

GERLING APPLIED ENGINEERING, INC.

[a Muegge GmbH company](#)

Advanced Microwave Heating Technology



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Protection Against Microwave Leakage

The following is an excerpt from the International Electrotechnical Commission (IEC) Standard publication 519-6, "Safety in Electroheat Installations," Part 6: *Specifications for safety in industrial microwave heating equipment*. A copy of the full document is available from the [IEC web store](#).

Microwave Leakage Limit

Microwave heating equipment shall be designed, constructed and operated to provide adequate protection against radiation hazards due to microwave leakage.

All equipment where accessibility to the applicator by a part of the human body is possible is to be provided with means of access. Such means of access may be omitted if other types of protective measures such as doors or barriers are arranged with required interlocking.

On the basis of current knowledge and pending the conclusions of work under way in different countries, the microwave leakage power density shall not exceed a power density of 50 W/m^2 (5 mW/cm^2) at any accessible location 0.05 m from any portion of the equipment under conditions designated as "normal operation". In addition, the microwave leakage shall not exceed a power density of 100 W/m^2 at any accessible location 0.05 m from any portion of the equipment under conditions designated as "abnormal operation". These levels shall not be exceeded at any point located at distances greater than 0.05 m.

Normal Operation

The maximum microwave leakage at any accessible location 0.05 m or more from any portion of the microwave heating equipment shall be measured for the range of microwave power input and material types in allowable working conditions of the equipment, as agreed between the manufacturer and the user.

Abnormal Operation With Workpiece

The measurements above shall be repeated but with all doors, access means and covers removed or open except those which incorporate microwave interlocks which prohibit generation of microwave power when they are removed or open. The measurements shall again be repeated, but with each door, cover or access means which incorporates a microwave interlock adjusted in the most unfavorable position which still allows generation of microwave power.

Abnormal Operation Without Workpiece

The measurements above shall be repeated but with no material in the applicator, and with the microwave energy generator adjusted to the maximum level that equipment interlocks permit or at the maximum level possible without damage to the microwave heating system.