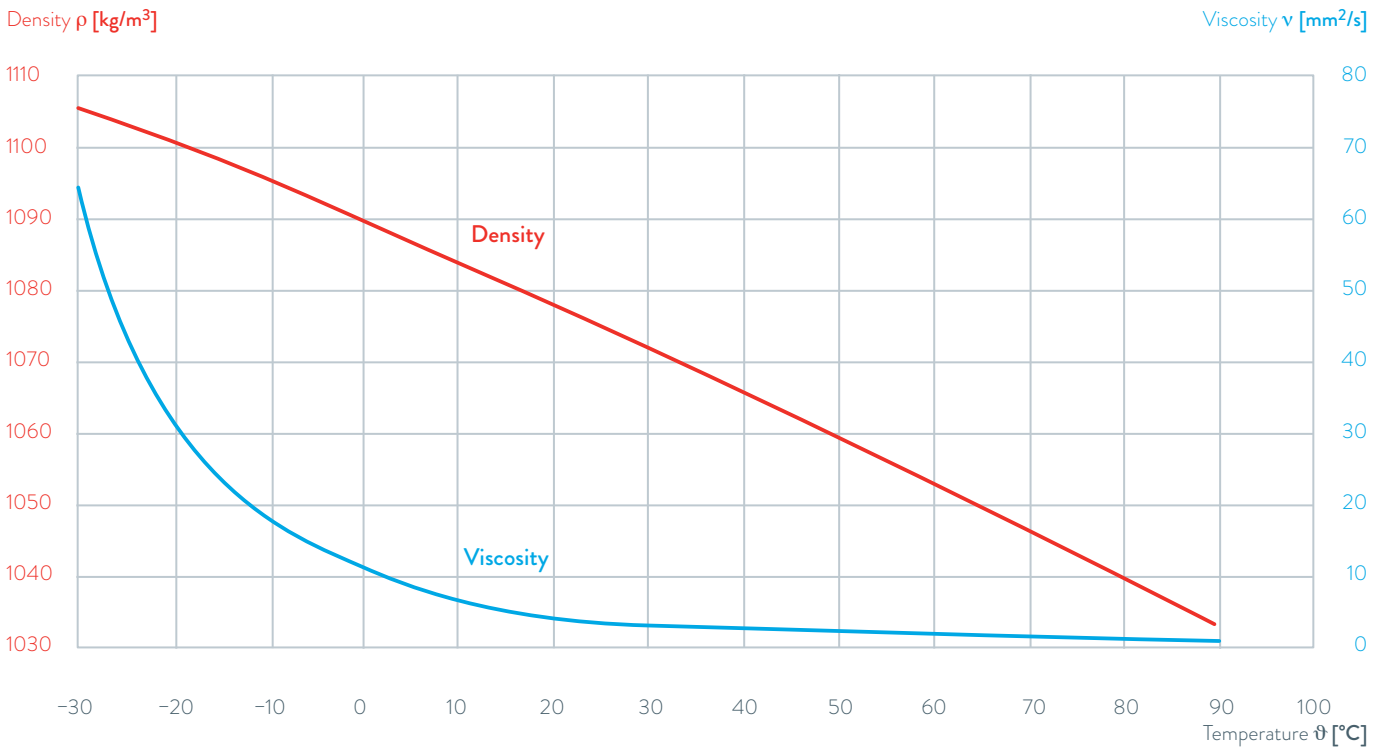
- If Kryo 30 is used in pressurized systems, the lower temperature range is extended to  $-40\text{ }^{\circ}\text{C}$ . The limit increases in the upper temperature range depending on the generated overpressure. Please refer to the operating instructions of your constant temperature equipment for details.
- When using Kryo 30 in open systems, the water-glycol mixing ratio may change, with water evaporating at higher temperatures or humidity condensing at lower temperatures. The mixing ratio must therefore be checked according to the application, and the medium replaced, if necessary. If the water content is too high, the constant temperature equipment may be damaged by frost; if the water content is too low, the medium becomes flammable.
- Do not use Kryo 30 on devices with cascade cooling.

## Technical Features

Recommended temperature range for open systems	$-30 \dots 90\text{ }^{\circ}\text{C}$
Recommended temperature range for closed systems	$-30 \dots 90\text{ }^{\circ}\text{C}$
Chemical characterisation	A mixture of: water, ethylene glycol and corrosion inhibitors
Color	Light yellow
Viscosity, kinematic at $20\text{ }^{\circ}\text{C}$	$4\text{ mm}^2/\text{s}$
Density at $20\text{ }^{\circ}\text{C}$	$1078\text{ kg}/\text{m}^3$
Solidifying point	$< -54\text{ }^{\circ}\text{C}$
Boiling point	ca. $108\text{ }^{\circ}\text{C}$
Water solubility	Completely soluble
Material incompatibility	No known incompatibility with other materials
Part Number 5 L	LZB 109
Part Number 10 L	LZB 209
Part Number 20 L	LZB 309
Part Number 200 L	LZB 809

# KRYO 30

## Physical properties



Please pay attention to the safety precautions and hazard statements before use.

The concerning safety data sheet and the product data sheet can be downloaded under [www.lauda.de](http://www.lauda.de) or requested directly from us.

# KRYO 51



## Features

- Heat transfer liquid for use in baths or open temperature control circuits
- Chemically inert and environmentally friendly synthetic silicone oil
- Low viscosity, ideal for temperatures below 0 °C
- Conforms with REACH and RoHs

## Notes

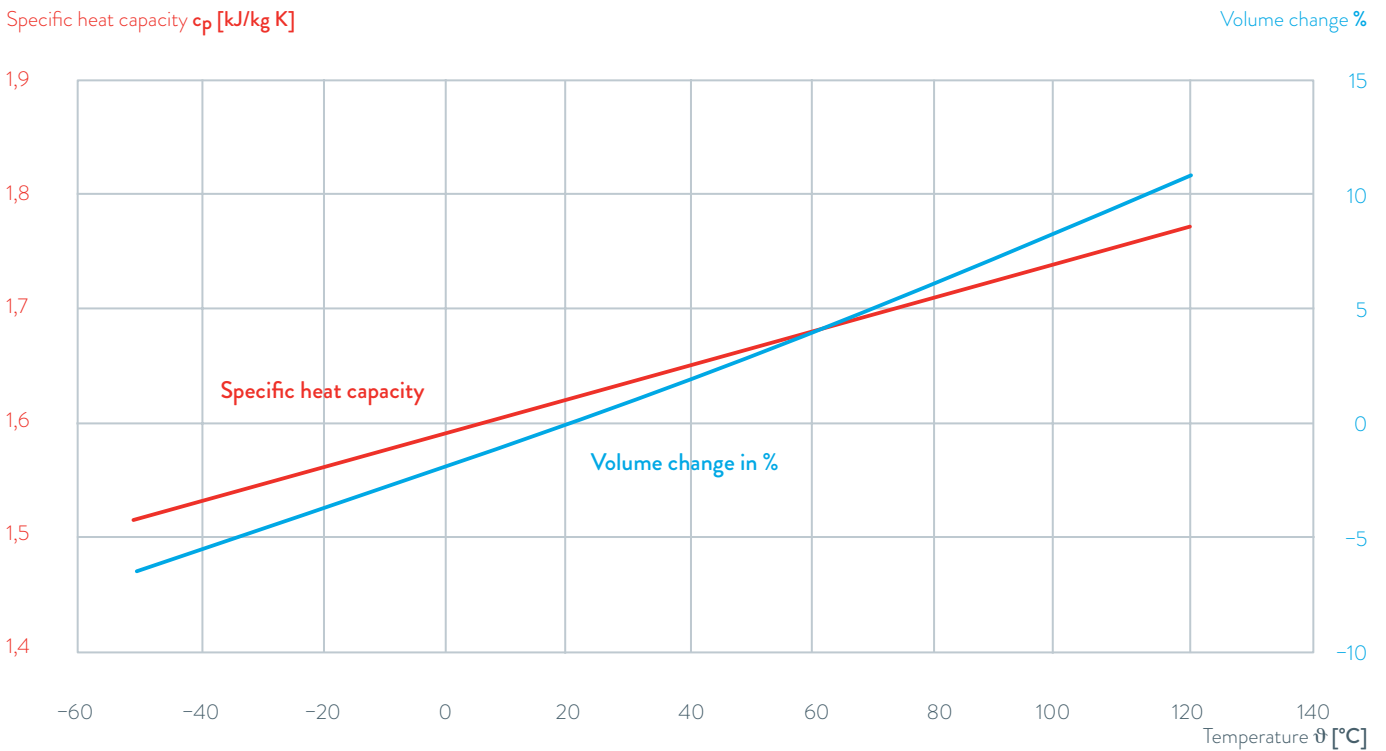
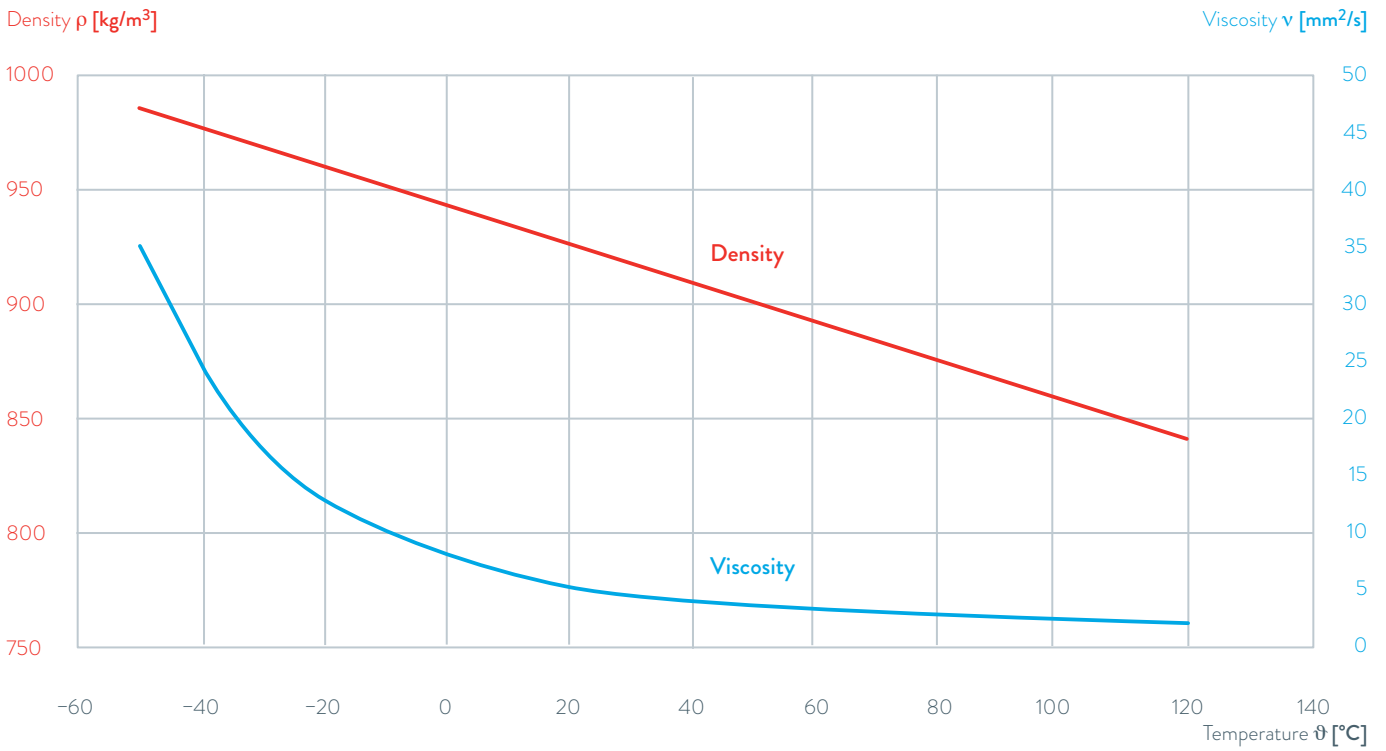
- IMPORTANT: silicone tubing is not allowed to use with silicone oils.

## Technical Features

Recommended temperature range for open systems	-50 ... 120 °C
Chemical characterisation	Polydimethylphenylsiloxane
Color	Colorless
Viscosity, kinematic at 20 °C	5.6 mm <sup>2</sup> /s
Density at 20 °C	924 kg/m <sup>3</sup>
Solidifying point	< -100 °C
Flash point	> 120 °C
Boiling point	≥ 200 °C
Ignition temperature	> 320 °C
Water solubility	Insoluble
Solvent	Petrol, Acetone, Alcohols
Material incompatibility	Silicone
Part Number 5 L	LZB 121
Part Number 10 L	LZB 221
Part Number 20 L	LZB 321

# KRYO 51

## Physical properties



Please pay attention to the safety precautions and hazard statements before use.

The concerning safety data sheet and the product data sheet can be downloaded under [www.lauda.de](http://www.lauda.de) or requested directly from us.

# KRYO 60



## Features

- Heat transfer liquid for use in baths or open temperature control circuits
- Chemically inert and environmentally friendly synthetic silicone oil
- Low viscosity, ideal for temperatures below 0 °C
- Conforms with REACH and RoHs

## Notes

- IMPORTANT: silicone tubing is not allowed to use with silicone oils.

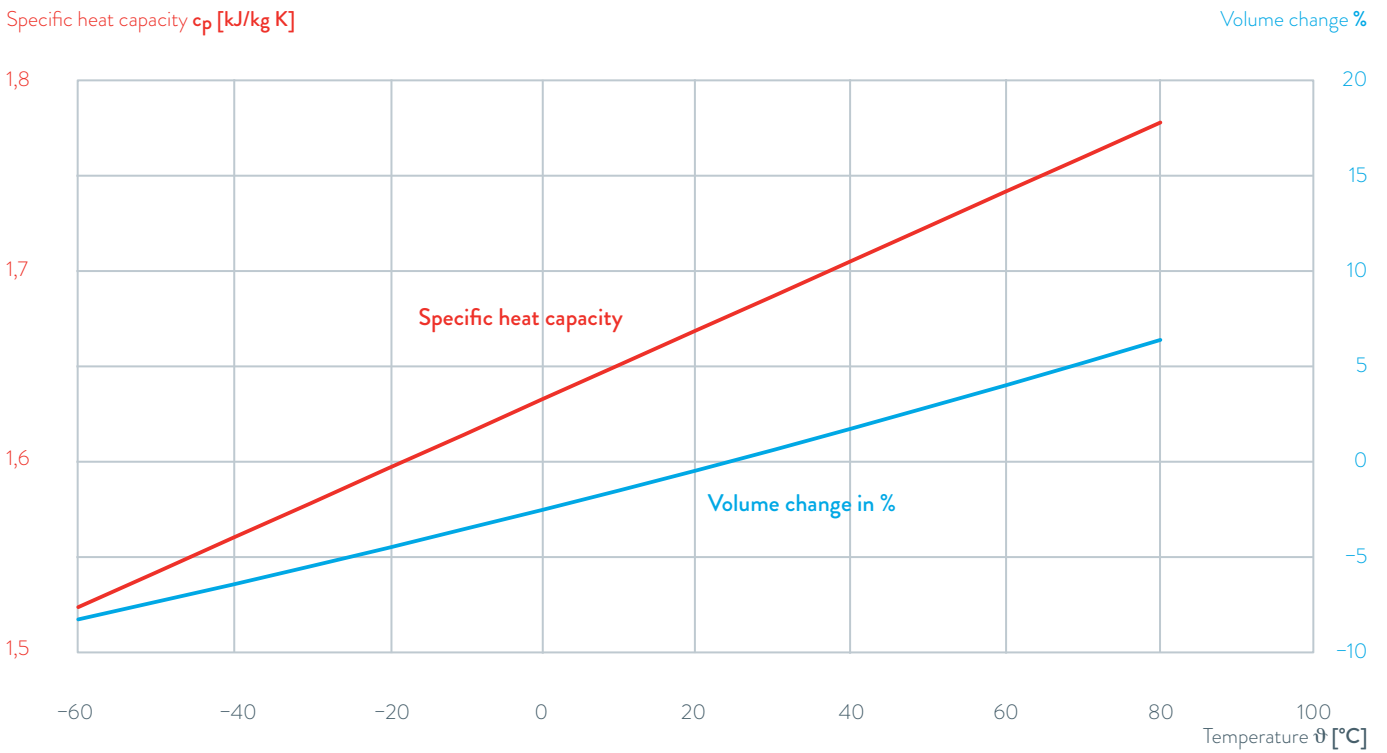
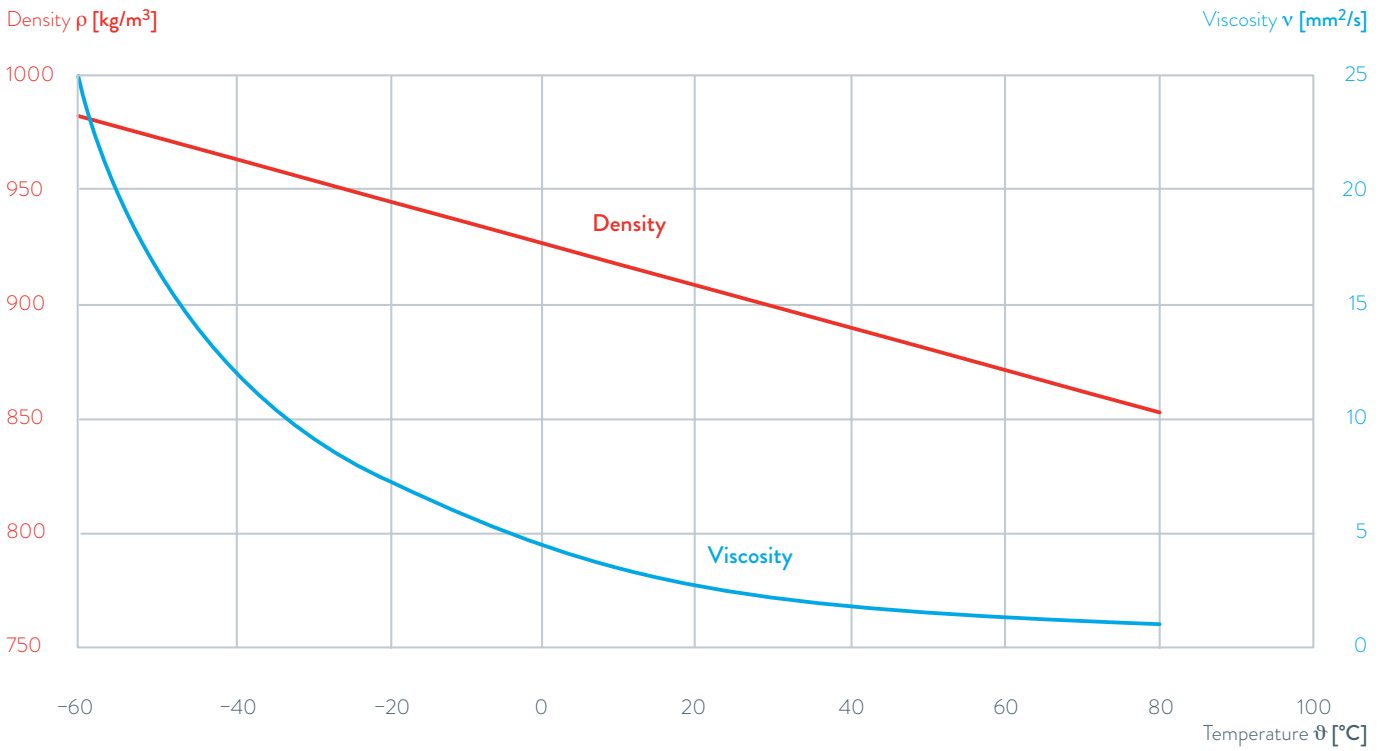
## Technical Features

Recommended temperature range for open systems	-60 ... 60 °C
Chemical characterisation	Polydimethylsiloxane
Color	Colorless
Viscosity, kinematic at 20 °C	3.34 mm <sup>2</sup> /s
Density at 20 °C	912 kg/m <sup>3</sup>
Solidifying point	< -100 °C
Flash point	> 62 °C
Boiling point	≥ 150 °C
Ignition temperature	> 300 °C
Water solubility	Insoluble
Solvent	Petrol, Acetone, Alcohols
Material incompatibility	Silicone
Part Number 5 L	LZB 102
Part Number 10 L	LZB 202
Part Number 20 L	LZB 302



# KRYO 60

## Physical properties



Please pay attention to the safety precautions and hazard statements before use.

The concerning safety data sheet and the product data sheet can be downloaded under [www.lauda.de](http://www.lauda.de) or requested directly from us.

# KRYO 65



## Features

- Heat transfer liquid only for use in systems with cold liquid overlay
- Low viscosity, ideal for temperatures below 0 °C
- Silicone-free liquid, ideal for surface-sensitive applications
- Noncorrosive
- Conforms with REACH and RoHs

## Notes

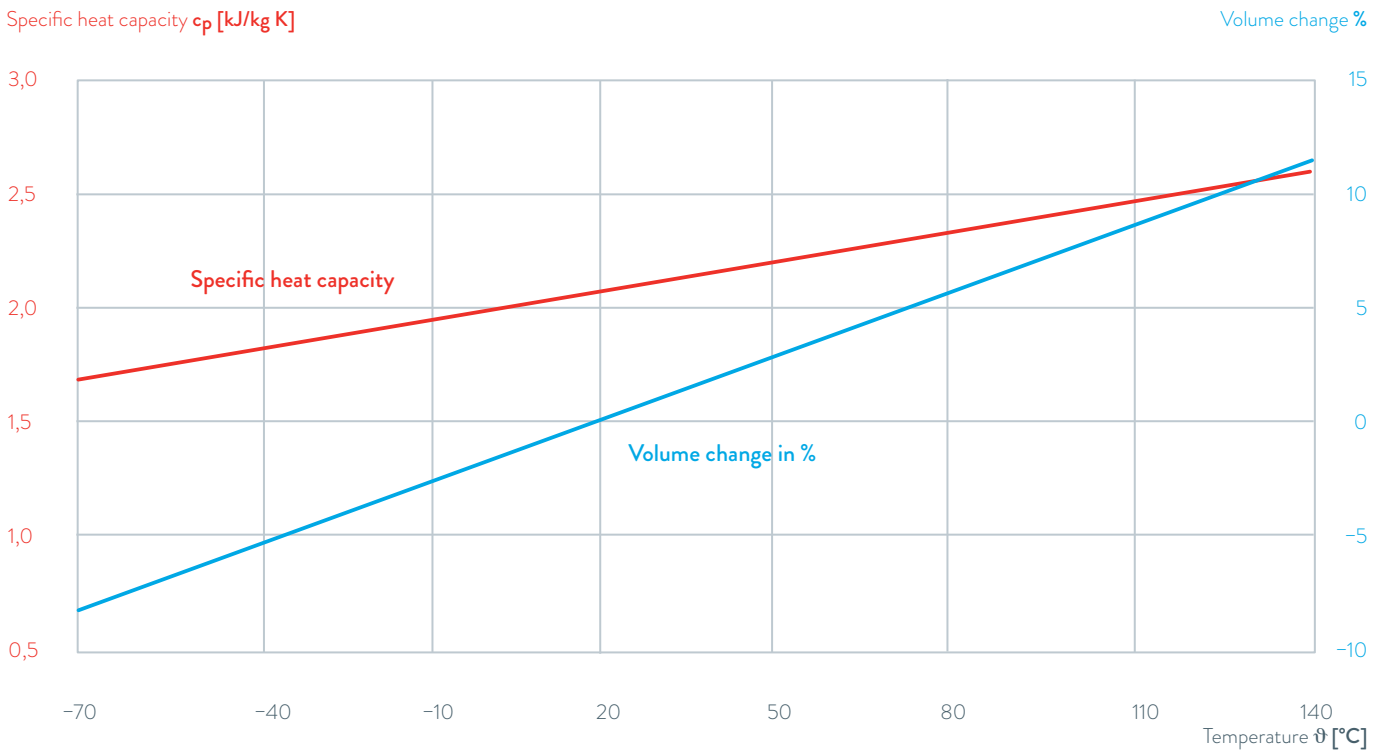
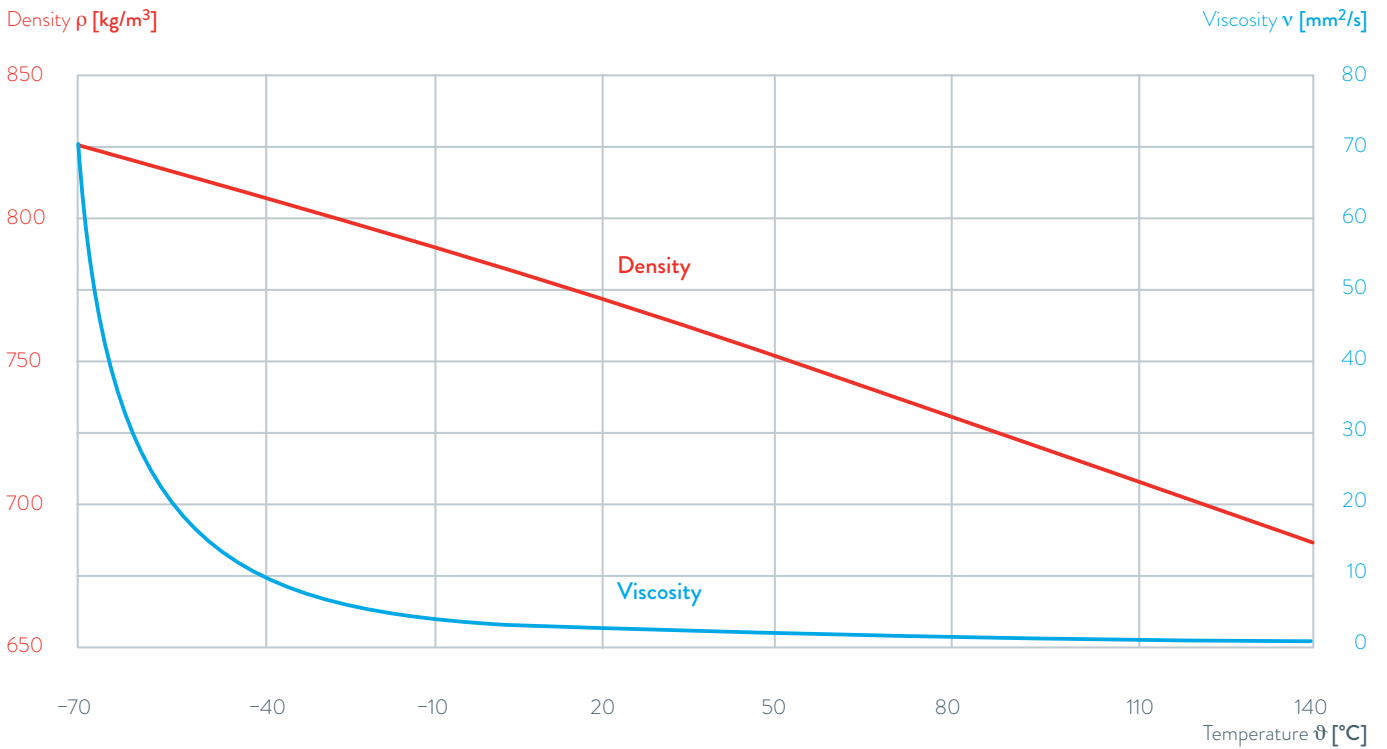
- IMPORTANT: EPDM tubing is not compatible with Kryo 65.

## Technical Features

Recommended temperature range for closed systems	-65 ... 140 °C
Chemical characterisation	Mixture of aliphatic hydrocarbons
Color	Colorless
Viscosity, kinematic at 20 °C	1.65 mm <sup>2</sup> /s
Density at 20 °C	762 kg/m <sup>3</sup>
Solidifying point	< -100 °C
Flash point	62 °C
Boiling point	192 °C
Ignition temperature	247 °C
Water solubility	< 1 mg/L
Solvent	Petrol, Acetone
Material incompatibility	EPDM
Part Number 5 L	LZB 118
Part Number 10 L	LZB 218
Part Number 20 L	LZB 318

# KRYO 65

## Physical properties



Please pay attention to the safety precautions and hazard statements before use.

The concerning safety data sheet and the product data sheet can be downloaded under [www.lauda.de](http://www.lauda.de) or requested directly from us.

# KRYO 70 A



## Features

- Heat transfer liquid only for use in systems with cold liquid overlay
- Chemically inert and environmentally friendly synthetic silicone oil
- Low viscosity, ideal for temperatures below 0 °C
- Thermally stabilized, for use at temperatures above 200 °C
- Noncorrosive
- Conforms with REACH and RoHs

## Notes

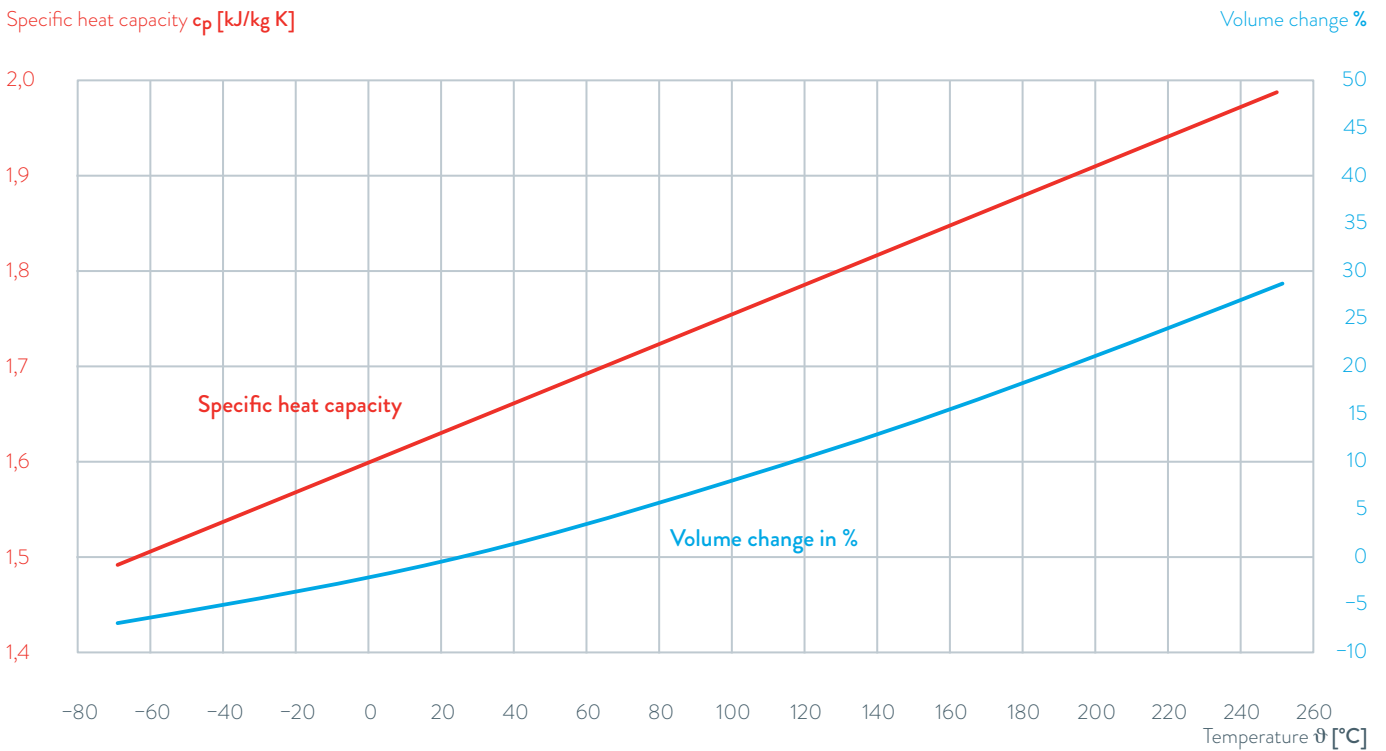
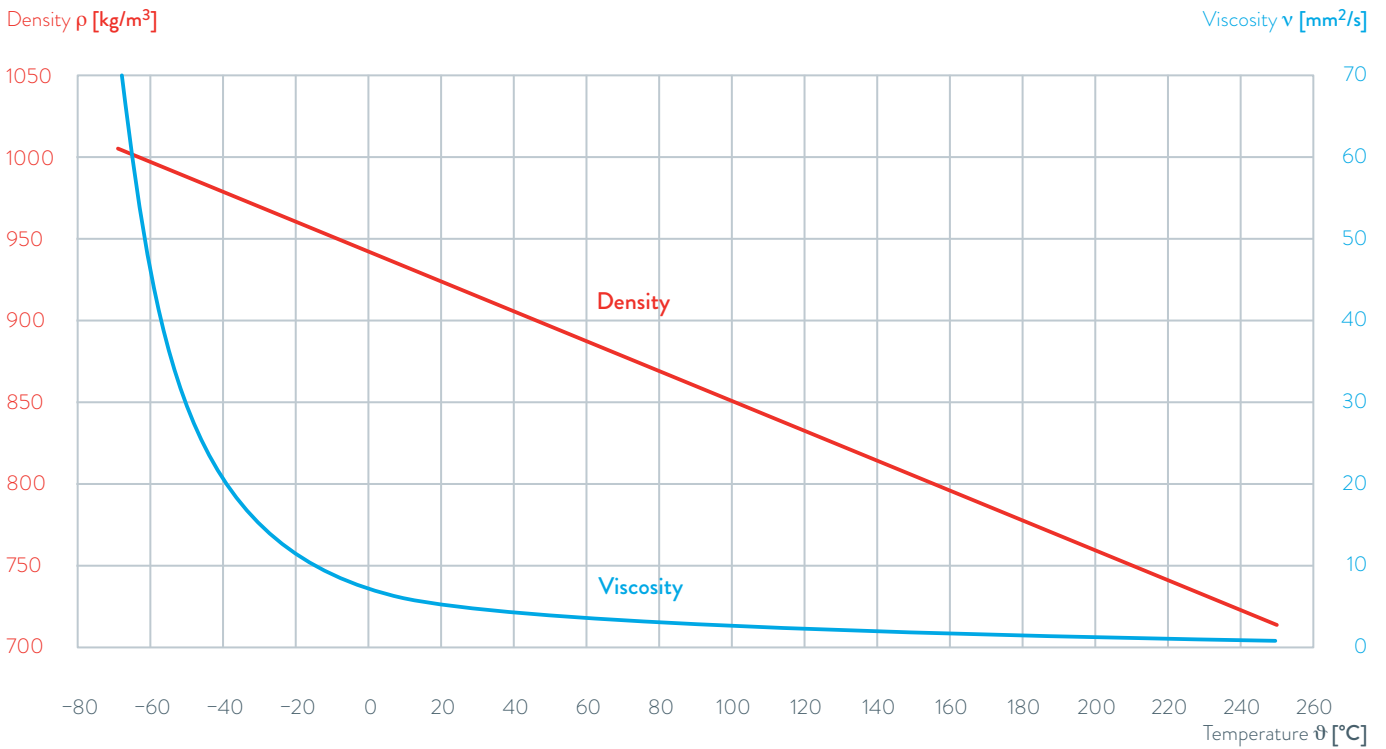
- IMPORTANT: silicone tubing is not allowed to use with silicone oils.

## Technical Features

Recommended temperature range for closed systems	-70 ... 220 °C
Chemical characterisation	Polydimethylsiloxane
Color	Colorless
Viscosity, kinematic at 20 °C	5.3 mm <sup>2</sup> /s
Density at 20 °C	924 kg/m <sup>3</sup>
Solidifying point	-100 °C
Flash point	125 °C
Boiling point	275 °C
Ignition temperature	355 °C
Water solubility	Insoluble
Solvent	Petrol, Acetone
Material incompatibility	Silicone elastomers
Part Number 5 L	LZB 131
Part Number 10 L	LZB 231
Part Number 20 L	LZB 331

# KRYO 70 A

## Physical properties



Please pay attention to the safety precautions and hazard statements before use.

The concerning safety data sheet and the product data sheet can be downloaded under [www.lauda.de](http://www.lauda.de) or requested directly from us.

# KRYO 95



## Features

- Heat transfer liquid for use at temperatures below  $-50\text{ }^{\circ}\text{C}$
- Chemically inert and environmentally friendly synthetic silicone oil
- Low viscosity, ideal for temperatures below  $0\text{ }^{\circ}\text{C}$
- Noncorrosive
- Conforms with REACH and RoHs

## Notes

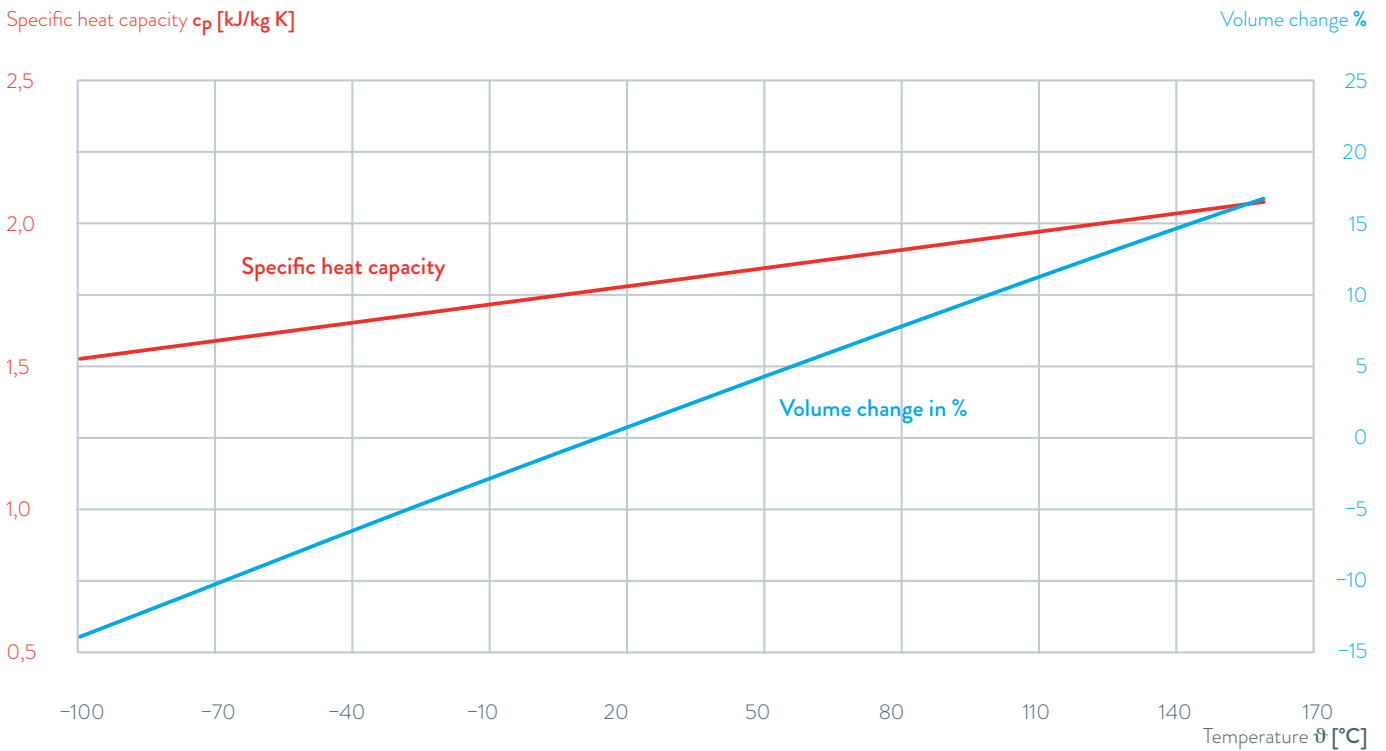
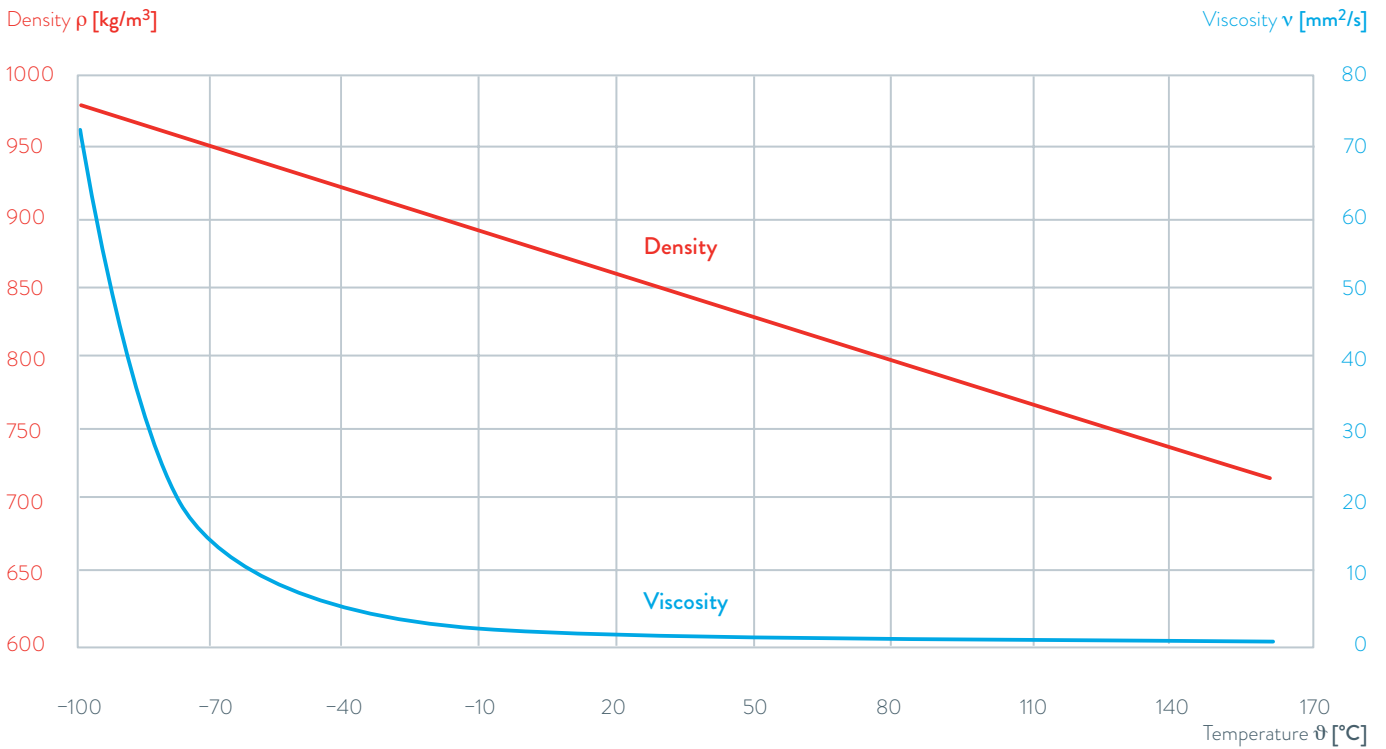
- IMPORTANT: silicone tubing is not allowed to use with silicone oils.

## Technical Features

Recommended temperature range for open systems	$-95 \dots 60\text{ }^{\circ}\text{C}$
Recommended temperature range for closed systems	$-95 \dots 160\text{ }^{\circ}\text{C}$
Chemical characterisation	Polydimethylsiloxane
Color	Colorless
Viscosity, kinematic at $20\text{ }^{\circ}\text{C}$	$1.6\text{ mm}^2/\text{s}$
Density at $20\text{ }^{\circ}\text{C}$	$855\text{ kg/m}^3$
Solidifying point	$< -111\text{ }^{\circ}\text{C}$
Flash point	$> 64\text{ }^{\circ}\text{C}$
Boiling point	$190\text{ }^{\circ}\text{C}$
Ignition temperature	$> 325\text{ }^{\circ}\text{C}$
Water solubility	Insoluble
Solvent	Petrol, Acetone, Alcohols
Material incompatibility	Silicone
Part Number 5 L	LZB 130
Part Number 10 L	LZB 230
Part Number 20 L	LZB 330

# KRYO 95

## Physical properties



Please pay attention to the safety precautions and hazard statements before use.

The concerning safety data sheet and the product data sheet can be downloaded under [www.lauda.de](http://www.lauda.de) or requested directly from us.

# REFRIFLUID 1



## Features

- Universally applicable heat transfer medium with corrosion protection agent
- Antifreeze protection down to  $-7^{\circ}\text{C}$
- Conforms with REACH and RoHs

## Notes

- Refrifluid 1 is only suitable for Ultracool units.

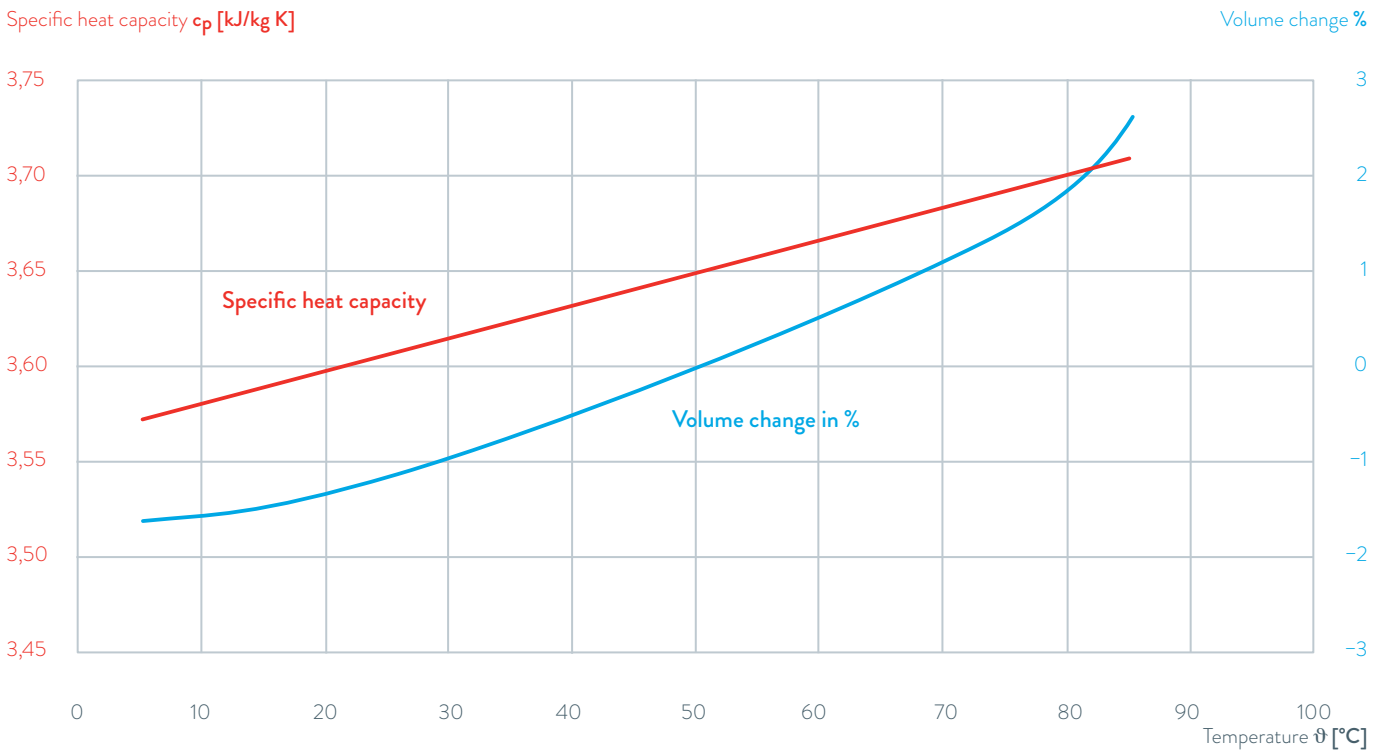
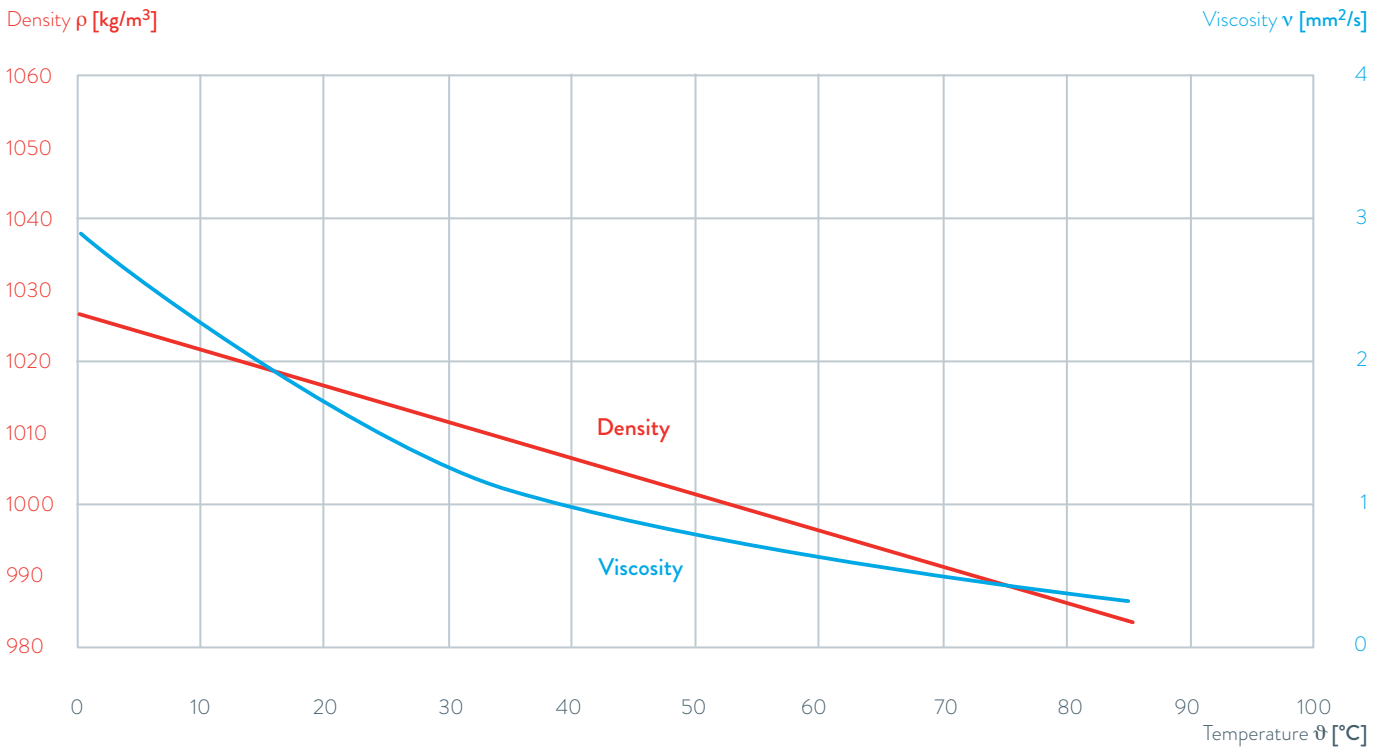
## Technical Features

Recommended temperature range for open systems	$-7 \dots 90^{\circ}\text{C}$
Chemical characterisation	A mixture of: water, ethylene glycol and corrosion inhibitors
Color	Transparent, pink
Viscosity, kinematic at $20^{\circ}\text{C}$	$1.8 \text{ mm}^2/\text{s}$
Density at $20^{\circ}\text{C}$	$1.023 \text{ kg}/\text{m}^3$
Water solubility	Completely soluble
Part Number 25 L	E7012402
Part Number 50 L	E7012404
Part Number 100 L	E7012406



# REFRIFLUID 1

## Physical properties



Please pay attention to the safety precautions and hazard statements before use.

The concerning safety data sheet and the product data sheet can be downloaded under [www.lauda.de](http://www.lauda.de) or requested directly from us.

# REFRIFLUID 5



## Features

- Universally applicable heat transfer medium with corrosion protection agent
- Antifreeze protection down to  $-10^{\circ}\text{C}$
- Conforms with REACH and RoHs

## Notes

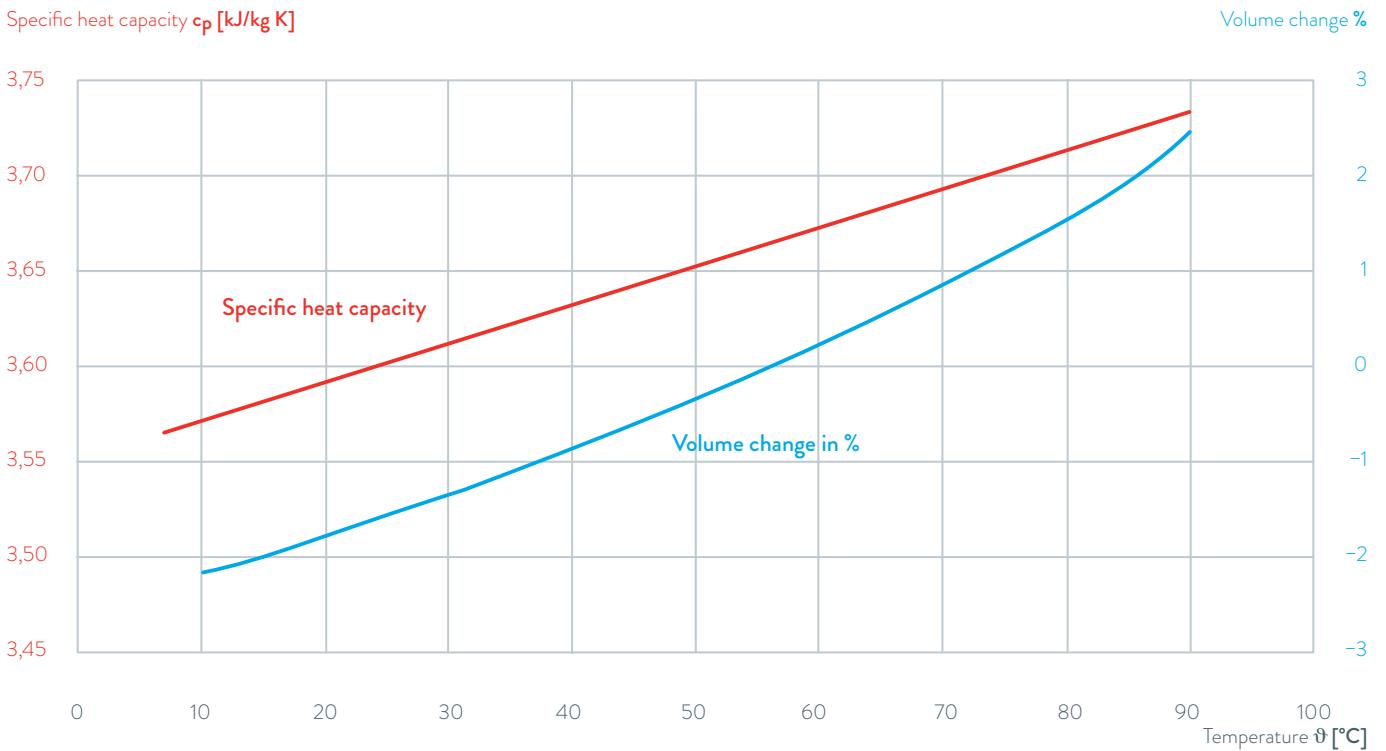
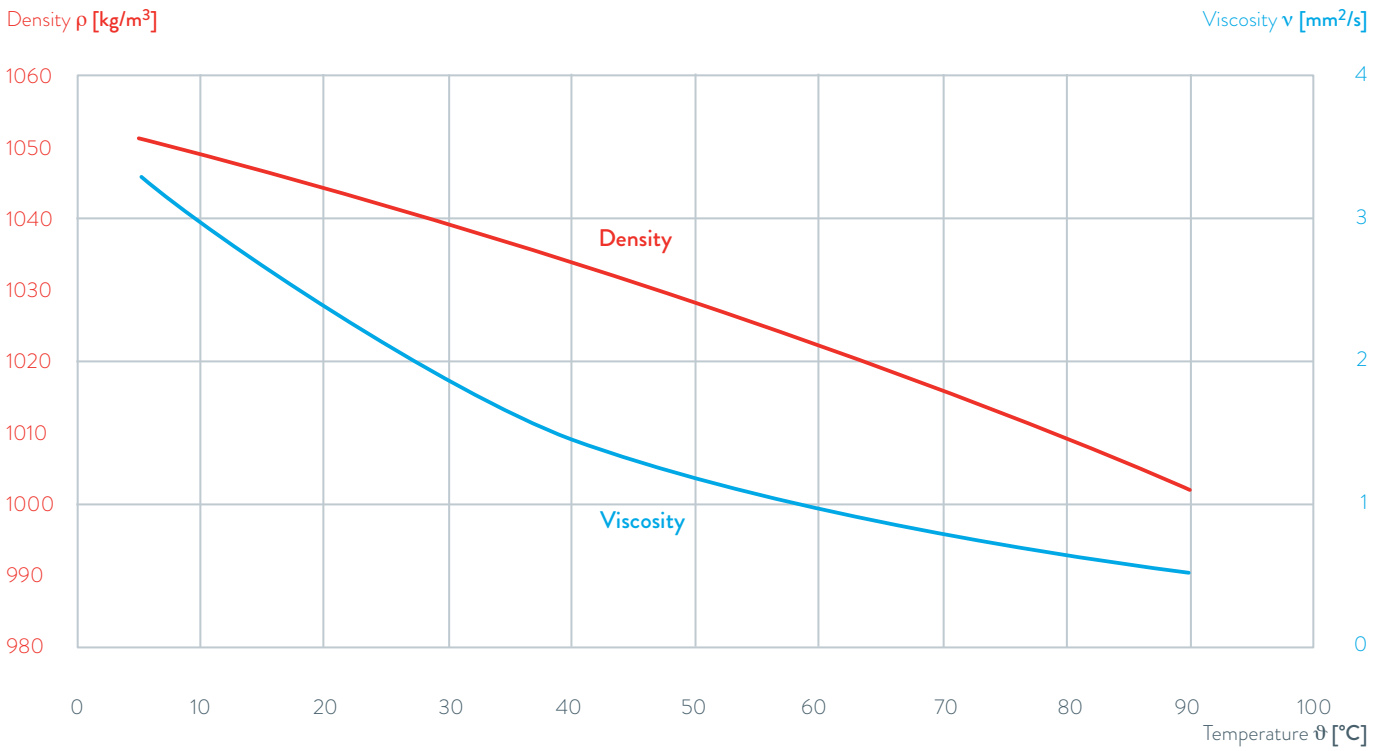
- Refrifluid 5 is only suitable for Ultracool units.

## Technical Features

Recommended temperature range for open systems	$-10 \dots 90^{\circ}\text{C}$
Chemical characterisation	A mixture of: water, ethylene glycol and corrosion inhibitors
Color	Transparent, pink
Density at $20^{\circ}\text{C}$	$1.057 \text{ kg/m}^3$
Part Number 25 L	E7012502
Part Number 50 L	E7012504
Part Number 100 L	E7012506

# REFRIFLUID 5

## Physical properties



Please pay attention to the safety precautions and hazard statements before use.

The concerning safety data sheet and the product data sheet can be downloaded under [www.lauda.de](http://www.lauda.de) or requested directly from us.

## WATER ADDITIVES

Please note the dosage.

### Falling below the minimum concentration leads to

- lower frost and corrosion protection
- faster bacterial contamination

### Exceeding the recommended concentration leads to

- decrease in the frost point
- deterioration of the thermal conduction
- increase in viscosity
- reduction in the thermal capacity of the liquid

## ALGICIDE AQUASTAB

### Features

- Protective agent for the prevention and control of algae formation in bath thermostats



### Technical Features

Recommended temperature range (with water)	5... 90 °C
Chemical characterisation	2 % Poly(dimethyl imino)-2-hydroxy-1,3-propanediyl chloride
Dose recommendation	5 ml / 10 L Water
Color	Blue, clear
Density at 20 °C	1050 kg/m <sup>3</sup>
Boiling point	100 °C
Water solubility	Completely soluble
Part Number 100 ml	LZB 929
Part Number 1 L	LZB 429
Part Number 5 L	LZB 129

## DECALCIFIER

### Features

- Citric acid based decalcifier

### Notes

- If the temperature unit has lime scale it must be decalcified
- Please empty the temperature unit and add citric acid into the water circuit
- Let stand for 30 minutes (best result with water circulation), then rinse it at least 3 times



### Technical Features

Chemical characterisation	Citric acid monohydrate, 2-Hydroxypropane-1,2,3-tri carbonic acid
Dose recommendation	100 g / 1 L Water
Appearance	White granulate
pH value at 25 °C	10 g/L: 2.2; 50 g/L: 1.85
Part Number 5 kg	LZB 126

# HTFP FOODGRADE ADDITIVE



## Features

- Concentrate can be used as antifreeze and corrosion protection agent
- Suitable for applications in the food and pharmaceutical industries
- Conforms with REACH and RoHs
- Food hygienically safe product

## Notes

- Instructions for use are included with the product.

## Technical Features

Dose recommendation	100 ml / 1 L Water
Part Number 2 L bottle	E7011860
Part Number 8 L bottle	E7011862

# REFRIFLUID B

## Features

- Corrosion inhibitor for active corrosion protection
- Long lasting protection

## Technical Features

Dose recommendation	2 L / 100 L Water
Viscosity, kinematic at 20 °C	1.23 mm <sup>2</sup> /s
Dichte bei 20 °C	1.05 kg/m <sup>3</sup>
Farbe/Aussehen	Transparent, pink
Water solubility	Completely soluble
Part Number 2 L bottle	E7011852
Part Number 4 L bottle	E7011854

Please pay attention to the safety precautions and hazard statements before use.

The concerning safety data sheet and the product data sheet can be downloaded under [www.lauda.de](http://www.lauda.de) or requested directly from us.

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