

INTERNATIONAL STANDARD

**High-frequency dielectric heating installations - Test methods for the
determination of power output**

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

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FOREWORD

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IEC 61308 has been prepared by IEC technical committee 27: Industrial electroheating and electromagnetic processing. It is an International Standard.

This third edition cancels and replaces the second edition published in 2005. This edition constitutes a technical revision.

This edition includes the following significant technical changes with respect to the previous edition:

- a) adaptation and alignment to the principles in more recent editions of IEC 60519-1 and IEC 60519-6;
- b) more detailed descriptions of, in particular, the calorimetric load test and output power evaluation for dielectric plastic welders.

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

Draft	Report on voting
27/1244/FDIS	27/1248/RVD

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 www.iec.ch/publications.

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- withdrawn, or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.

1 Scope

This document specifies test methods for the determination of useful high frequency power output in equipment for industrial heating and processing of materials. It is in particular applicable to HF generators made available to users as separate units.

This document is basically applicable to equipment operating in the frequency range 100 kHz to 300 MHz, as defined in IEC 60519-1, with the following limitations.

- This document does not apply to induction heating, which it is possible to carry out in the lower part of the specified frequency band.
- The ISM centre frequencies for dielectric heating and processing of industrial interest are narrow bands about 6,78 MHz, 13,56 MHz, 27,12 MHz and 40,68 MHz.
- This document is not applicable to:
 - appliances for household and similar use;
 - commercial use;
 - laboratory use;
 - medical high frequency equipment.

For equipment working in designated ISM bands, it is a legal requirement that the frequency remains within the ISM bands according to CISPR 11, but the resonant frequency of the circuit varies with the change of dielectric parameters of the load. Therefore, the value of the mean output power in the work cycle can be much lower than the value obtained under the test conditions. This value depends upon the response of the tuning system.

NOTE 1 The following criteria are suitable for determination of the classification as industrial equipment:

- commercial equipment is typically designed and planned for series production of many identical units;
- industrial equipment is typically produced in small series or even as single units; the processed goods are consumed or ready for final use at the end of the heating process.

NOTE 2 Heating a workload with dielectric parameters which change significantly in time and/or with temperature, the value of the output power obtained with the actual charge can be different from that obtained with the test load specified in this document.

This document relates to equipment normally operating under continuous rated conditions.

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 60050-841, *International Electrotechnical Vocabulary (IEV) - Part 841: Industrial electroheat*

IEC 60519-1, *Safety in installations for electroheating and electromagnetic processing - Part 1: General requirements*

IEC 60519-6, *Safety in installations for electroheating and electromagnetic processing - Part 6: Particular requirements for high frequency dielectric and microwave heating and processing equipment*