

## Chapter Ind 7

## CLEANING AND DYEING

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Ind 7.001 Application and scope of rules. (1) The provisions of this code shall, except where there is specific reference to the contrary, apply to all new establishments hereinafter defined as dry cleaning or dry dyeing plants, and to additions to and alteration of existing dry cleaning or dry dyeing plants.

(2) Substandard existing dry cleaning or dry dyeing establishments shall be brought within the standards of this code insofar as may be directed by the industrial commission.

(3) Requirements of other codes issued by the industrial commission shall apply as they may be applicable in all matters falling within the scope of, but not specifically treated in this code.

Ind 7.002 Inspections. (1) The authorized inspectors of the department, upon presenting appropriate credentials to the owner, operator, or agent in charge, are authorized—

(a) To enter without delay and at reasonable times any factory, plant, establishment, construction site, or other areas, workplace or environment where work is performed by an employee of an employer; and

(b) To inspect and investigate during regular working hours and at other reasonable times, and within reasonable limits and in a reasonable manner, any such place of employment and all pertinent conditions, structures, machines, apparatus, devices, equipment, and materials therein, and to question privately any such employer, owner, operator, agent or employee.

(2) The inspector before making his inspection shall contact a representative of the employer and a representative authorized by his employees who shall be given an opportunity to accompany the inspector during the physical inspection of any workplace under subsection (1) for the purpose of aiding such inspection.

(a) Where there is no authorized employee representative, the inspector shall consult with a reasonable number of employees concerning matters of health and safety in the workplace.

**Note:** The department policy is not to give advance notice, but in the scheduling and in the act of inspecting it may not always be possible to avoid advance notice or to obtain accompaniment as, for example, inside boilers or in precarious locations of elevator installations, but otherwise these rules will be diligently observed.

**History:** Cr. Register, April, 1973, No. 208, eff. 5-1-73.

**Ind 7.01 Definitions.** For the purpose of these regulations, the following definitions shall apply. Terms not herein defined shall be understood as having their usual and ordinary meaning unless a different meaning is plainly required by the context.

(1) **DRY CLEANING.** The process of removing dirt, grease, paint and other stains from wearing apparel, furs, textiles, fabrics, rugs, etc., by use of any volatile commercial solvent substantially moisture-free, flammable or non-inflammable, (including, but not by way of limitation, petroleum distillates, coal tar distillates, and chlorinated hydrocarbons) by,

(a) Immersion and/or agitation with the solvent in open vessels.

(b) Immersion and/or with the solvent in closed machines.

(c) "Spotting" or local application of solvents to spots of dirt, grease, paints and stains not removed by the immersion and agitation process.

(d) "Brushing" or "Scouring" with cleaning solvents.

**Exception:** Occasional spotting or cleaning as incidental to the operation of a small tailoring or pressing shop or hat cleaning shop shall not be considered "dry cleaning", provided, however, that in such shop use shall be from a container not exceeding one quart capacity with not more than 5 gallons of solvent on the premises stored in approved safety containers.

(2) **DRY DYEING.** The process of dyeing clothes or other fabrics or textiles in a solution of dye colors and flammable liquids.

(3) **DRY DYEING AND/OR DRY DYEING PLANT.** Any building, room or premises equipped to perform the service of dry cleaning and/or dry dyeing.

(4) **NEW DRY CLEANING AND/OR DRY DYEING PLANT.** A plant, additions thereto, and alterations thereof for which plans have not been approved by the industrial commission or construction is not in progress, prior to the effective date of this code.

(5) **EXISTING DRY CLEANING AND/OR DRY DYEING PLANT.** A plant, additions thereto, and alterations thereof, structurally completed or for which plans have been approved by the industrial commission, and construction is in progress prior to the effective date of this code.

(6) **WASHING MACHINE OR WASHER.** A machine consisting of a stationary metal case or shell inside of which there is a revolving perforated cylinder, or any other approved type of washing machine for washing or rinsing wearing apparel, fabrics, textiles or articles of any sort.

(7) **EXTRACTOR.** A centrifugal machine used for removing surplus solvent from wearing apparel, fabrics, textiles or articles of any sort. The machine consists of an outer shell or casing inside of which is a revolving perforated metal basket.

(8) **DRYING TUMBLER.** A machine used in the dry cleaning or dry dyeing process in which wearing apparel, fabrics, textiles or articles of any sort are dried in currents of air, usually heated. The machine consists of a metal enclosure inside of which is a revolving perforated cylinder. Fur drums and shakers are considered drying tumblers for the purpose of these orders.

(9) **DRYING CABINET.** An enclosure used in the dry cleaning or dry dyeing process, in which wearing apparel, fabrics, textiles or articles of any sort are dried in currents of heated air.

(10) **DRYING ROOM.** A room or rooms wherein wearing apparel, fabrics, textiles, or articles of any sort which have been dry dyed are subjected to the process of drying.

(11) **CLEANING ROOM.** Any building or part thereof in which dry cleaning as defined in section Ind 7.01 (1), with the exception of spotting, is carried on.

(12) **STILL.** An apparatus used to evaporate volatile cleaning solvents by means of steam heat and to condense the same in a condenser or cooling chamber as a purified product.



(13) **CLARIFIER.** An apparatus utilizing the principle of centrifugal force for the purpose of removing suspended impurities from cleaning solvents.

(14) **FILTER.** An apparatus used for straining impurities, solid particles or coloring matter from cleaning solvents.

(15) **PURIFIER.** An apparatus for decolorizing and removing foreign matter from cleaning solvents.

(16) **STORAGE SYSTEM.** A tank or tanks used for the storage or settling of cleaning solvents together with all pipes, fittings, valves and traps used in connection therewith.

(17) **MECHANICAL SYSTEM OF VENTILATION.** Any ventilation, exhaust or heating system, the effectiveness of which depends upon the operation of power driven equipment.

(18) **GRAVITY SYSTEM OF VENTILATION.** Any ventilation, the practical effectiveness of which depends wholly upon atmospheric conditions, such as relative density, temperature or wind motion.

(19) **DUCT.** Any pipe, flue or channel, used, or intended to be used for the conveyance of air, gases or entrained materials pertaining to a heating or ventilation system.

(20) **APPROVED.** The term shall be understood to mean acceptable to the Industrial Commission of Wisconsin.

(21) **APPLICATION OF RULES.** In the rules which follow, wherever reference is made to "Dry Cleaning" it shall be construed as applying to both dry cleaning and dry dyeing operations.

**Ind 7.02 Classification of plants.** (1) For the purpose of this code, dry cleaning plants are arranged into 4 classes dependent upon the relative hazard of the solvent employed, as follows:

(a) **Class I**—Plants utilizing flammable solvents having flash points below 100° F. (Closed cup test).

*Note:* Plants of this class are prohibited. (See section Ind 7.07 for limitations on use of solvents of flash points below 100° F. for brushing, spotting, etc.)

(b) **Class II**—Plants utilizing flammable solvents having flash points at or above 100° F. (Closed cup test), but which do not meet the requirements for Class III.

(c) **Class III**—Plants employing "approved" equipment and utilizing flammable solvents having flash points above 138° F. (Closed cup test).

(d) **Class IV**—Plants utilizing solvents classed as non-flammable.

*Note:* Flash points shall be as determined by closed cup tester, and all tests shall be made in accordance with the methods adopted by the American Society for Testing Materials. The "Tag" closed cup tester (Standardized by the United States Bureau of Standards) shall be authoritative in case of dispute.

*Note:* Mixtures of solvents shall be considered as having the same flash point as that constituent of the mixture having the lowest flash point, except that when a solvent has been certified by a recognized testing laboratory to be a stable mixture and to have a definite minimum flash point, such flash point shall be used for classification.

*Note:* It will be the policy of the industrial commission to approve subject to the provisions of this rule, dry cleaning equipment and cleaning liquids which have been inspected and listed by Underwriters' Laboratories or equivalent.

(2) Since certain Underwriters' Laboratories listed cleaning liquids are classified and marked according to a "hazard rating" schedule rather than flash point, the following conversion table may be employed:

<i>Plant Class</i>	<i>Solvent Utilized</i> <i>Flashpoint</i>	<i>Hazard Rating (U.L.)</i>
I -----	below 100° F.	above 40
II -----	at or above 100° F.	40 or below
III -----	above 138° F.	25 or below
IV -----	classed as non-flammable	5 or below

See Underwriters' Laboratories "List of Inspected Gas, Oil, and Miscellaneous Appliances".

### GENERAL REQUIREMENTS

**Ind 7.03 Restrictions.** (1) All dry cleaning as defined in section Ind 7.01 shall be carried on only in dry cleaning rooms or buildings constructed in accordance with requirements hereinafter provided.

(2) Except as provided in section Ind 7.15 dry cleaning by immersion and agitation in open vessels is prohibited. Dry cleaning shall be done only in closed, standard, dry cleaning machines.

**Ind 7.04 Application and approval.** Before any dry cleaning plant may be established, application for permission therefor shall be filed with and approved by the industrial commission. Application shall be made on a standard form which will be furnished on request, and the completed form shall accompany the plans and specifications called for under the following order.

**Ind 7.05 Plans and specifications.** (1) **APPROVAL REQUIRED.** Before any new dry cleaning plant, room or building may be constructed or an existing dry cleaning plant remodeled, complete plans and specifications showing information hereinafter required shall be submitted in duplicate to the industrial commission. Approval shall be obtained before construction work is started, and all work shall be executed according to approved plans and specifications.

*Exception:* In cities where plans are examined and building permits are issued by a city building official in a manner approved by the industrial commission, additional approval by the industrial commission is not required.

(2) **INFORMATION REQUIRED ON PLANS FOR ALL CLASSES OF PLANTS.** Plans covering dry cleaning plants of all classifications shall show the following information:

(a) A plot plan showing the relative location of the dry cleaning building or room, with respect to property boundary lines and any other building on the same lot or property.

(b) Complete construction details based on the requirements hereinafter specified for the particular class of plant involved.

(c) Location and construction details of boiler room. (See sections Ind 7.12 (2) and 7.21 (2) of this code.)

(d) Where, in connection with the cleaning plant, there is a separate solvent storage system, the arrangement and capacity of storage tanks and piping to the cleaning equipment shall be shown.

*Note:* All storage systems shall conform to requirements of the flammable liquids code issued by the industrial commission.

*Exception:* Where a class IV dry cleaning plant is to be established in an existing building, it will be sufficient to provide a floor plan showing the proposed location of the dry cleaning equipment with respect to other departments or operations incidental to or in connection with the dry cleaning business.

**Ind 7.06 Permit required.** (1) Every dry cleaning plant shall have posted in a conspicuous place, a permit issued by the industrial commission. Permits shall remain in force until revoked for cause but shall not be transferable. Application for such permit shall be made on a standard form provided by the industrial commission.

(2) Where a new dry cleaning plant is to be established, or where, after the effective date of this code an existing dry cleaning plant is to be moved to a new location, or change is made to a different class of solvent, or where additional or substitute equipment involving a different classification under the provisions of section Ind 7.02 is provided, application shall be made and permit received before operations are started.

(3) Existing dry cleaning plants shall apply for permit when duly notified by the industrial commission to do so.

(4) Where any dry cleaning plant is not maintained or operated in accordance with the provisions of this code, the industrial commission may revoke the permit.

### CLASS I PLANTS

**Ind 7.07 Class I plants prohibited.** Use of solvents having flash point below 100° F. is prohibited for dry cleaning by immersion or agitation and is permitted for spotting, brushing, or scouring but only in quantities not in excess of those specified in the "exception" following section Ind 7.01(1) (d).

*Note:* It will be the policy of the industrial commission to consider as falling within the scope of this rule any Underwriters Laboratories "listed" solvent having a hazard rating above 40.

### CLASS II PLANTS

**Ind 7.08 Class II plants defined.** Class II plants are dry cleaning plants utilizing flammable solvents having flash points at or above 100° F., but which do not qualify as class III under section Ind 7.02.

**Ind 7.085 Location; class II.** (1) Walls facing any other building or the line of adjoining property which is or may be built upon shall be unpierced when less than 100 feet distant from such building or property line.

*Exception:* See provisions of Ind 7.10 (2).

(2) Dry cleaning operations shall in no event be carried on in the same building with other occupancies. Living quarters of the owner-operator of the business, also operations incidental to or in connection with the dry cleaning business, such as laundering and drying, pressing, ironing, etc., shall not class as other occupancies for the purpose of this rule.

(3) Dry cleaning operations shall be restricted to the lowest floor of a building, but shall not be carried on in any basement section.

*Note:* For the purpose of this rule a basement is defined as a story whose floor line is below grade at any entrance or exit, and whose ceiling is not more than 5 feet above grade at any such entrance or exit.

**Ind 7.09 Construction requirements; class II.** (1) Walls and required partitions shall be not less than 8 inches thick and of at least 2-hour fire-resistive construction (as specified in section Ind 51.05 of the Wisconsin State Building Code). Wall finish shall be plain or plastered without furring or concealed spaces.

(2) Floors of dry cleaning sections shall be of not less than 2-hour fire-resistive construction (as specified in section Ind 51.06 of the Wisconsin State Building Code), and shall have no pits or other depressions except that this requirement shall not apply to the shallow depressions formed to secure floor drainage, nor to catch basins installed in compliance with the provisions of the Plumbing Code issued by the state board of health. Where located over a basement the floor shall be liquid and vapor-tight. The wearing surface shall be of incombustible and non-absorbent material.

(3) Except as provided in (5) of this rule, all floors in new buildings of more than one story in height shall be of not less than 2-hour fire-resistive construction (as specified in section Ind 51.06 of the Wisconsin State Building Code).

(4) A separate one-story building housing dry cleaning equipment and operations exclusively shall have a roof of not less than 2-hour fire-resistive construction.

*Note:* A dry cleaning addition built onto another building is considered to be a separate building for the purpose of this order.

*Exception:* Where such building is not more than 1000 square feet in area and is located at least 15 feet from any other building or boundary line between premises, the roof may be of ordinary construction providing it is protected on the underside by one-hour fire-resistive construction and has a fire retardant covering. (See sections Ind. 51.06 and 51.67 of the Wisconsin State Building Code.)

(5) Where incidental operations such as are permitted under section 7.085 (2) are located on the same floor with dry cleaning operations, the dry cleaning operations shall be conducted in a separate section having walls, floor and ceiling of at least 2-hour fire-resistive construction as specified in section Ind 7.09 (1) and (2). The cleaning section preferably should be located in a corner or end of the building so that the exterior walls will form part of the enclosure.

(6) Drying rooms as defined in section Ind 7.01 (10) shall conform to requirements for dry cleaning rooms. If under the same roof as dry cleaning rooms, drying rooms shall be separated by a 2-hour fire-resistive partition as specified in section Ind 7.09 (1). Every doorway to such drying room shall be protected with a self-closing or automatic fire door as specified in section Ind 51.09 of the Wisconsin State Building Code.

(7) All fixtures such as cabinets, lockers, shelves, racks, bins, etc., installed inside a dry cleaning or drying room shall be constructed of metal or other incombustible material.

**Ind 7.10 Protection of openings; class II.** As specified in section Ind 7.085 (1), unpierced facing walls are required at distances less than 10 feet from adjoining buildings or property lines.



(2) All walls or part of walls nearer than 20 feet but not nearer than 10 feet to any other building or line of adjoining property which is or may be built upon shall have all openings therein protected by fire-resistive door or windows as specified in sections Ind 51.09 and 51.10 of the Wisconsin State Building Code. Windows shall be fixed of a type which will close automatically under fire conditions. Doors of swinging type shall open outward.

*Acceptance:* (1) At the discretion of the industrial commission after consideration of the nature of adjoining property, location, height, and type of construction of exposed buildings, doors or windows may be permitted in other than facing walls at distances of less than 10 feet from adjoining buildings or property lines.

(2) The facing wall of a dry cleaning building nearer than 10 feet to a building also occupied by the dry cleaning establishment as quarters for operations incidental to, or in connection with, the dry cleaning business may have one or more doorways providing each such opening is protected by an automatic or self-closing fire door as specified in section Ind 51.09 of the Wisconsin State Building Code.

(3) Walls or partitions separating dry cleaning operations from operations incidental to, or in connection with, the dry cleaning business shall be unimpeded except that doorways protected by automatic or self-closing fire doors as specified in section Ind 51.09 of the Wisconsin State Building Code may be provided. Unless the floor of the dry cleaning section is at least 6 inches lower than that of the adjoining floor, non-combustible liquid-tight sills raised at least 6 inches shall be provided at such openings.

(4) Skylights may be provided if not nearer than 10 feet to any other building or boundary line between premises, and if constructed of wired glass in metal sash and frame.

(5) Where a skylight is provided in a roof of ordinary construction as permitted in section Ind 7.09 (4), the light well shall be protected with construction equivalent to that required for the underside of the roof.

Ind 7.11 Ventilation, heating and lighting; class II. (1) Dry cleaning rooms or buildings shall have ventilation systems of sufficient capacity to insure complete and continuous change of air at least once every six minutes. Such systems shall include a mechanical supply of fresh, tempered, outside air and a positive exhaust.

(2) All ventilation systems shall be designed, constructed and installed in accordance with requirements of the Wis. Adm. Code Ch. 58, Heating, Ventilating and Air Conditioning Code issued by the industrial commission.

(3) Where required ventilation is through unit heaters, the air intake shall extend from the outside. There shall be no dampers of any kind in the outside air supply duct. Recirculation is permitted but only for air in excess of the amount needed to provide the change of air every 6 minutes. Recirculated air shall be drawn from a point at least 6 feet above the floor.

(4) Exhaust may be by mechanical means or by gravity through proper size vent ducts extending from the floor line through the roof of building and capped with approved siphon type ventilators located at least 2 feet above the high point of the roof.

(5) Electric motors in connection with ventilation systems shall be as specified in the Wisconsin State Electrical Code.

*Acceptance:* Ordinary motors without brushes or sliding contacts or totally enclosed motors may be used in connection with standard factory-type unit heaters when installed not less than 8 feet above the floor.

(6) The spiders, blades, and all running rings or exhaust fans shall be of non-ferrous metal.

(7) All lighting fixtures, switches, and other electrical devices located within 8 feet of the floor, and all electric wiring in dry cleaning buildings or rooms shall comply with requirements for class I hazardous locations as specified in the Wisconsin State Electrical Code.

(8) Heating shall be of steam or hot water only. Pipes and radiators shall be installed to provide a clearance of at least one inch from all woodwork, and shall be protected where necessary against contact with incombustible materials.

**Ind 7.12 Electrical power equipment and boilers; class II.** (1) ELECTRICAL EQUIPMENT. Except as provided in section Ind 7.11 (5) and (7), electric motors, motor controllers, overcurrent devices, switches, and other electrical devices in dry cleaning buildings or rooms shall be of the explosion-proof type approved for class I hazardous locations as specified in the Wisconsin State Electrical Code.

(2) BOILER INSTALLATIONS. (a) All boilers used in connection with dry cleaning plants shall be isolated from the rest of the building by at least a 2-hour fire-resistant enclosure as specified in section Ind 54.13 of the Wisconsin State Building Code. All boilers shall be built and installed in accordance with the Wisconsin State Boiler Code issued by the industrial commission.

(b) Detached or adjoining boiler rooms or buildings shall have walls of at least 2-hour fire-resistive construction as specified in section Ind 51.05 of the Wisconsin State Building Code. The roof may be of ordinary construction providing it is protected as specified in section Ind 7.09 (4). Where a boiler room or building adjoins a dry cleaning room and dividing wall shall be parapeted unless the roof on the boiler room or building is of fire-resistive or incombustible construction.

*Note:* It is recommended that wherever possible boilers be installed in separate detached buildings.

(c) Where a boiler room or building adjoins a dry cleaning room the dividing wall shall be unpierced. Boiler room doorways except those in exterior walls shall be protected by automatic or self-closing fire doors as specified in section Ind 51.09 of the Wisconsin State Building Code.

(d) Chimneys, metal smoke stacks, smoke pipes or breeching in connection with boilers shall be constructed and installed in accordance with section Ind 52.10 or 52.12 of the Wisconsin State Building Code.

**Ind 7.13 Storage and handling of solvents; class II.** (1) SOLVENT STORAGE TANKS. All solvent storage tanks shall be underground or in approved enclosures, except that inside (aboveground) storage tanks may be used provided the aggregate capacity does not exceed 550 gallons and the individual capacity of any storage tank does not exceed 275 gallons.

(2) ABOVEGROUND TANKS FOR OTHER THAN STORAGE. Aboveground tanks used in connection with treatment processes shall not have individual capacity exceeding 350 gallons, and shall in no event exceed

in capacity any individual storage tank to which they may be connected.

(3) Each aboveground container connected to underground storage tanks shall be provided with an automatic heat-actuated emergency drain connection of ample capacity to discharge the entire contents to the underground tanks within a brief period.

(4) Solvent storage and settling tanks in connection with the cleaning system shall be constructed and installed in accordance with the requirements of the Flammable Liquids Code issued by the industrial commission.

(5) The handling of solvent from tanks, through the various machines and back to tanks, shall be through closed circuits of piping. In small capacity systems, transfer of solvent from drums shall be by pump and pipe or hose.

**Ind 7.14 Machinery and equipment; class II.** (1) **GENERAL REQUIREMENTS.** (a) Each washing machine shall be provided with an overflow pipe one size larger than the solvent supply line to the machine. Such overflow pipe shall be connected to the shell of the washer so that the top of the overflow is below the bottom of the bearings, shall be without shut-off valves and shall be arranged to discharge to an underground tank, or where underground storage is not required by section Ind 7.13, to a safe place outside the building.

(b) Each washing machine shall be provided with hinged, splash-proof doors, self-closing or which close automatically in case of fire.

(c) When pulleys and belting are used in the dry cleaning room, the danger from static electricity shall be lessened by the installation of properly grounded combs or collectors, or by other approved method.

(d) Cylinders and shells of washing machines and drying tumblers and the outside shell of extractors shall be permanently and effectively grounded. The grounding of cylinders in each case shall be through the end of the shaft.

*Note:* It is recommended that all pulleys used in dry cleaning rooms be of metal.

(e) All pulleys, belting, gears, and other rotating or oscillating parts shall be properly guarded as required by Wis. Adm. Code Ch. 1, Safety issued by the industrial commission.

(2) **STILLS AND CONDENSERS.** (a) Steam shall be issued to secure the necessary temperature and a pressure regulating valve shall be installed in the steam supply line to the still.

(b) The still shall be equipped with a pressure valve or rupture disc arranged to discharge outside of building, and stills other than those designed for vacuum operation or which deliver through condenser to receiver vented to the atmosphere shall have a vacuum relief valve.

(3) **TANKS OR PURIFIERS.** Aboveground treatment tanks or purifiers shall be provided with a vent pipe of not less than 1¼ size extending to outside of building.

(4) **WASHING MACHINES.** (a) Each washing machine shall be provided with an overflow pipe at least one size larger than the solvent supply line to the machine. Such overflow pipe shall be connected

so that the top of the overflow is below the bottom of the bearings, shall be without shut-off valve and shall be arranged to discharge to an underground tank, or where underground storage is not required by section Ind 7.13, to a safe place outside the building.

(b) Each washing machine shall be provided with hinged, splash-proof doors, self-closing or which close automatically in case of fire.

(c) Each washing machine must be equipped with a brake or lock which will enable the operator to lock the machine when he is filling or emptying the cylinder. (See Wis. Adm. Code Ch. 1 Safety).

(5) **EXTRACTORS.** (a) Each extractor shall be equipped with a non-ferrous safety cover so arranged that the machine cannot be started until the cover is in place, and the cover cannot be opened until the machine is brought to a full stop. (See Wis. Adm. Code Ch. 1 Safety).

(b) The baskets shall have a rim of non-ferrous metal and shall be well-balanced.

(c) Extractors shall be provided with a drain pipe not less than 1½ inches in diameter connected directly to underground storage tanks or to the washer through an extractor pump filtered with proper valves.

(6) **DRYING TUMBLERS.** (a) Drying tumblers shall be ventilated to the outside air by means of substantially constructed ducts connected to an exhaust fan which will remove virtually all dust, vapors, or fibres generated by the process. Such discharge pipe shall be carried to a height of not less than 6 feet above the roof. Discharge pipes shall not terminate within 10 feet, measured horizontally, from any door, window or other building opening, and shall be fitted with an inverted "U" cap or gooseneck. Openings for inspection and cleaning shall be provided in horizontal runs of discharge piping and means shall be provided to prevent release of lint.

(b) The tumbler ventilating fan shall be properly housed and precautions taken so as to insure operation at all times when the tumbler is in motion. Fan spiders, blades or running rings shall be constructed of non-ferrous metal.

(c) Drying tumblers shall be of substantial incombustible construction, well secured to substantial foundations, shall be substantially vapor-tight and shall be provided with self-releasing and self-closing explosion hatches having an area equal to at least 10% of the total area of the cylinder excluding the ends. The net effective area of open air ports in the housing and of explosion hatches in connected air ducts when located not farther than 3 feet from the tumbler housing, may be considered as part of the required venting area. Hatches shall be so arranged as to minimize exposure to the operator.

*Note:* The industrial commission will approve any drying tumbler having less than 10% explosion venting area, providing conclusive evidence of safety has been developed by actual test.

(d) Drying tumblers shall be provided with a steam jet of not less than ¾ inch size for steaming during the drying process.

**Ind 7.15 Scouring or brushing; class II.** (1) Scouring, brushing, or scrubbing of articles which cannot practicably be cleaned in the usual cleaning machines, also spotting operations requiring quantities greater than named in section 7.01 (1) (d), shall be performed in a dry cleaning room, provided,

(a) That the use of solvent having flash point at or above 100° F., in open containers is limited to not more than 5 gallons.

(b) That solvents when not in use shall be kept in approved type storage containers.

**Ind 7.16 Fire prevention and fire protection; class II.** (1) All clothes when received shall be thoroughly searched in the receiving room, and all foreign materials, especially matches and metallic substances removed.

(2) Where necessary to prevent dripping of solvent while transferring materials between operations, a suitable incombustible non-ferrous metal drip apron shall be provided. Such apron should be placed so as to rest on the metal basket of the truck and the cylinder of the washer.

(3) Flammable liquids shall not be used for cleaning floors.

(4) A good standard of housekeeping shall be maintained. Flammable residues and waste materials shall be kept in closed metal containers until removed from the premises.

(5) Smoking in the dry cleaning room or building is strictly prohibited except in offices, boiler rooms, or other sections specifically provided for that purpose. Suitable "No Smoking" signs shall be conspicuously posted.

(6) Each washing machine, drying tumbler or drying cabinet shall be provided with fire extinguishing facilities arranged to operate automatically or by remote manual control. These shall be either an approved carbondioxide system or a steam jet at least  $\frac{3}{4}$  inch size with a continually available steam supply at a pressure of not less than 15 pounds per square inch.

*Exception:* This requirement shall not apply to small capacity washing machines which are not operated in fixed positions.

(7) At or near the entrance to the cleaning room or building there shall be provided at least one approved dry chemical or carbon dioxide first aid fire extinguisher of 10 pound size, having a classification and rating of not less than 5-B:C.

*Note:* Where above requirements are below recommended standards for specific plants, the department will recommend and accept those standards of NFPA #10, "Installation of Portable Fire Extinguishers."

(8) Extinguishers shall be conspicuously located where they will always be readily accessible. They shall be hung on brackets or shelves so that the top of the extinguisher is not more than 5 feet above the floor. All fire extinguishers shall be charged and maintained in accordance with the manufacturer's instructions.

*Note:* The industrial commission will ordinarily approve any extinguisher which bears the label of Underwriters' Laboratories providing it is of size and type specified in section Ind 7.16 (7).

**History:** 1-2-56; r. and recr. (7), Register, June, 1972, No. 198, eff. 7-1-72.

## CLASS III PLANTS

**Ind 7.17 Location; class III.** (1) Plants of this classification shall not be established in a building occupied as a place of public assembly or as living quarters other than for the owner-operator of the business.

(2) Where located in the same building with other occupancies, or where operations incidental to or in connection with the dry cleaning business are carried on in the same building, the dry cleaning operations shall be confined to a separate room or section constructed as specified in section Ind 7.18.

*Note:* Laundering and drying, pressing, ironing, etc., are considered to be operations incidental to or in connection with the dry cleaning business.

(3) Dry cleaning operations shall be restricted to the lowest floor of a building, but shall not be carried on in any basement section.

*Note:* For the purpose of this order a basement is defined as a story whose floor line is below grade at any entrance or exit, and whose ceiling is not more than 5 feet above grade at any such entrance or exit.

**Ind 7.18 Construction; class III.** (1) **WALLS.** (a) The walls of a separate dry cleaning building or of any building containing a dry cleaning plant (under the provisions of section Ind 7.17 (2)), shall be masonry at least 8 inches thick and of at least 2-hour fire-resistive construction as specified in section Ind 51.05 of the Wisconsin State Building Code. Wall finish shall be plain or plastered without furring or concealed spaces.

(b) Where, under the provisions of section Ind 7.17 (2), separation from other occupancies or operations in a building is required, the interior walls or partitions forming the enclosure for the dry cleaning equipment shall be of at least one-hour fire-resistive construction as specified in section Ind 51.05 of the Wisconsin State Building Code. The cleaning section preferably should be located in a corner or end of the building so that the exterior walls will form part of the enclosure.

(2) **FLOORS.** Floors of dry cleaning sections shall be of not less than 2-hour fire-resistive construction as specified in section Ind 51.06 of the Wisconsin State Building Code, and shall have no pits or other depressions except that this requirement shall not apply to the shallow depressions formed to secure drainage, nor to catch basins installed in compliance with provisions of the Plumbing Code issued by the State Board of Health.

(a) Where located over a basement, the floor shall be liquid and vapor-tight. The wearing surface shall be of incombustible and non-absorbent material.

(3) **ROOFS AND CEILINGS.** (a) The roof of a dry cleaning building may be of ordinary construction provided it has a fire-retardant covering and the underside over the cleaning section is protected by one-hour fire-resistive construction. (See section Ind 51.06 and section 51.07 of the Wisconsin State Building Code).

(4) **FIXTURES.** All fixtures such as cabinets, lockers, shelves, racks, bins, etc., installed inside a dry cleaning room shall be constructed of metal or other incombustible material.

**Ind 7.19 Protection of openings; class III.** (1) All walls or parts of walls of dry cleaning rooms nearer than 10 feet to any other building or boundary line between premises shall have all openings therein protected by fire-resistive doors or windows of a type which will close automatically under fire conditions. See sections Ind 51.09 and 51.10 of the Wisconsin State Building Code.

(2) Walls or partitions providing the separation required under section Ind 7.17 (2) shall be unpierced except that doorways protected by automatic or self-closing fire doors as specified in section Ind 51.09 of the Wisconsin State Building Code may be provided. Unless the floor of the dry cleaning section is at least 6 inches lower than that of the adjoining floor, an incombustible, liquid tight sill raised at least 6 inches shall be provided at such openings.

(3) Skylights may be provided if constructed of wired glass in metal sash and frame. In a roof of ordinary construction the light well shall be protected with one-hour fire-resistive construction, as specified for the underside of the roof. (See section Ind 7.18 (3)).

**Ind 7.20 Ventilation and heating; class III.** (1) Dry cleaning rooms shall have ventilation systems of sufficient capacity to insure complete and continuous change of air at least once every 6 minutes. Such systems shall include a mechanical supply of fresh, tempered, outside air and a positive exhaust.

(2) All ventilation systems shall be designed, constructed and installed in accordance with requirements of the Wis. Adm. Code Ch. 58, Heating, Ventilating and Air Conditioning Code issued by the industrial commission.

(3) Where required ventilation is through unit heaters, air intake shall extend from the outside. There shall be no dampers of any kind in the outside air supply duct. Recirculation is permitted but only for air in excess of the amount needed to provide the change of air every 6 minutes. Recirculated air shall be drawn from a point at least 6 feet above the floor.

(4) Exhaust may be by mechanical means or by gravity through proper size vent ducts extending from the floor line through the roof of the building and capped with approved siphon-type ventilators, located at least 2 feet above the high point of the roof.

(5) The spiders, blades and all running rings of exhaust fans shall be of non-ferrous metal.

(6) Heating shall be by steam or hot water only. Pipes and radiators shall be installed to provide at least one inch clearance from all woodwork, and shall be protected where necessary against contact with combustible materials.

**Ind 7.21 Light and power; class III.** (1) **ELECTRICAL EQUIPMENT.** Lighting shall be by electricity. Wiring for light and power shall be in rigid conduit and with all electrical equipment and devices installed in accordance with requirements of the Wisconsin State Electrical Code.

*Note:* With reference to rules of the Wisconsin State Electrical Code, dry cleaning plants of this classification may be considered non-hazardous locations.

(2) **BOILER INSTALLATIONS.** (a) All boilers used in connection with dry cleaning plants shall be isolated from the rest of the building by at least a 2-hour fire-resistive enclosures as specified in section Ind 54.13

of the Wisconsin State Building Code. All boilers shall be built and installed in accordance with the Wisconsin State Boiler Code issued by the industrial commission.

(b) Detached or adjoining boiler rooms or buildings shall have walls of at least 2-hour fire-resistive construction as specified in section Ind 51.05 of the Wisconsin State Building Code. The roof may be of ordinary construction providing it is protected on the underside by 1-hour fire-resistive construction and has a fire retardant covering. Where a boiler room or building adjoins a dry cleaning room the dividing wall shall be parapeted unless the roof on the boiler room or building is of fire-resistive or incombustible construction.

(c) Where a boiler room or building adjoins a dry cleaning room the dividing wall shall be unpierced. Boiler room doorways except those in exterior walls shall be protected by automatic or self-closing fire doors as specified in section Ind 51.09 of the Wisconsin State Building Code.

(d) Chimneys, metal smoke stacks, smoke pipes or breeching in connection with boilers shall be constructed and installed in accordance with sections Ind 52.10 to 52.12 of the Wisconsin State Building Code.

**Ind 7.22 Storage and handling of solvents; class III.** (1) All solvent storage tanks and piping systems in connection therewith shall be constructed and installed in accordance with requirements of the Flammable Liquids Code issued by the industrial commission.

(2) The storage of solvent in above ground inside tanks, in excess of that ordinarily contained in the cleaning system is limited to a total of 550 gallons, and the individual capacity of any one such tank shall not exceed 275 gallons.

*Note:* Solvent treatment tanks are classed as storage tanks.

(3) Storage in excess of 550 gallons shall be in approved tanks installed underground or in fire-resistive enclosures or casings constructed in accordance with requirements of the Flammable Liquids Code.

(4) Solvent storage tanks and drain tanks shall be provided with at least 1¼ inch pipe size vent pipe extending to the outside of the building.

(5) The handling of solvents from storage and through the cleaning system shall be through closed circuits of piping.

*Exception:* The requirements of section Ind 7.22 shall not apply to small capacity systems designed to accomplish washing and extraction in the same machine and involving not more than a total of 110 gallons of solvent in the equipment and auxiliary storage containers from which transfer shall be by pump and pipe or oil resistant hose.

**Ind 7.23 Machinery and equipment; class III.** (1) **GENERAL REQUIREMENTS.** (a) All machinery and equipment shall be substantially constructed, securely mounted on rigid incombustible supports, and shall be properly maintained.

(b) All solvent handling equipment, such as treating tanks, clarifiers, etc., shall be liquid-tight. All stills and condensers shall be liquid and vapor-tight.



(c) The cylinders and shells of all washing machines, drying tumblers, and all aboveground containers shall be permanently and effectively grounded. The grounding of cylinders in each case shall be through the end of the shaft and across the surface of the cylinder if constructed of wood. Washing cylinders if constructed with ball or roller bearings may be grounded to the frame.

(d) The walls of drying cabinets and the outside shell of extractors shall be permanently and effectively grounded.

(e) All pulleys, belting, gears and other rotating or oscillating parts shall be guarded as required under general orders on safety issued by the industrial commission.

(2) **STILLS AND CONDENSERS.** (a) Steam shall be used as a source of heat and a pressure regulating valve shall be installed in the steam supply line to the still.

(b) Stills shall be of type designed for vacuum operation. Pressure operated stills are prohibited.

(3) **WASHING MACHINES.** (a) Each washing machine shall be provided with an over-flow pipe at least one size larger than the solvent supply line to the machine. The top of the over flow shall be below the bottom of the bearings, without shut-off valves, and arranged to discharge to an underground tank or to an approved aboveground container.

(b) Washing machines shall have hinged, splash-proof doors.

(c) Each washing machine shall be equipped with a brake or lock which will enable the operator to lock the machine when he is filling or emptying the cylinder. (See general orders on Safety).

(4) **EXTRACTORS.** (a) Each extractor shall be equipped with a non-ferrous safety cover so arranged that the machine cannot be started until the cover is in place and the cover cannot be opened until the machine is brought to a full stop. (See Wis. Adm. Code Ch. 1 Safety).

(b) The baskets shall have a rim, or hub if horizontal, of non-ferrous metal.

(c) Extractors shall be provided with a drain pipe not less than 1½ inches diameter connected directly to underground storage tanks, to a suitable aboveground container, or the washer through an approved extractor pump fitted with proper valves.

(5) **DRYING TUMBLERS AND DRYING CABINETS.** (a) Steam or hot water only shall be used to secure the necessary temperatures in drying tumblers and cabinets.

(b) Drying tumblers and drying cabinets shall be ventilated to the outside air by means of substantially constructed ducts connected to an exhaust fan of sufficient capacity to remove virtually all dust, vapors or fibers generated by the process. Such discharge pipes shall be carried to a height of not less than 6 feet above the roof and shall not terminate within 10 feet measured horizontally from any door, window, or frame wall of any adjoining building.

(c) Fans in connection with drying tumblers and drying cabinets shall be properly housed and shall be so interlocked as to insure operation at all times when the tumbler is in motion. Fan spiders, blades, or running rings shall be constructed of non-ferrous metal.

(d) Drying tumblers shall be provided with interlocks so that the cylinder cannot be power-driven while the access door is open. Opening the access door shall automatically stop the cylinder.

**Ind 7.24 Scouring or brushing; class III.** Scouring, brushing, or scrubbing of articles which cannot be cleaned in the usual cleaning machines, shall conform to requirements of section Ind 7.15, except that the solvent permitted in open containers in quantities not exceeding 5 gallons shall have flash point at or above 138° F.

**Ind 7.25 Fire prevention and fire protection; class III.** (1) All clothes when received shall be thoroughly searched in the receiving room, and all foreign materials, especially matches and metallic objects removed.

(2) Where necessary to prevent dripping of solvent while transferring materials between operations, a suitable incombustible drip apron shall be provided. Such apron should be placed so as to rest on the metal basket of the truck and cylinder of the washer.

(3) Flammable liquids shall not be used for cleaning floors.

(4) A good standard of housekeeping shall be maintained. Flammable residues and waste materials shall be kept in closed metal containers until removed from the premises.

(5) Smoking in the dry cleaning room or building is strictly prohibited except in offices, boiler rooms, or other sections specifically provided for that purpose. Suitable "No Smoking" signs shall be conspicuously posted.

(6) The drying tumbler of drying cabinet shall be provided with fire extinguishing facilities arranged to operate automatically or by remote manual control. These shall be either an approved carbon-dioxide system or a steam jet with a continually available steam supply at a pressure of not less than 15 pounds per square inch.

(7) At or near the entrance to the cleaning room or building there shall be provided at least one approved dry chemical or carbon dioxide first aid fire extinguisher of 10 pound size, having a classification and rating of not less than 5-B:C.

**Note:** Where above requirements are below recommended standards for specific plants, the department will recommend and accept those standards of NFPA #10, "Installation of Portable Fire Extinguishers."

(8) Extinguishers shall be conspicuously located where they will always be accessible. They shall be hung on brackets or shelves so that the top of the extinguisher is not more than 5 feet above the floor. All fire extinguishers shall be charged and maintained in accordance with the manufacturer's instructions.

**Note:** The industrial commission will ordinarily approve any extinguisher which bears the label of Underwriters' Laboratories providing it is of size and type specified in section Ind 7.16 (7).

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Cleaning and Dyeing

## CLASS IV PLANTS

**Ind 7.26 Sub-classification; class IV.** (1) For the purpose of the orders of this section, plants utilizing carbon tetrachloride or other chlorinated hydrocarbon solvents which give off potentially health-hazardous vapors, (classified as class IV plants under section Ind 7.02) are here sub-classified into two groups according to the design of the cleaning system employed as follows:

(a) Group A—Systems of this group are those in which washing, extraction, drying, and deodorizing are accomplished in cylinders or chambers necessitating handling of materials in the cleaning-drying cycle. For the purpose of this order, the term chamber is considered as including a cabinet or room for drying or deodorizing.

(b) Group B—Systems designed to accomplish washing, extraction, drying and deodorizing in a single cylinder or chamber, and requiring no handling of materials between operations. These shall have exhaust ventilation to remove solvent vapors at the source, to prevent their entrance into the breathing zone of an operator or other persons in the vicinity and to dispose of them in a manner so that they will not re-enter any occupied area.

**Ind 7.27 Location; class IV.** Class IV plants shall not be installed in basement areas. For the purpose of this order a basement is defined as a story whose floor line is below grade at any entrance or exit and whose ceiling is not more than 5 feet above grade at any such entrance or exit.

**Ind 7.28 Enclosure required; class IV.** All class IV plants shall be installed and operated in ventilated rooms or enclosures conforming to the following requirements:

(1) GROUP "A" SYSTEMS.

(a) The design of the enclosure for group "A" systems shall be such that the operator will perform the cleaning operations from the outside, through operating openings specifically provided for the purpose. It shall not be necessary for the operator to use access openings except for maintenance and repairs.

*Note:* See section Ind 7.31 for respiratory protection required while doing maintenance work inside the enclosure.

(b) The required operating openings shall be as small as practicable and shall be kept closed when not in use. Doors on access openings shall be self-closing.

(c) The room or enclosure shall be so constructed that with the required ventilation, vapors will not escape beyond the enclosed space.

(d) The room or enclosure for a group "A" cleaning system shall be provided with exhaust ventilation of sufficient capacity to insure movement of air into the enclosure at a minimum face velocity of 120 linear feet per minute through operating openings. The exhaust blower for the ventilation system shall be capable of providing the required air flow at a suction pressure of 2 inches water gauge.

(2) GROUP "B" SYSTEMS.

(a) The room or enclosure shall have a general ventilation system of sufficient capacity to insure complete and continuous change of air

once every six minutes and such system shall conform to requirements of section Ind 7.20 (1), except that air supply may be taken from adjoining areas.

(b) The operator may work inside a group "B" enclosure but when doing maintenance work inside he shall use the respiratory protection specified in section Ind 7.31.

**Ind 7.29 Handling of solvents; class IV.** (1) The handling of solvent in the cleaning system shall be through closed circuits of piping. Transfer of solvent from storage containers to the system shall be through pipe or hose. Transfer by means of pails or other open containers is prohibited.

(2) All dry cleaning equipment and all piping in connection therewith shall be maintained in liquid-tight condition.

**Ind 7.30 Scouring, brushing, or scrubbing; class IV.** (1) Brushing, scouring, or scrubbing shall be performed on well ventilated tables. The use of flammable solvents is prohibited.

(2) The use of flammable solvent for "spotting" purpose is limited to the quantity and facilities permitted in the exception following section Ind 7.01 (1) (a).

**Ind 7.31 Respiratory protection required; class IV.** (1) For protection against potentially health-hazardous solvent vapors, "approved" masks or respirators shall be provided for and used by each operator engaged in the maintenance mentioned in section Ind 7.28 (1) and (2).

(2) Masks or respirators shall be properly maintained at all times in accordance with the manufacturer's recommendations.

*Note:* A list of "approved" masks and respirators will be furnished by the industrial commission, on request.

**Ind 7.32 Boiler installations; class IV.** All boilers used in connection with dry cleaning plants of this class shall be installed in accordance with the requirements of section Ind 7.21 (2), except that a door way is permitted in the dividing wall between boiler room and cleaning room.

**Ind 7.33 Housekeeping; class IV.** A good standard of housekeeping shall be maintained. Flammable residues and waste materials shall be kept in closed metal containers until removed from the premises.