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INTERNATIONAL STANDARD



**Solar thermal electric plants –
Part 1-6: Silicone-based heat transfer fluids for use in line-focus concentrated
solar power applications**

INTERNATIONAL
ELECTROTECHNICAL
COMMISSION

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CONTENTS

FOREWORD.....	4
1 Scope.....	6
2 Normative references	6
3 Terms and definitions	7
3.1 General definitions.....	7
3.2 Relevant physical and chemical properties of heat transfer fluids.....	8
4 Classification of heat transfer fluids	12
4.1 General.....	12
4.2 Mineral oil fluids.....	12
4.3 Synthetic fluids	12
4.4 Synthetic heat transfer fluids based on polydimethylsiloxanes (silicone, SiHTF).....	12
4.5 Organic synthetic heat transfer fluids based on biphenyl / diphenyl oxide (BP/DPO).....	12
4.6 Molten salt	12
5 Specified fluid properties and test methods	12
5.1 General.....	12
5.2 List of technical requirements and evaluation of the quality of unused heat transfer fluids.....	13
5.3 List of additional fluid properties and test methods for silicone-based heat transfer fluids for general layout at operating conditions	14
5.4 List of fluid properties and test methods for heat transfer fluids in use	14
6 Inspection interval and sampling.....	15
6.1 Inspection interval.....	15
6.2 HTF sampling	16
6.3 Gas-sampling.....	16
6.4 Labeling of the samples	17
7 Reporting.....	18
8 Marking, labelling and accompanied documents	19
9 Mixing.....	19
10 Recycling and disposal.....	20
11 Replacement and disuse	20
Annex A (informative) Determination of the degree of thermal degradation of polydimethylsiloxane-based heat transfer fluids	21
A.1 Overview.....	21
A.2 Meaning of symbols M, D, T.....	21
A.3 Principle	21
A.4 Technical equipment.....	23
A.5 Safety remarks.....	24
A.6 Reagents	24
A.7 Procedure.....	24
A.7.1 Sample preparation	24
A.7.2 Measurement procedure	24
A.8 Evaluation.....	25
A.8.1 Analysis of results	25
A.8.2 Calculation of the degree of degradation	26
A.8.3 Assessment of the result	27

A.9	Accuracy	27
A.9.1	General	27
A.9.2	Addition of TM ₃ as external standard	27
A.9.3	Repeatability	27
A.9.4	Reproducibility	27
A.10	Example with TM ₃ as reference substance	27
Annex B (informative) Safety instructions and recommendations for handling polydimethylsiloxane-based heat transfer fluids at temperatures up to 450 °C		29
B.1	Safety information	29
B.2	Safety instructions and recommendations	29
B.2.1	General recommendations	29
B.2.2	Hazardous ingredients of polydimethylsiloxane-based heat transfer fluids under operating conditions	30
B.2.3	Exposure controls and personal protection	30
B.2.4	General protection and hygiene measures	31
B.2.5	Personal protection equipment	31
B.2.6	First aid measures after contact	31
B.2.7	Firefighting measures	32
Bibliography		33
Figure 1 – Example of an aluminum bottle for sampling (new)		16
Figure 2 – Example of a cylinder mounted with two valves (before use) e.g. for sampling at 425 °C and 20 bar		17
Figure A.1 – Representation of the molecular structure of M-, D-, and T-units in polydimethylsiloxanes (PDMS)		21
Figure A.2 – Representation of the molecular structure of polydimethylsiloxanes (PDMS, left) and the thermally induced equilibration reaction of linear polydimethylsiloxanes		22
Figure A.3 – Thermally induced disproportionation of D-units in linear polydimethylsiloxanes, into T and M units		22
Figure A.4 – Theoretical model for describing the long-term increase in viscosity of polydimethylsiloxane-based fluids by thermal aging		23
Figure A.5 – Representation of a ²⁹ Si NMR spectrum indicating the different shift regions		26
Figure A.6 – ²⁹ Si NMR spectrum (99,3 MHz, CD ₂ Cl ₂) of TM ₃ with TMS as internal standard		28
Table 1 – Properties and test methods for unused heat transfer fluids		13
Table 2 – Additional fluid properties at specified operating conditions		14
Table 3 – Test methods for heat transfer fluids in use (basic program)		15
Table 4 – Test methods for heat transfer fluids in use (additional program)		15
Table A.1 – Shift regions and assignment		25
Table B.1 – Possible hazardous ingredients of polydimethylsiloxane-based heat transfer fluids in use		30
Table B.2 – The product can contain the following substances of very high concern (Regulation (EC) No. 1907/2006 (REACH), Article 57) in amounts ≥ 0,1 %		30

INTERNATIONAL ELECTROTECHNICAL COMMISSION

SOLAR THERMAL ELECTRIC PLANTS –**Part 1-6: Silicone-based heat transfer fluids for use in
line-focus concentrated solar power applications**

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IEC 62862-1-6 has been prepared by IEC technical committee TC 117: Solar thermal electric plants. It is an International Standard.

The text of this International Standard is based on the following documents:

Draft	Report on voting
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Full information on the voting for its approval can be found in the report on voting indicated in the above table.

The language used for the development of this International Standard is English.

This document was drafted in accordance with ISO/IEC Directives, Part 2, and developed in accordance with ISO/IEC Directives, Part 1 and ISO/IEC Directives, IEC Supplement, available at www.iec.ch/members_experts/refdocs. The main document types developed by IEC are described in greater detail at <http://www.iec.ch/standardsdev/publications>.

A list of all parts in the IEC 62862 series, published under the general title *Solar thermal electric plants*, can be found on the IEC website.

The committee has decided that the contents of this document will remain unchanged until the stability date indicated on the IEC website under webstore.iec.ch in the data related to the specific document. At this date, the document will be

- reconfirmed,
- withdrawn, or
- revised.

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SOLAR THERMAL ELECTRIC PLANTS –

Part 1-6: Silicone-based heat transfer fluids for use in line-focus concentrated solar power applications

1 Scope

This part of IEC 62862 specifies the technical requirements (safety and physical parameters), test methods, inspection rules and intervals, sampling, judgment, marking, labelling and accompanying documents, packaging, transportation and storage, recycling and disposal of silicone-based heat transfer fluids (SiHTF) for use in line-focusing solar thermal power plants.

The application of polydimethylsiloxane-based heat transfer fluids for this type of installation is covered in this document. Owing to their chemical nature and composition, the introduction of new test methods to determine the applicability and the thermal stability of SiHTF is included in this document.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

IEC TS 62862-1-1, *Solar thermal electric plants – Part 1-1: Terminology*

ISO 2049, *Petroleum products – Determination of colour (ASTM scale)*

ISO 2160, *Petroleum products – Corrosiveness to copper – Copper strip test*

ISO 2719, *Determination of flash point – Pensky-Martens closed cup method*

ISO 3016, *Petroleum and related products from natural or synthetic sources – Determination of pour point*

ISO 3104, *Petroleum products – Transparent and opaque liquids – Determination of kinematic viscosity and calculation of dynamic viscosity*

ISO 3405, *Petroleum and related products from natural or synthetic sources – Determination of distillation characteristics at atmospheric pressure*

ISO 3675, *Crude petroleum and liquid petroleum products – Laboratory determination of density – Hydrometer method*

ISO 6618, *Petroleum products and lubricants – Determination of acid or base number – Colour-indicator titration method*

ISO 11885, *Water quality – Determination of selected elements by inductively coupled plasma optical emission spectrometry (ICP-OES)*

ISO 12185, *Crude petroleum and petroleum products – Determination of density – Oscillating U-tube method*

ISO 12937, *Petroleum products – Determination of water – Coulometric Karl Fischer titration method*

ISO 15597, *Petroleum and related products – Determination of chlorine and bromine content – Wavelength-dispersive X-ray fluorescence spectrometry*

ISO 20846, *Petroleum products – Determination of sulfur content of automotive fuels – Ultraviolet fluorescence method*

UNE 206015, *Heat transfer fluids for solar thermal power plants with parabolic trough collector technology. Requirements and tests*

DIN 4754-1, *Wärmeübertragungsanlagen mit organischen Wärmeträgern – Teil 1: Sicherheitstechnische Anforderungen, Prüfung* (in German) [*Heat transfer installations working with organic heat transfer fluids – Part 1: Safety requirements, test*]

DIN 51529, *Prüfung von Mineralölen und verwandten Erzeugnissen – Prüfung und Beurteilung gebrauchter Wärmeträgermedien* (in German) [*Testing of mineral oils and related products – Testing and evaluation of used heat transfer fluids*]

DIN 51794-2003-05, *Prüfung von Mineralölkohlenwasserstoffen – Bestimmung der Zündtemperatur* (in German) [*Testing of mineral oil hydrocarbons – Determination of ignition temperature*]