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IEC 62862-1-6

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# INTERNATIONAL STANDARD



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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**

INTERNATIONAL  
ELECTROTECHNICAL  
COMMISSION

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

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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](http://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>.

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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*]