

**Hoses**

All circulators and cryostats are always delivered with nozzles for tubings with an inner Ø of 8 and 12 mm. The tubings and insulation (if applicable) have to be ordered separately and should be selected according to the application.

Description	Order-No.
Insulated <b>metal tubing</b> made from stainless steel with M 16 x 1 unions on both ends. To be used from -50 to +300°C.	
50 cm long	<b>333-0292</b>
100 cm long	<b>333-0293</b>
150 cm long	<b>333-0294</b>
coupling to connect 2 tubings to each other	<b>001-2560</b>
coupling for circulation set C-/DC-line	<b>333-0302</b>
Insulated <b>metal tubing</b> made from stainless steel with M 16 x 1 unions on both ends. Especially for the low temperature range -90..105°C	
100 cm long	<b>333-0578</b>
150 cm long	<b>333-0579</b>
coupling to connect 2 tubings to each other	<b>001-2560</b>
coupling for circulation set C-/DC-line	<b>333-0302</b>
<b>PVC tubing</b> to be used only with water	
8 mm i. Ø; per meter	<b>082-0745</b>
12 mm i. Ø; per meter	<b>082-0304</b>
<b>Viton tubing</b> for a temperature range of -60 to + 200°C	
8 mm i. Ø; per meter	<b>082-1214</b>
12 mm i. Ø; per meter	<b>082-1215</b>
<b>Silicone tubing</b> for a temperature range of -30 to + 220°C (not to be used with any silicone oil.)	
8 mm i. Ø; per meter	<b>082-0663</b>
12 mm i. Ø; per meter	<b>082-0664</b>
<b>Perbunan tubing</b> for a temperature range of -40 to + 100°C	
8 mm i. Ø; per meter	<b>082-0172</b>
12 mm i. Ø; per meter	<b>082-0173</b>
<b>Foam rubber insulation</b> for PVC, Viton, silicone and Perbunan tubings	
for tubings with 8 mm i. Ø; per meter	<b>806-0373</b>
for tubings with 12 mm i. Ø; per meter	<b>806-0374</b>



**Bath Liquids**

The carefully selected and proven heat transfer liquids offer the following advantages:

- Eliminates health hazards and minimizes unpleasant odors.
- High resistance against aging while retaining a low viscosity with a low corrosive tendency.

**Note:** Good ventilation is recommended when working at temperatures > 200°C.

**1. Viscosity**

For optimum temperature accuracy it is very important that the heat transfer liquid be of low viscosity.

**2. Fire Point**

Flammable thermal liquids can ignite when a specified temperature is surpassed. The usage of bath liquids is limited to a temperature level 25°C below the fire point as defined by the EN 61010.

**3. Selection**

**Silicone oils (Sil):**

Carry a low risk of inflammation, do not give off unpleasant odors and have a long service life.

**Synthetic thermal liquids (Synth):**

Are mainly produced on a hydrocarbon basis and exhibit a low viscosity within the recommended working temperature range.

**4. Application Range**

**Working temperature range:**

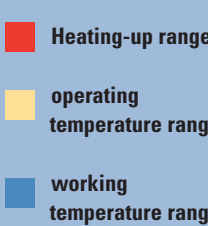
This is the range within which the circulator can be operated optimally over a longer period of time. The maximum viscosity is approx. 5 mPas.

**Operating temperature range:**

The circulator may be operated only within this range over a longer period of time under certain conditions. Viscosity may rise to a maximum of 30 mPas. The pump capacity no longer matches the specifications made in the brochure.

**Heating range:**

Long-term temperature control in this range is not permissible as the pump motor's excess temperature protection may switch off the pump.

Application range		Sil 100	Sil 180	Sil 300	Synth 20*)	Synth 60	Synth 200	Synth 260
Fire point	°C	>100	> 225	>325	n.a.	70	>235	275
Viscosity	at 20 °C [mPas]	3	11	200	<1	2	100	140
Density	at 20 °C [kg/dm <sup>3</sup> ]	0.89	0.93	1.08	0.77	0.76	0.86	1.03
Spec. heat capacity	[kJ / kg x K]	1.67	1.51	1.56	n.a.	2.1	1.96	2
<b>Temperature ranges</b> 	300°C			<b>300</b>				
	250°C							<b>250</b>
	200°C						<b>210</b>	
	150°C							
	100°C							
	50°C	<b>75</b>						
	0°C						<b>45</b>	
	-50°C					<b>-28</b>		
	-100°C							
	Color		transparent colorless	transparent colorless	transparent colorless	transparent colorless	transparent colorless	transparent light brown
Reacts with		Silicone	Silicone	Silicone	Light-metals Zinc	Rubber Silicone	Copper Lightmetal Bronze	Copper Lightmetal Bronze
Order-No. for 10 l Container		<b>999-0202</b>	<b>999-0204</b>	<b>999-0206</b>	<b>999-0208</b>	<b>999-0210</b>	<b>999-0226</b>	<b>999-0214</b>
Order-No. for 5 l Container		<b>999-0201</b>	<b>999-0203</b>	<b>999-0205</b>	<b>999-0207</b>	<b>999-0209</b>	<b>999-0225</b>	<b>999-0213</b>

EC-Safety Data Sheets will be delivered together with each container of liquid.

\*) Cannot be exported; use methylecyclohexane as bath liquid

n.a. not applicable