

## Recommended Oils for Temperature Control Units

The maximum main line temperature of a temperature control unit defines the most suitable heat transfer medium selected. Temperature control units which use oil as heat transfer medium can be subdivided into the following groups.

- Group 1:** - maximum main line temperature 150 °C, open system  
**Group 2:** - maximum main line temperature 250 °C, closed system with superimposed cold oil  
**Group 3:** - maximum main line temperature 350 °C, closed system with superimposed cold oil

The basic requirements for heat transfer oil are:

- The maximum permissible run-up temperature of the oil must be above the maximum main line temperature of the unit.
- The permissible film temperature and initial boiling point must lie least 50 K above the maximum main line temperature; it must however be at least 380 °C.

If unsuitable oil is used there is a risk of cracking, overheating and fire. Mineral oils and synthetic oils must not be mixed together in service. The use of synthetic transfer media is to be recommended because of their greater down-time properties.

The following products can be recommended, as based on information from the manufacturer:

Company	Homepage	Commercial name	Type	Group		
				1 150 °C	2 250 °C	3 350 °C
ARAL	<a href="http://www.aral.com">www.aral.com</a>	ARAL Farolin U	mineral	+	—	—
Deutsche BP	<a href="http://www.bp.com">www.bp.com</a>	BP Transcal SA	synthetic	++	++	—
		BP Olex WF 0801	synthetic	++	++	—
ESSO	<a href="http://www.esso.com">www.esso.com</a>	ESSOTHERM 500	mineral	+	—	—
Gulf	<a href="http://www.gulfoil.com">www.gulfoil.com</a>	Gulf Transotherm M	mineral	+	—	—
Marlotherm	<a href="http://www.marlotherm.com">www.marlotherm.com</a>	MARLOTHERM SH	synthetic	++	++	++
Fuchs	<a href="http://www.fuchs-oil.de">www.fuchs-oil.de</a>	RENOLIN THERM 380 S	synthetic	++	++	++
Shell	<a href="http://www.shell.com">www.shell.com</a>	Shell Thermia Oil B	mineral	+	—	—

— = not suitable  
 + = suitable  
 ++ = recommended

### Problems with existing units

If, with existing units, more enhanced cracking or increased aging is found with the heat transfer medium used, then the following points should be clarified particularly when using heat transfer media which are not included above:

- Was the lifetime of the heat transfer medium exceeded?
- Is the heat transfer medium being used appropriate for this application (main line and film temperatures, onset of boiling, oxygen contact, compatibility with the materials used, etc.)?
- Are the prevailing operating condition extreme (higher control setting, lower flow rate, frequent start-ups, poor ventilation, etc.)?
- Has it been ensured that inadmissible oil types and qualities have not been added (refilling units using synthetic heat transfer media e.g. with mineral oils)?
- Has it been ensured that small quantities of water are not getting into the circuit all the time (e.g., through leaking moulds or coolers)?

**N.B.** In case of any doubt it is advisable to make contact with the supplier of the heat transfer medium and, if increased aging is established, to have an analysis carried out.

HB-THERM Oil-temperature control units are tested in our works using the following oils:

- Group 1: ARAL Farolin U  
 Group 2: MARLOTHERM SH  
 Group 3: MARLOTHERM SH