

FAQ Title Insulation Materials

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Plant: Cook Nuclear  
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**Purpose of FAQ:**

FAQ provides clarification of an acceptable definition of limited combustible used in (NFPA 805, Chapter 3) element 3.3.4, Insulation Materials.

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**Is this Interpretation of guidance?**  Yes / No**Proposed new guidance not in NEI 04-02?**  Yes / No

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**Details:****NEI 04-02 guidance needing interpretation (include section, paragraph, and line numbers as applicable):**

NEI 04-02, Section 4.3.1, Fundamental Fire Protection Program and Design Elements Transition Review, and Appendix K, "NFPA 805 Chapter 3 Clarifications" which lists interpretation of specific sections of NFPA 805 Chapter 3.

**Circumstances requiring guidance interpretation or new guidance:**

Clarification of the NFPA 805 Chapter 3 requirement of Section 3.3.4, which requires that "Thermal insulation materials, radiation shielding materials, ventilation duct materials, and soundproofing materials shall be noncombustible or limited combustible." The industry requires clarification of the acceptable application of the definition of "limited combustible" as applied to Element 3.3.4.

**3.3.4 Insulation Materials.** Thermal insulation materials, radiation shielding materials, ventilation duct materials, and soundproofing materials shall be noncombustible or limited combustible.

NFPA 805 design element 3.3.2 "Structural" and definition 1.6.36 "Limited Combustible" both make specific reference to NFPA 220, Standard on Type of Building Construction. As stated in the NFPA 220 scope, "This standard defines types of building construction based on combustibility and fire resistance rating of buildings structural elements. Fire walls,

**FAQ Title Insulation Materials**

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nonbearing exterior walls, nonbearing interior partitions, fire barriers walls, shaft enclosures, and openings in walls, partitions, floors, and roofs are not related to types of building construction and are regulated by other standards and codes where appropriate." NFPA 805 design element 3.3.4 does not make reference to NFPA 220 like design element 3.3.2 and definition 1.6.36. Therefore the application of the term "limited combustible" to design element 3.3.4 requires clarification.

Design element 3.3.3 specifically addresses Interior Finish. As defined by NFPA 101 interior finish is "The exposed surfaces of walls, ceilings, and floors within buildings. Requirements for materials as interior finish are defined in NFPA 101 for Class A materials or Class I for interior floor finishes as referenced in the design element 3.3.3.

Design element 3.3.4 addresses miscellaneous materials (thermal insulation materials, radiation shielding materials, ventilation duct materials, and soundproofing materials) which may be used within the nuclear plant. In cases where these are applied to exposed surfaces of walls, ceilings and floors they fall under the scope of interior finish and must meet the design element requirements for design element 3.3.3. If the miscellaneous materials are applied in other types of applications such as on plant equipment and piping then design elements 3.3.2 and 3.3.3 are not applicable nor are their associated definitions.

Where thermal insulation materials, radiation shielding materials, ventilation duct materials, and soundproofing materials are used on plant equipment and piping the applicable definition of Limited Combustible needs to be defined. Under previous NRC approved FP licensing basis (10CFR50 Appendix R and BTP APCSB 9.5-1) thermal insulation materials, radiation shielding materials, ventilation duct materials, and soundproofing materials used on plant equipment and piping were considered a limited combustible as listed by a nationally recognized testing laboratory, such as Factory Mutual or Underwriters Laboratory, Inc. for flame spread, smoke and fuel contribution of 25 or less in its use configuration (ASTM E-84 Test, "Surface Burning Characteristics of Building Materials.>"). This was the basis licensees installed the materials that exist within the plants. This is the previously approved NRC criteria contained in BTP APCSB 9.5-1 Section IV B.1 for these types of materials when they did not meet the non-combustible criteria.

Various types of insulation, radiation shielding, ventilation duct materials and soundproofing materials (such as Armaflex foam insulation) and similar insulating products meet the previous regulatory guidance for limited combustibles by meeting the flame spread rating of 25 or less as measured using the test method of ASTM E-84.

**Detail contentious points if licensee and NRC have not reached consensus on the facts and circumstances:**

None

**Potentially relevant existing FAQ numbers:**

None

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FAQ Title Insulation Materials

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**Response Section:****Proposed resolution of FAQ and the basis for the proposal:**

Design element 3.3.4 Thermal insulation materials, radiation shielding materials, ventilation duct materials, and soundproofing materials applied in applications such as that are applied on plant equipment and piping meet the criteria of limited combustible if they are listed by a nationally recognized testing laboratory, such as Factor Mutual (FM) or Underwriters Laboratory (UL), for flame spread, smoke and fuel contribution of 25 or less in its use configuration (ASTM E-84 Test, "Surface Burning Characteristics of Building Materials.")\*. This is the previously approved NRC criteria for these types of materials when they did not meet the non-combustible criteria. Based on the history of compliance with this requirement, a similar compliance strategy is suggested to demonstrate compliance with NFPA 805 section 3.3.4.

\*- The Fuel Contribution Index is no longer recognized by nationally recognized testing organizations or by accepted industry standard test methods and is not included in the proposal.

***If appropriate, provide proposed rewording of guidance for inclusion in the next Revision:***

Modify Appendix K to add the following clarification:

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**K.X NFPA 805 Section 3.3.5.3 (FAQ 18-0078)**

Specific clarification for NFPA 805 section 3.3.4 from FAQ 18-0078;

**3.3.4 Insulation Materials.** Thermal insulation materials, radiation shielding materials, ventilation duct materials, and soundproofing materials shall be noncombustible or limited combustible.

When used as structural elements the limited combustible definition from section 1.6.36 applies to these materials.

When used on exposed surfaces of walls, ceilings, and floors within buildings the definition on limited combustible from design element 3.3.3 applies to these materials.

When used on plant equipment and piping the materials are considered limited combustible as listed by a nationally recognized testing laboratory, such as Factory Mutual or Underwriters Laboratory, Inc. for flame spread, smoke and fuel contribution of 25 or less in its use configuration (ASTM E-84 Test, "Surface Burning Characteristics of Building Materials.")".