

ADVISORY COMMITTEE COMMENT FORM FOR PROPOSED CODE CHANGES

(This form must be submitted electronically)

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1346 IMC #31

Proposed Code Change - Language

Please provide your proposed code change in strikeout/underline format. Provide the *specific* language you would like to see changed, with new words underlined and words to be deleted should be ~~stricken~~. Also, state whether the language contained in your proposal is from a code book or from an amendment currently found in Minnesota Rule. (You may provide the language (electronically) on a separate, attached sheet).

The following are amendments that pertain to commercial kitchen cooking operations

Revise the following in proposed MR 1346:

1346.0050 TITLE; INCORPORATION BY REFERENCE.

Chapters 1 to 10 and 12 to 15 of the 2011 edition of NFPA 96 Standard for Ventilation Control and Fire Protection of Commercial Cooking Operations, promulgated by the National Fire Protection Association, 1 Batterymarch Park, Quincy, MA 02169-7471, are incorporated by reference as part of the Minnesota Mechanical Code as amended in this chapter. Portions of this chapter reproduce text and tables for the NFPA 96. The NFPA 96 is copyright 2011 by the National Fire Protection Association. All rights reserved.

As used in this chapter, "NFPA 96" means the NFPA 96 Standard for Ventilation Control and Fire Protection of Commercial Cooking Operations incorporated into this part. The NFPA 96 is not subject to frequent change and a copy of the NFPA 96, with amendments for use in Minnesota, is available in the office of the commissioner of labor and industry.

1346.0506 SECTION 506 COMMERCIAL KITCHEN HOOD VENTILATION SYSTEM DUCTS AND EXHAUST EQUIPMENT.

Subpart 1. **Section 506.3.** IMC Section 506.3 is amended to read as follows:

506.3 Ducts serving Type I hoods. Commercial kitchen exhaust systems serving Type I hoods shall be designed, constructed and installed in accordance with NFPA 96-2008~~2011~~, *Standard for Ventilation Control and Fire Protection of Commercial Cooking Operations*.

506.3.2.5 506.3.1-Grease Duct Leakage Performance Test. Prior to the use or concealment of any portion of a grease duct system, a leakage test shall be performed to determine that all welded joints and seams are liquidtight. Ducts shall be considered to be concealed where they are installed in shafts or covered by coatings or wraps that prevent the duct from being visually inspected on all sides. It is permissible to test the duct in sections, provided that, after the duct system is completely assembled, all field-assembled joints are tested, including the duct-to-hood connection. When the testing is performed in this manner, only the field-assembled joints of listed factory-built grease ducts are required to be tested. The leakage test shall consist of a light, air or water test, or an approved equivalent test. The permit holder shall be responsible to provide the necessary equipment and perform the grease duct leakage test. A light test shall be performed to determine that all welded and brazed joints are liquid tight.

506.3.1.1 Light Test. The light test shall be performed by passing a lamp having a power rating of not less than 100 watts through the entire section of ductwork to be tested. The lamp shall be open so as to emit light equally in all directions perpendicular to the duct walls. No light from the duct interior shall be visible through any exterior surface. ~~A test shall be performed for the entire duct system, including the hood to duct connection. The duct work shall be permitted to be tested in sections, provided that every joint is tested. For listed factory-built grease ducts, this test shall be limited to duct joints assembled in the field and shall exclude factory welds.~~

506.3.1.2 Air Test. The air test shall be performed by sealing the entire duct system from the hood exhaust opening(s) to the duct termination. The sealed duct system shall then be pressurized to a minimum pressure of 1.0 inch water column and shall be required to hold the initial set pressure for a minimum of 20 minutes.

506.3.1.3 Water Test. The water test shall be performed by use of a pressure washer operating at a minimum of 1,500 psi, simulating cleaning operations. The water shall be applied directly to all areas to be tested. No water applied to the duct interior shall be visible on any exterior surface in any volume during the test.

Subp. 2. **Sections 506.3.1 to ~~506.3.12.3~~ 506.3.13.3.** IMC Sections 506.3.1 to ~~506.3.12.3~~ 506.3.13.3 are deleted and replaced with Chapters 1 to 10 and 12 to 15 of NFPA 96-2008~~2011~~ with the following amendment to Section 5.1.1 and 7.5.2:

5.1.1 The hood or that portion of a primary collection means designed for collecting cooking vapors and residues shall be constructed of ~~and be supported by steel not less than 1.09 mm (0.043 in.) (No. 18 MSG) in thickness, stainless steel not less than 0.94 mm (0.037 in.) (No. 20 MSG) in thickness or other approved material of equivalent strength and fire and corrosion resistance. Refer to the Minnesota Food Code, Minnesota Rules, chapter 4626, for additional requirements for commercial kitchen hoods licensed and inspected by the Department of Agriculture, Department of Health, or local authorities that conduct inspections of food establishments.~~

7.5.2.1 ~~All seams, joints, penetrations, and duct to hood collar connections shall have a liquid tight continuous external weld. Listed grease ducts and ducts complying with 7.5.1 through 7.5.5.5 that are installed within a concealed enclosure shall maintain an air pressure test of at least 1.0 inch water column positive pressure for a minimum of 20 minutes, unless an equivalent alternate test is specified by the building official.~~

Subp. 3. **Section 506.4.2 1.** IMC Section 506.4.2 1 is amended to read as follows:

506.4.2 1 Ducts. Ducts and plenums serving Type II hoods shall be constructed of rigid metallic materials. Duct construction, installation, bracing, and supports shall comply with Chapter 6. Ducts conveying moisture-laden or waste heat-laden air shall comply with the following requirements:

1. Ducts shall be constructed, joined, and sealed to prevent drips and leaking.
2. Ducts shall slope not less than one-fourth unit vertical in 12 units horizontal (2 percent slope) toward the hood or toward an approved reservoir.
3. ~~Horizontal ducts exceeding 75 feet (22,860 mm) in length shall slope not less than one unit vertical in 12 units horizontal (8.3 percent slope).~~
4. Ducts subject to positive pressure shall maintain an air pressure test of 1.0 inch water column positive pressure for a minimum of 20 minutes, unless an equivalent alternate test is specified approved by the building official.

Subp 4. Sections 506.5 to 506.5.5. IMC Sections 506.5 to 506.5.5 are deleted.

1346.0507 SECTION 507 COMMERCIAL KITCHEN HOODS.

Subpart 1. **Section 507.1.** IMC Section 507.1 is amended by adding subsection 507.1.1 after the exceptions to read as follows:

507.1.1 Factory built systems with exhaust or recovery. Where factory built commercial cooking recirculating systems or dishwashers and potwashers equipped with heat and vapor exhaust or recovery systems are installed, the sensible and latent heat from the systems shall be included in the HVAC design calculations of the kitchen. A mechanical HVAC system shall be provided to maintain maximum relative humidity of 65 percent in the space.

~~Subp. 2. **Section 507.2.** IMC Section 507.2 is amended to read as follows:~~

~~**507.2 Where required.** A Type I or Type II hood shall be installed at or above all commercial cooking appliances in accordance with Sections 507.2.1 and 507.2.2. Where any cooking appliance under a single hood requires a Type I hood, a Type I hood shall be installed. Where a Type II hood is required, a Type I or Type II hood shall be installed.~~

~~**507.2.1 Type I hoods.** Type I hoods shall be installed where cooking appliances produce grease or smoke, such as occurs with griddles, fryers, broilers, ovens, ranges, and wok ranges.~~

~~**507.2.1.1 Operation.** Type I hood systems shall be designed and installed to automatically activate the exhaust fan whenever cooking operations occur. The activation of the exhaust fan shall occur through an interlock with the cooking appliances, by means of heat sensors or by means of other approved methods.~~

~~**507.2.2 Type II hoods.** Type II hoods shall be installed where cooking or dishwashing appliances produce heat, steam, or products of combustion and do not produce grease or smoke, such as steamers, kettles, pasta cookers, and dishwashing machines.~~

Exceptions:

1. ~~Under counter type commercial dishwashing machines.~~
2. ~~A Type II hood is not required for dishwashers and potwashers that are provided with heat and water vapor exhaust or recovery systems that are supplied by the appliance manufacturer and are installed in accordance with the manufacturer's instructions. The additional heat and moisture loads generated by such appliances shall be accounted for in the design of the HVAC system. The HVAC system shall maintain a maximum relative humidity of 65 percent in the space.~~
3. ~~A single light-duty electric convection, bread, retherm, or microwave oven that is rated at 3.7 kW or less. The additional heat and moisture loads generated by such appliances shall be accounted for in the design of the HVAC system. The HVAC system shall maintain a maximum relative humidity of 65 percent in the space.~~

4. A Type II hood is not required for the following electrically heated appliances: toasters, steam tables, popcorn poppers, hot dog cookers, coffee makers, rice cookers, egg cookers, and holding/warming ovens that are rated at 3.7 kW or less. The additional heat and moisture loads generated by such appliances shall be accounted for in the design of the HVAC system. The HVAC system shall maintain a maximum relative humidity of 65 percent in the space.

Subp. 3. [Repealed, 34 SR 537]

Subp. 4. ~~Section 507.2.3.~~ IMC Section 507.2.3 is amended to read as follows:
507.2.3 Domestic cooking appliances used for commercial purposes. Domestic cooking appliances utilized for commercial purposes shall be provided with Type I or II hoods as required for the type of appliances and processes in accordance with amended IMC Section 507.2. Refer to the Minnesota Food Code, Minnesota Rules, chapter 4626, for additional requirements for commercial kitchen hoods licensed and inspected by the Department of Agriculture, Department of Health, or local authorities that conduct inspections of food establishments.

Subp. 5. [Repealed, 34 SR 537]

Subp. 6. **Section 507.4.** IMC Section 507.4 is deleted.

Subp. 7. **Section 507.5.** IMC Section 507.5 is amended to read as follows:
507.5 Type II hood materials. Type II hood materials shall be constructed of steel having a minimum thickness of 0.0296 inch (0.7534 mm) (No. 22 gage) stainless steel not less than 0.024 inch (0.61 mm) (No. 24 Gage) in thickness, copper sheets weighing not less than 24 ounces per square foot (7.3 kg/m²), or of other approved material and gage. Refer to the Minnesota Food Code, Minnesota Rules, chapter 4626, for additional requirements for commercial kitchen hoods licensed and inspected by the Department of Agriculture, Department of Health, or local authorities that conduct inspections of food establishments.

Subp. 8. **Section 507.7.** IMC Section 507.7 is amended to read as follows:
507.7 Hood joints, seams, and penetrations. Hood joints, seams, and penetrations shall comply with amended IMC Section 507.7.1 and IMC Section 507.7.2.

Subp. 9. **Section 507.7.1.** IMC Section 507.7.1 is amended to read as follows:
507.7.1 Type I hoods. Type I hoods shall be designed, constructed, and installed in accordance with Chapter 5 of NFPA 96-20082011.

Subp. 10. **Sections 507.8 to 507.11.2.** IMC Sections 507.8 through 507.11.2 are deleted.

Subp. 11. [Repealed, 34 SR 537]

Subp. 12. **Section 507.14.** IMC Section 507.14 is deleted.

Subp. 13. [Repealed, 34 SR 537]

1346.0508 SECTION 508 COMMERCIAL KITCHEN MAKEUP AIR.

Subpart 1. **Section 508.1.** IMC Section 508.1 is amended to read as follows:
508.1 Makeup air. Makeup air shall be supplied during the operation of commercial kitchen exhaust systems that are provided for commercial food heat-processing appliances. The amount

of makeup air supplied shall be approximately equal to the exhaust air. ~~A minimum of 80 percent of the makeup air shall be supplied into the space where the exhaust hood is located.~~ The makeup air shall not reduce the effectiveness of the exhaust system. Makeup air shall be provided by mechanical means and the exhaust and makeup air systems shall be electrically interlocked to insure that makeup air is provided whenever the exhaust system is in operation. Makeup air intake openings shall comply with IMC Section 401.4 and amended IMC Section 401.4.1.

Exception: This section shall not apply to dwelling units.

508.1.1 Makeup air temperature. Makeup air shall be not less than 50°F (10°C), measured at the flow of air from the supply diffuser into the space.

508.1.2 Makeup and ventilation air distribution. Makeup and ventilation air supply diffusers located within 12 feet (3.7 m) of an exhaust hood shall be directed away from the hood.

Exception: Perimeter perforated supply plenums installed in accordance with the manufacturer's installation instructions.

Subp. 2. **Section 508.2.** IMC Section 508.2 is amended to read as follows:

508.2 Compensating hoods. Manufacturers of compensating hoods shall provide a label indicating minimum exhaust flow and maximum makeup airflow that provides capture and containment of the exhaust effluent. Short-circuit compensating hoods are prohibited.

Proposed Code Change – Need and Reason

Please provide a thorough explanation of the need for this change and why this proposed code change is a reasonable change. During the rulemaking process, the Agency must defend the need and reasonableness of all its proposed changes. The Agency must submit evidence that it has considered all aspects of the proposal. (You may provide the need and reason (electronically) on a separate attached sheet).

NFPA Standard 96-2011, Standard for Ventilation Control and Fire Protection of Commercial Cooking Operations, is the nationally accepted standard that addresses ducts and hoods used for commercial cooking operations that produce grease-laden vapors. The IMC does not contain requirements to adequately cover all of the provisions that are addressed in detail in this standard, so the adoption of NFPA 96 by reference is necessary in order to contain adequate provisions for ducts and hoods used in systems that produce grease-laden cooking vapors. It is reasonable to adopt this standard because it has been adopted by reference as part of the Minnesota Mechanical Code since 2004.

Proposed Code Change – Cost/Benefit Analysis

Please consider whether this proposed code change will increase/decrease costs or indicate that it will not have any cost implications and explain how it will not. If there is an increased cost, will this cost be offset somehow by a life safety or other benefit? If so, please explain. Are there any cost increases/decreases to enforce or comply with this proposed code change? If so, please explain. (You may provide the cost/benefit analysis (electronically) on a separate, attached sheet).

Since it has the same result as language in the current mechanical code, there are no cost implications.

Other Factors to Consider Related to Proposed Code Change

1. Is this proposed code change meant to:

change language contained in a published code book? If so, list section(s).

Sections 506, 507 and 508

change language contained in an existing amendment in Minnesota Rule? If so, list Rule part(s).

delete language contained in a published code book? If so, list section(s).

delete language contained in an existing amendment in Minnesota Rule? If so, list Rule part(s).

neither; this language will be new language, not found in the code book or in Minnesota Rule.

2. Is this proposed code change required by a Minnesota Statute or new legislation? If so, please provide the citation to the Statute or legislation.

No

3. Will this proposed code change impact other sections of a published code book or of an amendment in Minnesota Rule? If so, please list the affected sections or rule parts.

No.

4. Will this proposed code change impact other parts of the Minnesota State Building Code? If so, please list the affected parts of the Minnesota State Building Code.

No.

5. Who are the parties affected or segments of industry affected by this proposed code change?

None.

6. Can you think of other means or methods to achieve the purpose of the proposed code change? If so, please explain what they are and why your proposed change is the preferred method or means to achieve the desired result.

No.

7. Are you aware of any federal requirement or regulation related to this proposed code change? If so, please list the regulation or requirement.

No.