

DIVISION 112
REQUIREMENTS FOR MICROWAVE OVEN USE AND SERVICE

333-112-0001 [PURPOSE AND SCOPE]

- (1) The purpose of this Division is to assure adequate servicing and repair of microwave ovens and to prevent public and occupational exposure to microwave radiation from leaking microwave ovens which the Agency has determined to present a biological hazard to occupational and public health and safety.
- (2) The requirements of this Division apply to any person or facility that operates microwave ovens or that provides repair or other service for microwave ovens used in homes, restaurants, hospitals, schools or other establishments where the public could be exposed.

333-112-0005 [DEFINITIONS]

As used in this Division, these terms have the definitions set forth below:

- (1) *Microwave oven* means an electronic product designed to heat or cook food through the application of electromagnetic energy at frequencies assigned by the [Federal Communications Commission](#) in the normal industrial, scientific and medical heating bands ranging from 890 MHz to 6,000 MHz.
- (2) *Cavity* means that portion of the microwave oven in which food may be heated or cooked.
- (3) *Door* means the movable barrier which prevents access to the cavity during operation and the function of which is to prevent emission of microwave energy from the passage or opening which provides access to the cavity.
- (4) *External surface* means the outside surface of the cabinet or enclosure provided by the manufacturer as part of the microwave oven, including doors, door handles, latches and control knobs.
- (5) *Licensee* means any person (facility) that provides service for microwave ovens.
- (6) *Service* means the testing, repair, maintenance, modification, replacement or adjustment of any microwave oven or any part or component thereof.
- (7) *Stirrer* means that feature of a microwave oven which is intended to provide uniform heating of the load by constantly changing the standing wave pattern within the cavity or moving the load.
- (8) *Technician* means any individual that performs service on microwave ovens

333-112-0010 [LICENSING OF MICROWAVE OVEN REPAIR FACILITIES]

- (1) No person or facility shall provide service for microwave ovens except as authorized by a specific license issued by the Agency. A license application will be approved or an annual validation certificate issued when the Agency determines that:
 - (a) The applicant's proposed test equipment satisfies the requirements of § [0020](#);
 - (b) The applicant's proposed procedures pertaining to oven repair and instruction of personnel are adequate to ensure compliance with these rules.

- (2) License applications shall be made on forms furnished by the Agency.
- (3) In addition to the requirements of this division, all licensees are subject to the requirements of divisions [100](#)¹ and [111](#).²

REQUIREMENTS FOR MICROWAVE OVEN SERVICE LICENSEES

333-112-0015 [SERVICE RESPONSIBILITIES]

- (1) The licensee shall test each microwave oven serviced for leakage in accordance with measurement and test procedures described in § [0020](#). The test shall be performed before, if the oven is operational, and after servicing of the oven has been completed.
- (2) No licensee shall provide service for a microwave oven in such a manner as to cause leakage from the oven in excess of those limits specified in § [0040](#).
- (3) The licensee shall notify the Agency within 20 days of any microwave oven that is found to be leaking microwave radiation in excess of the limits specified in § [0040](#). The notification shall include:
 - (a) The maximum power density measured with procedures described in § [0020](#);
 - (b) The name of the manufacturer of the oven;
 - (c) The date the leakage was corrected and the oven was brought into compliance with § [0040](#);
 - (d) The reason why the leakage was not corrected and brought into compliance with § [0040](#); or
 - (e) The name and address of the owner.
- (4) A copy of the notification required by § [0015\(3\)](#) shall be supplied to the owner or user of the microwave oven at the time the notification is sent to the Agency.

333-112-0020 [MEASUREMENT AND TEST PROCEDURES]

- (1) Leakage levels shall be determined by measurements of microwave power density made with an instrument system which:
 - (a) Reaches 90% of its steady-state reading within three seconds when the system is subjected to a stepped input signal;
 - (b) Has a radiation detector with an effective aperture of 25 cm² or less as measured in a plane wave, having no dimension exceeding 10 cm;
 - (c) Is capable of measuring microwave oven leakage levels with an accuracy of +25% and -20% (±1 dB);
 - (d) Has been calibrated at least within the last 12 months.
- (2) Measurements shall be made in accordance with the manufacturer's leakage test procedures or with the microwave oven operating at its maximum output and containing a load of 275 ± 15 ml of tap water, initially at room temperature, placed within the cavity at the center of the load-carrying surface provided by

¹ [Control of radiation in Oregon](#)

² [Notices, instructions and reports to workers: Inspections](#)

the manufacturer. The water container for the latter procedure shall be a low form 600 ml beaker, or substantially similar vessel, having an inside diameter of approximately 8.5 cm and made of an electrically nonconductive material, such as glass or plastic.

- (3) Measurements shall be made with the door fully closed, as well as with the door fixed in any other position which allows the oven to operate.
- (4) Measurements shall be made at points 5 cm or less from external surfaces of the oven.

333-112-0025 [TRAINING OF SERVICE PERSONNEL]

The licensee shall ensure that each technician who services microwave ovens in his or her employ is instructed in the test procedures, compliance criteria and all requirements of this Division.

333-112-0030 [PERSONNEL MONITORING FOR CATARACTS]

It is recommended that each individual who performs servicing of microwave ovens have his or her eyes examined for cataract formations. The testing for cataracts should be by a licensed ophthalmologist and should be performed at the beginning of employment and annually thereafter.

333-112-0035 [RECORDS]

The licensee shall maintain records showing the results of leakage measurements on each microwave oven serviced. The records shall be maintained for inspection by the Agency and shall be so filed as to be readily available for review. The records shall contain at least the following information:

- (1) The name of the individual who performed the service.
- (2) The date the service was completed.
- (3) The maximum leakage levels before and after servicing as applicable.
- (4) The location of the maximum leakage levels.

333-112-0040 [OPERATION OF MICROWAVE OVENS]

- (1) No person shall operate or direct the operation of a microwave oven that has been determined to leak microwave radiation in excess of the following limits:
 - (a) For ovens manufactured after October 1, 1971, leakage in excess of 5 mW/cm² at any point 5 cm or more from the external surface of the oven;
 - (b) For ovens manufactured before October 1, 1971, leakage in excess of 10 mW/cm² at any point 5 cm or more from the external surface of the oven.
- (2) Microwave ovens shall be considered to be in compliance with § [0040\(1\)](#) of this rule if the maximum power density of microwave radiation leakage measured in the test procedures specified in § [0020](#) does not exceed the microwave radiation leakage limits specified in § [0040\(1\)](#) measured through at least one stirrer cycle.