
Technical Information

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Supersedes edition dated May 2007



® = Registered trademark of BASF SE

Glythermin[®] P44

Concentrated heat-transfer fluid for solar heating equipment and for heating and cooling equipment used in food processing and water purification

Properties

Appearance	clear to slightly opalescent liquid	
Density (20 °C)	1.054 – 1.057 g/cm ³	DIN 51757
Refractive index n _D ²⁰	1.435 – 1.438	DIN 51423
pH	6.5 – 8.0	ASTM D 1287
Water content	max. 4 %	ASTM D 1123/ DIN 51777
Flash point	> 100 °C	DIN 51578
Reserve alkalinity	10 – 16 ml M/10 HCl	ASTM D 1121

The above information is correct at the time of going to press.

It does not necessarily form part of the product specification.

A detailed product specification is available from your local BASF representative.

Properties

Glythermin P44 is a non-toxic, virtually odorless, hygroscopic liquid. It is based on propylene glycol.

The corrosion inhibitors contained in Glythermin P44 reliably protect the metals normally used in solar collectors and other heating equipment from corrosion, ageing and scaling.

Mixtures of Glythermin P44 and water do not demix.

Glythermin P44 does not contain any nitrites, phosphates or amines.

Miscibility

Glythermin P44 is miscible with typical commercial heat-transfer fluids based on propylene glycol.

Applications

Glythermin P44 has to be diluted with at least 25 % v/v and no more than 75 % v/v of water when it is used in heating or cooling circuits. Potable water (100 mg/kg Cl⁻ max.) or demineralized water with a neutral pH must be used.

In order to prevent corrosion, the following minimum and maximum concentrations of Glythermin P44 should be observed.

In solar heating equipment	40 – 75 % v/v Glythermin P44
In other equipment	25 – 75 % v/v Glythermin P44

Stability in solar heating equipment

Sustained exposure to temperatures higher than 170 °C causes Glythermin P44 to age prematurely.

Glythermin P44 starts to age irreversible at temperatures higher than 200 °C, with the result that the reliability of the equipment may be jeopardized.

The following table shows the effectiveness of mixtures of Glythermin P44 in inhibiting corrosion.

Corrosion tests according to ASTM D 1384 (American Society for Testing and Materials)

Average change in weight of coupons in g/m²

Material	Glythermin P44/ water (ASTM standard) 1 : 2
Copper (F-Cu)	-0.5
Soft solder (L Pb Sn 30)	-0.2
Brass (Ms 63)	-0.2
Cast iron (GG 25)	+0.2
Steel (H II)	+0.4
Cast aluminium (G AISi6Cu4)	+0.4

Mixtures of Glythermin P44 and water do not attack the sealants normally used in heating systems. The following list of sealants, elastomers and plastics that are resistant to mixtures of Glythermin P44 and water has been compiled from experience, and the literature.

Examples of sealants are Fermit® and Fermitol® (registered trademarks of Nissen & Volk GmbH, Hamburg) and hemp

Butyl rubber	IIR
Chloroprene	CR
Ethylene-propylene-diene rubber	EPDM
Fluorocarbon elastomers	FPM
Natural rubber at temperatures up to 80 °C	NR
Nitrile rubber	NBR
Polyacetal	POM
Polyamide at temperatures up to 115 °C	PA
Polybutene	PB
Polyethylene, soft/hard	PE-LD/PE-HD
Polyethylene, crosslinked	VPE
Polypropylene	PP
Polytetrafluoroethylene	PTFE
Polyvinyl chloride, rigid	PVC h
Silicone rubber	Si
Styrene-butadiene rubber at temperatures of up to 100 °C	SBR
Unsaturated polyester resins	UP

Phenolic and aminoplast resins, plasticized PVC and polyurethane elastomers are **not** resistant to Glythermin P44.

An important point to note is that the performance of elastomers such as EPDM is determined by the nature and amount of the constituent additives and the vulcanization conditions, as well as the properties of the rubber itself.

For this reason, we would recommend testing the resistance of these elastomers to mixtures of Glythermin P44 and water before they are put into service for the first time.

This applies particularly to elastomers intended for use as membranes for expansion tanks as described in DIN 4807.

Gaskets made from 70 EPDM 281* have been shown to be resistant to mixtures of Glythermin P44 and water at temperatures of up to 160 °C, and gaskets such as REINZ-AFM 34** and Centellen 3820***, which is based on a combination of Aramid and special NBR, have been shown to be resistant at temperatures of up to 200 °C.

* Supplied by Carl Freudenberg, Dichtungs- und Schwingungstechnik, Postfach 1 00 03 63, D-69465 Weinheim

** Supplied by REINZ-Dichtungs GmbH, Postfach 19 09, D-89229 Neu-Ulm

*** Supplied by Hecker Werke GmbH & Co., D-71093 Weil im Schönbuch

If losses occur due to evaporation, the system can be topped up with neutral potable water. If leakages or other losses occur, the heat-transfer liquid in the system must be replenished with an aqueous Glythermin P44 solution of the same concentration. In cases of doubt, the Glythermin P44 content must be determined.

Glythermin P44 % v/v	Density at 20 °C g/cm ³	Refractive index n _D ²⁰	Freezing point °C
25	1.023	1.3627	-10
30	1.029	1.3690	-13
35	1.033	1.3747	-17
40	1.037	1.3801	-21
45	1.042	1.3855	-26
50	1.045	1.3910	-32
55	1.048	1.3966	-40

Shelf life

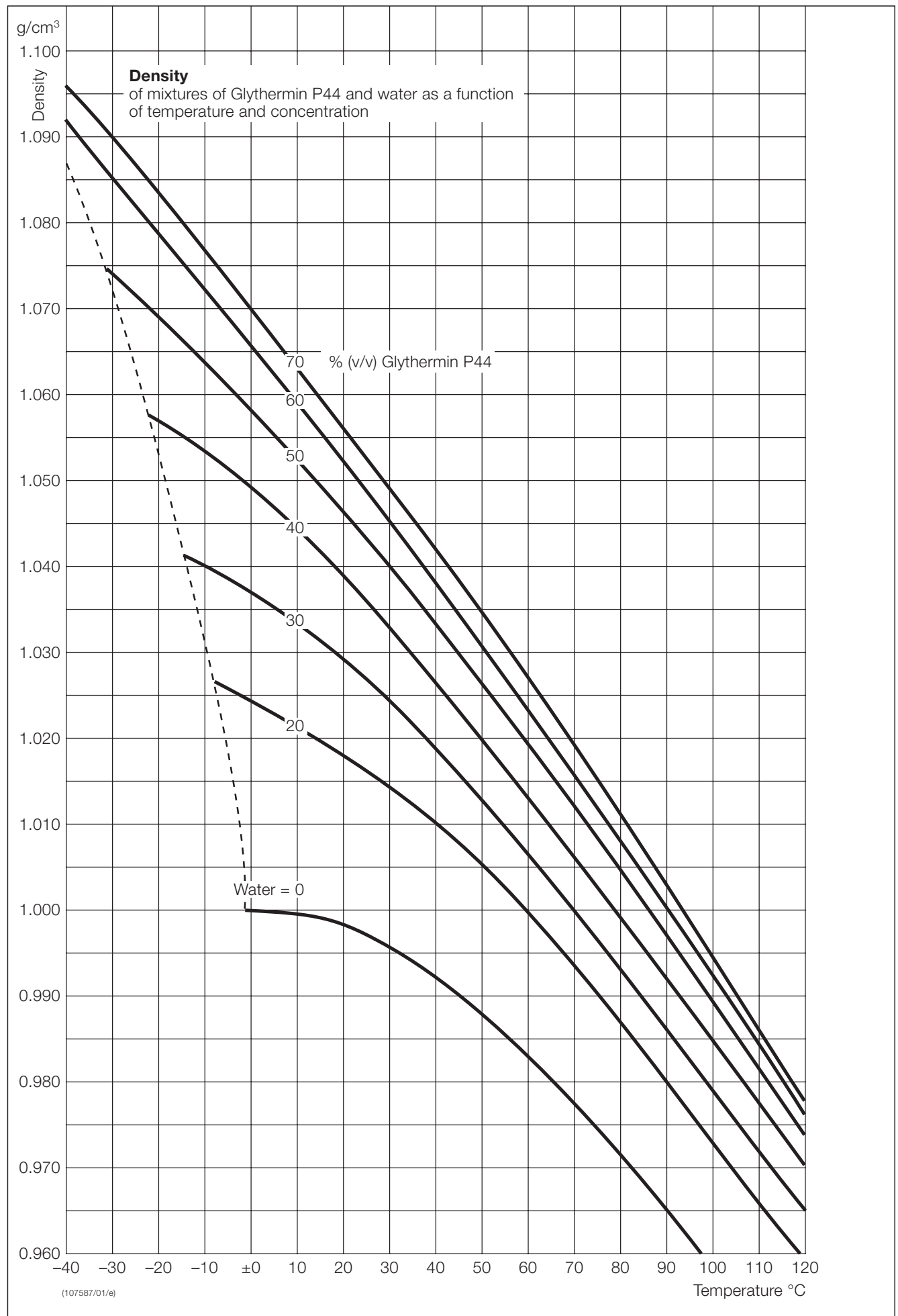
Glythermin P44 has a shelf life of at least three years when stored properly and professionally in originally closed containers.

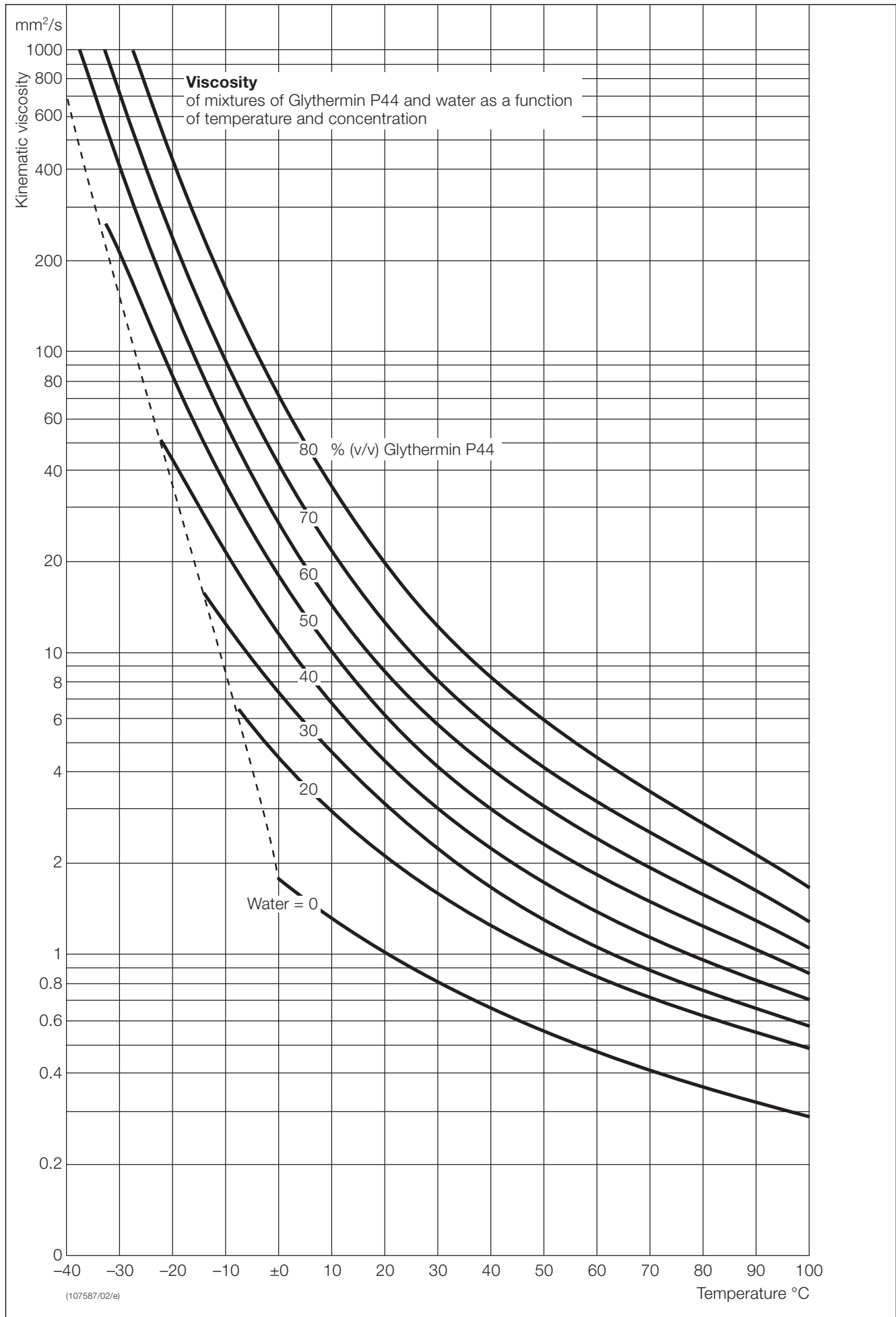
Packaging/form of delivery

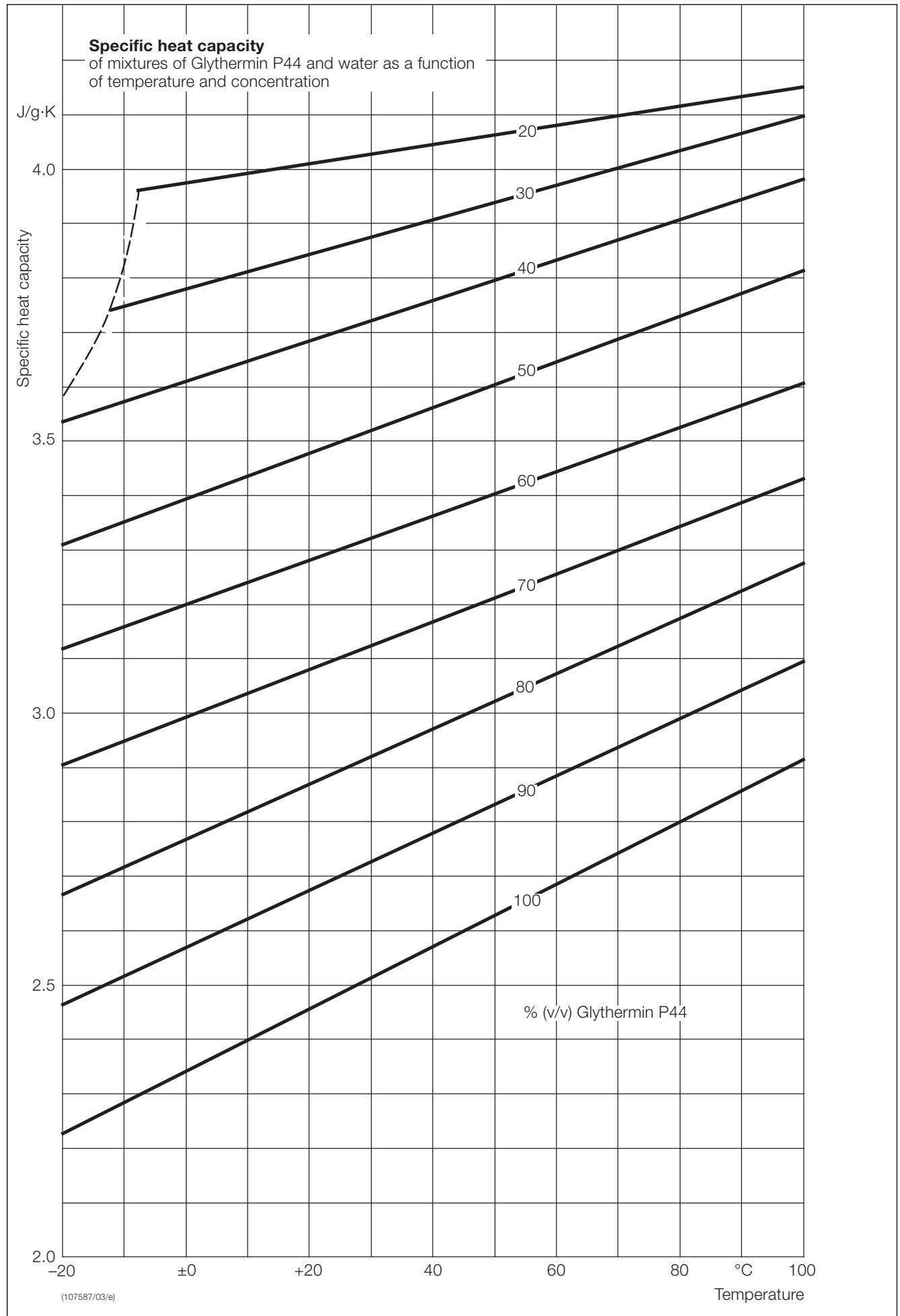
Glythermin P44 is supplied in road tankers and 220 kg non-returnable metal drums.

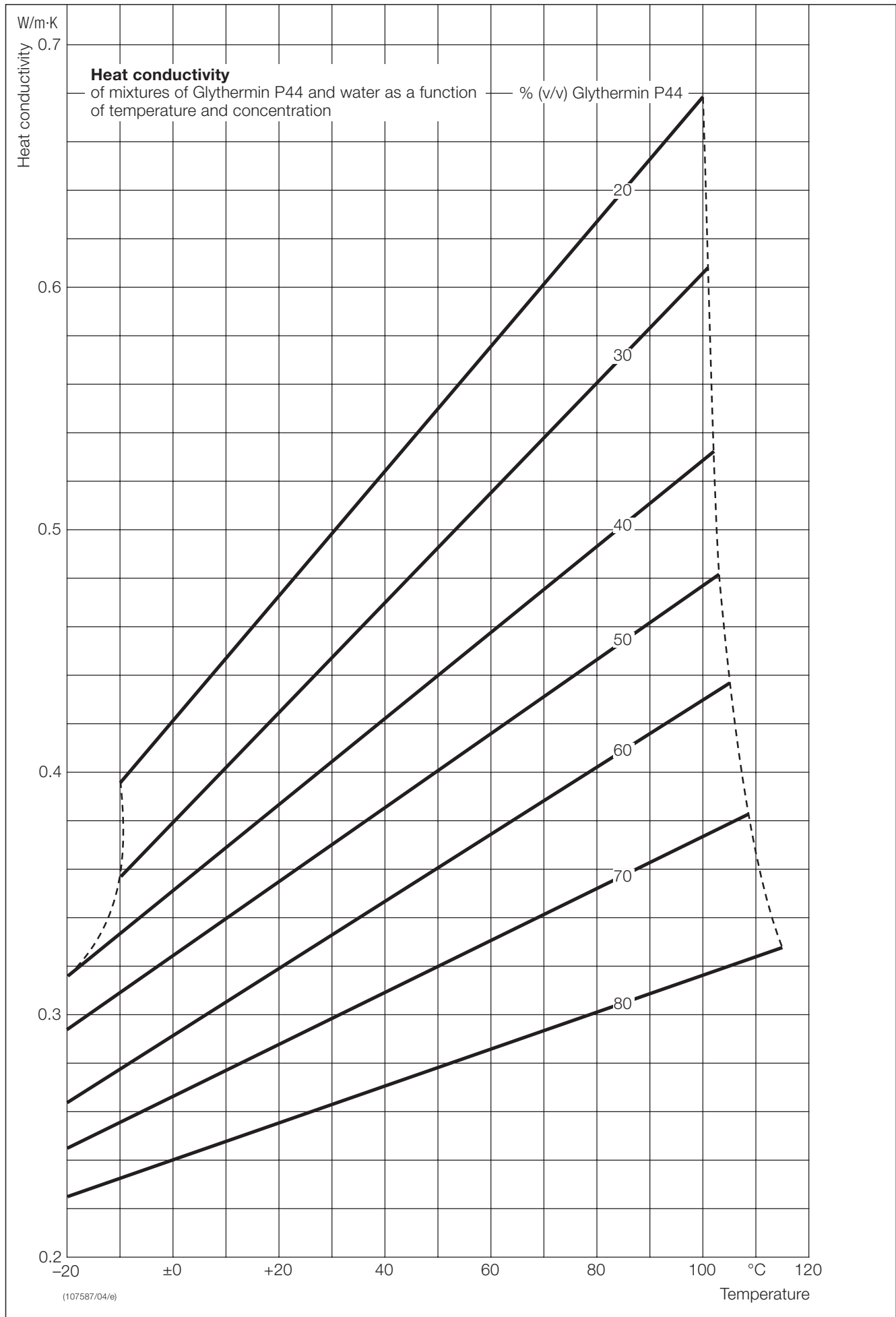
Safety**Safety Data Sheet**

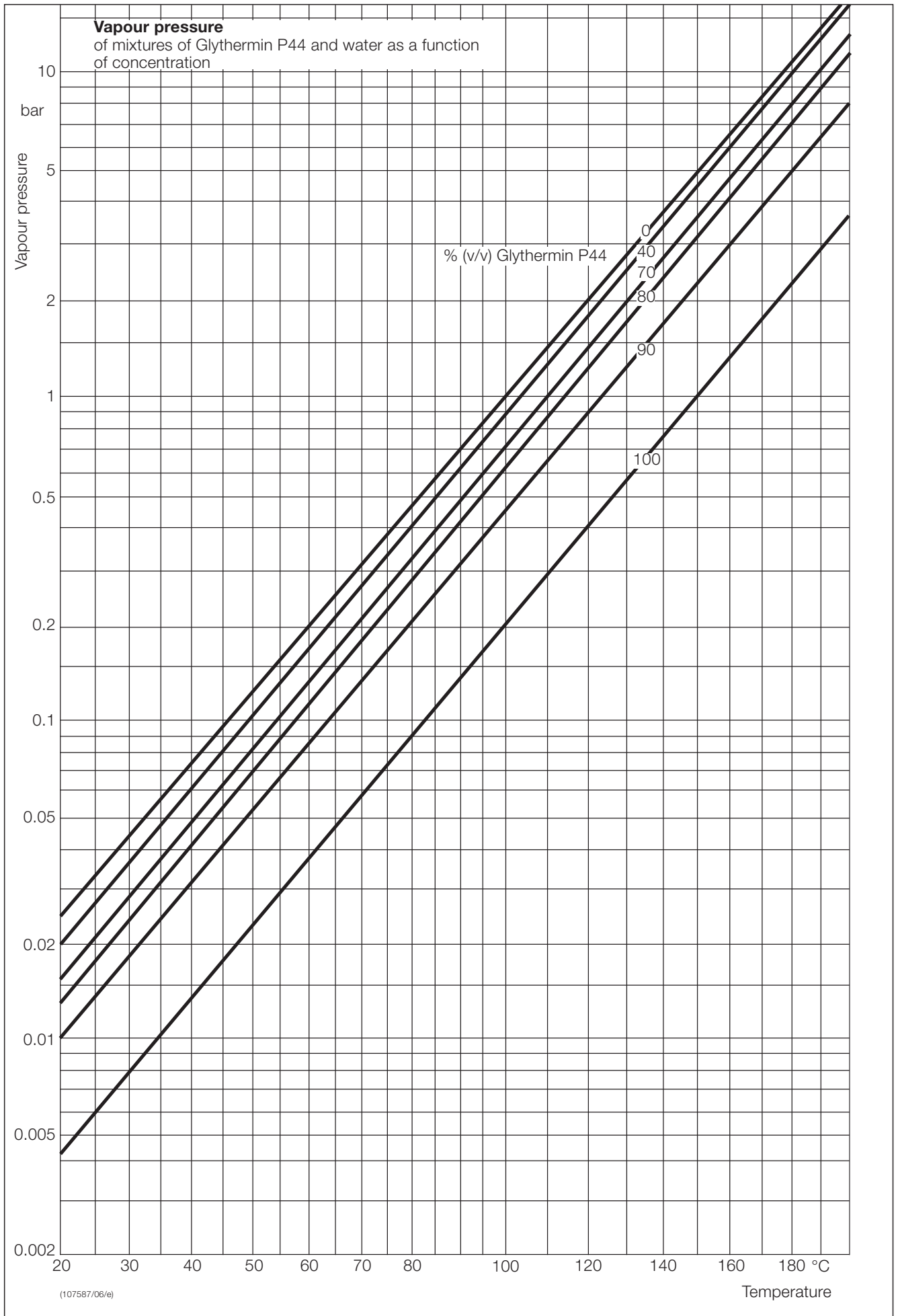
A safety data sheet has been drawn up for Glythermin P44 in accordance with EEC Directive (EG) No. 1907/2006

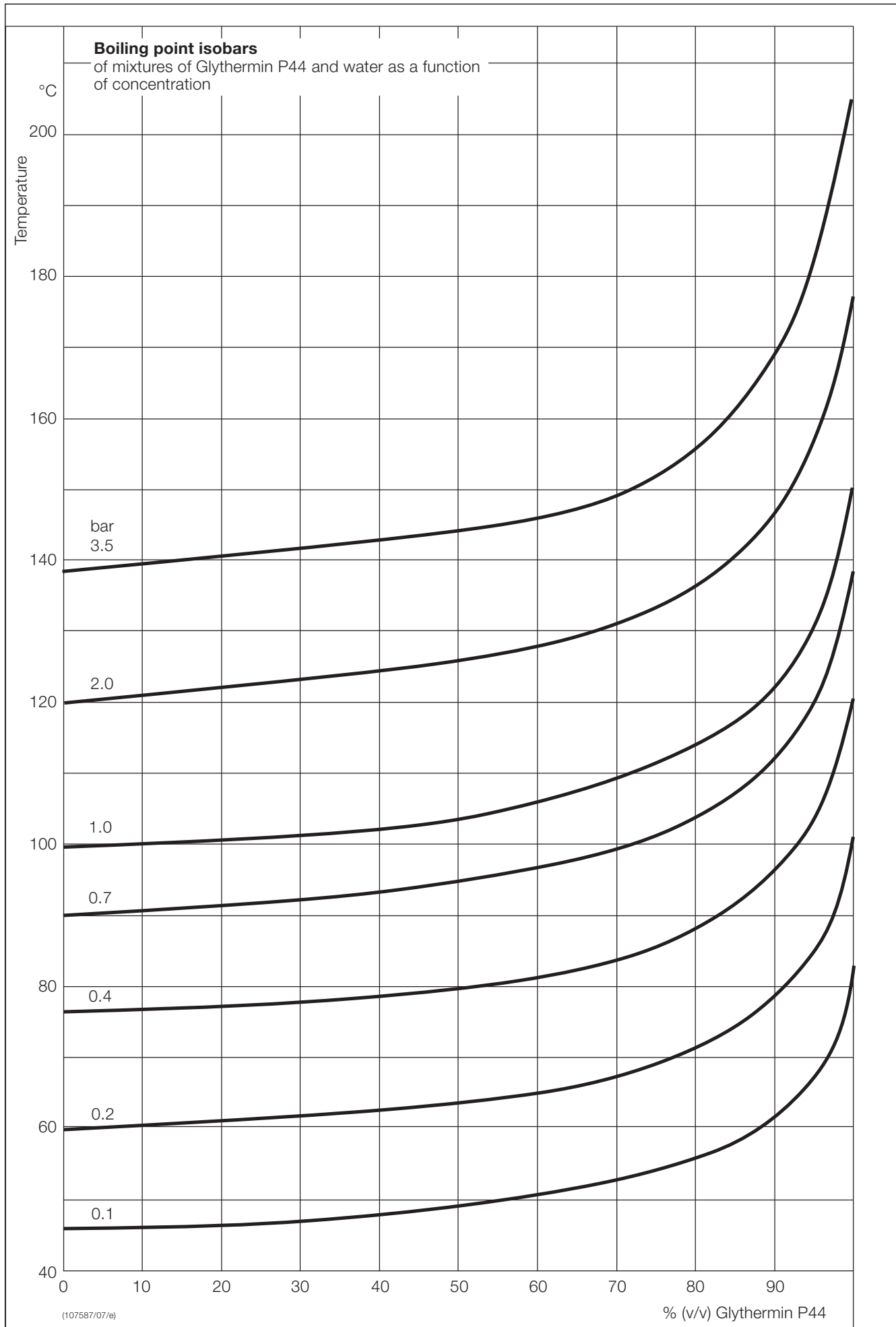


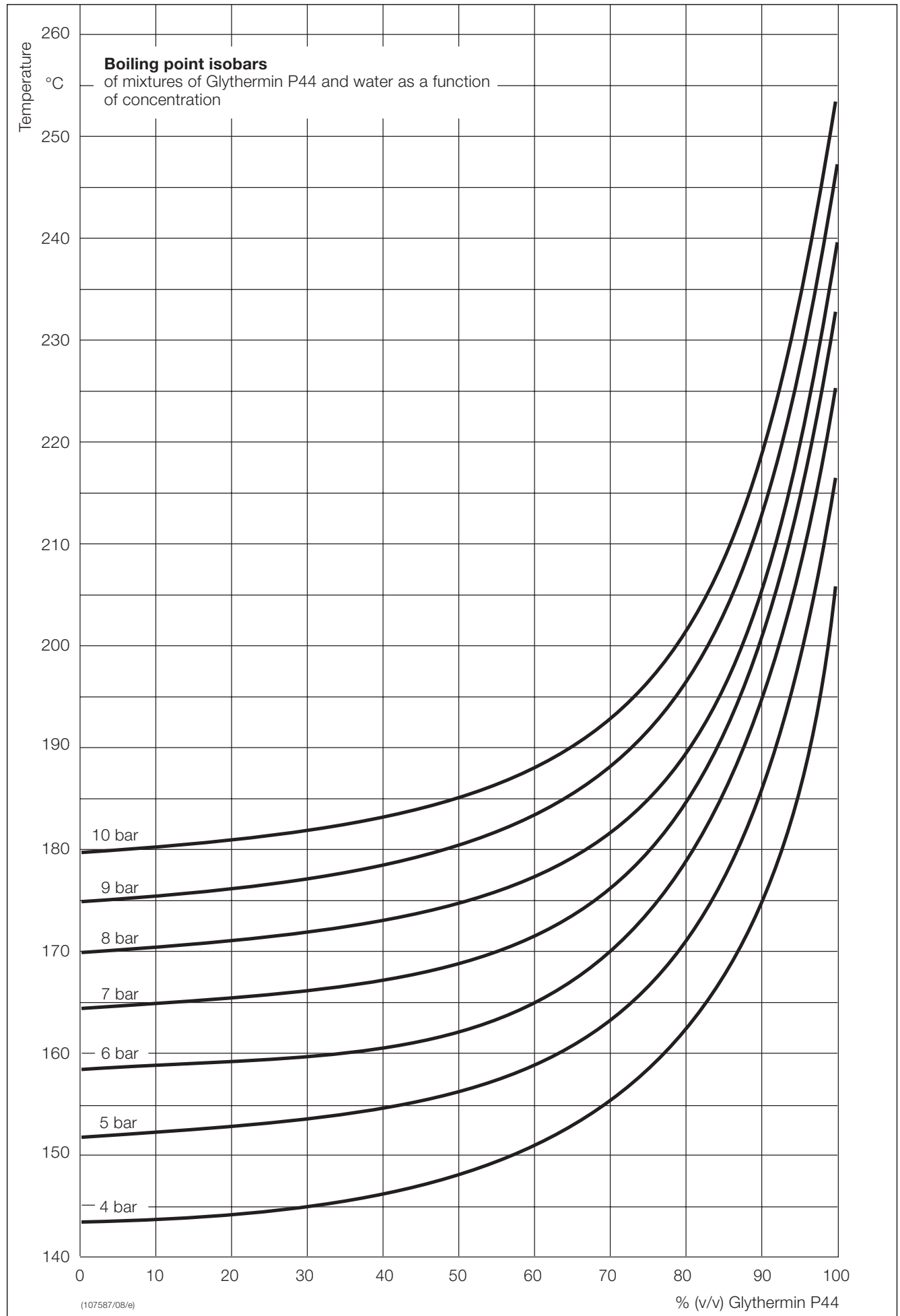












Note

The data contained in this publication are based on our current knowledge and experience. In view of the many factors that may affect processing and application of our product, these data do not relieve processors from carrying out their own investigations and tests; neither do these data imply any guarantee of certain properties, nor the suitability of the product for a specific purpose. Any descriptions, drawings, photographs, data, proportions, weights etc. given herein may change without prior information and do not constitute the agreed contractual quality of the product. It is the responsibility of the recipient of our products to ensure that any proprietary rights and existing laws and legislation are observed.

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