BROWARD COUNTY
BOARD OF RULES AND APPEALS

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To: Members of the Mechanical/Smoke Control Committee

Steven Feller, P.E. Chair	Robert Kamm, P.E.	Robert Taylor, F.M.
Gregg D'Attile	MECHANICAL CONTRACTOR VACANT	Phil London
Jack Mitchell, P.E.	Jack Walsh	Eric Jenison
Julio Briceno	Alex Hernandez	Roman Sanchez
Peter McGinnis	Michael Charnin	Wesley Neely

From: Rolando Soto, P.E. Chief Mechanical Code Compliance Officer

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Agenda
September 22, 2020
Time: 1:30 P.M. EST

Due to COVID-19, this meeting will be held virtually via ZOOM.
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The Chair, Mr. Steven Feller, P.E. has called for a meeting of the Board of Rules and Appeals, Mechanical/Smoke and Committee.

Roll Call

Regular Meeting

Item 1 **Review and approval of 4/18/2019 Mechanical/Smoke Control Committee meeting minutes.**

Item 2 **Review of proposed Formal Interpretation for the installation of residential standby generators based on BORA Policy 06-03.**
a) Staff Presentation
b) Committee Discussion
c) Public comments
d) Committee Action

Item 3 **Analysis and committee recommendation for possible interpretation of FMC section 602.2.1 Materials within plenums.**
a) Staff Presentation
b) Committee Discussion
c) Public comments
d) Committee Action

General discussion.

Adjournment.

BROWARD COUNTY

Board of Rules & Appeals

One North University Drive, Suite 3500B, Plantation, Florida 33324
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MECHANICAL AND SMOKE CONTROL COMMITTEE

Minutes
April 18, 2019

Call to order:

Chair Steven Feller called a published meeting of the Mechanical and Smoke Control Committee to order at 9:00 a.m. at Plantation Fire Station #56. The roll was called, and the following members were present:

Present:

Steven Feller, P.E. Chair
Robert Taylor, F.M.
Phil London
Robert Kamm, P.E.
Peter McGinnis
Chip Lafferty, P.E.
Roman Sanchez
Jack Mitchell, P.E.

Arrived momentarily:

Michael Charnin
Jack Walsh
Wesley Neely
Gregg D'Attile

Staff:

Rolando Soto
Mechanical Chief Code Compliance Officer-BORA
Maria "Pat" Kong
Recording Assistant

After the roll call, the presence of a quorum was announced.

Discussion Items

Item 1: **Approval of 03/29/2018 Mechanical & Smoke Control Committee meeting minutes.**

MR. KAMM MADE A MOTION AND MR. TAYLOR SECONDED THE MOTION TO APPROVE THE MARCH 29, 2018 MEETING MINUTES. THE MOTION CARRIED BY UNANIMOUS VOTE OF 12-0.

Item 2: <u>Review of proposed "Broward County Uniform Data Form for Residential and Light Commercial Air Conditioning Replacements".</u>

Mr. Rolando Soto, Chief Code Compliance Officer Mechanical from the Board of Rules & Appeals, explained that after several meetings with chiefs from different cities, at the request of the South Florida Refrigeration and Air Conditioning Contractors, he wanted to present, for approval, the Uniform Data Form for Residential and Light Commercial Air Conditioning Replacements on page 5.

Mr. Phil London, Thermal Concepts, asked what was in use currently, Mr. Soto answered that each city has their own form and Mr. Michael Charnin added that this form was a combination of all the forms from different cities. The uniform form does not require the engineers' signature since its content is just for information purposes Mr. Soto stated.

Chair Feller, noted that the form provides a uniform record that benefit the home owner or the user, it will provide comfort knowing about what was replaced in terms of size of whatever changes or modifications are done in their residences. He believed that with the use of this uniform form the county, cities and contractors can relay on what information is in it and he recommended it.

Mr. Robert Taylor, Davie Fire Rescue, asked Mr. Feller if certain cities do not require any information, the uniform form has to be mandated to them? Mr. Feller said that not requiring anything is the same as putting bad information in it.

A MOTION WAS MADE BY MR. KAMM AND SECONDED BY MR. TAYLOR TO APPROVE THE BROWARD COUNTY UNIFORM DATA FORM FOR RESIDENTIAL AND LIGHT COMMERCIAL AIR CONDITIONING REPLACEMENTS. THE MOTION PASSED BY UNANIMOUS VOTE.

Item 3: **Review of proposed change to Chapter 1, Broward County Administrative Provisions for the 2017 FBC (6th Edition) Section 105.2 Work exempt from permit.**

Mr. Soto clarified that this question has been asked to him several times about if a permit is required when replacing a thermostat. The present members agreed that a permit is not required.

Chair Feller asked the members if additional items should be added to the list.

Mr. Soto mentioned that the list is included in the Code, and that it's based on the Florida Building Code State list of exempt items. Mr. Jack Walsh referenced to the new language asking the committee to review the section, in regards of the portable cooling equipment and portable heating appliance in wheels up to 25 ton, in what case a permit should be required:

- Units connected to an existing duct system in a building, or
- Units brought through a window.

Further discussion ensued relating this subject.

Mr. Jack Walsh, Trane Commercial Sales, noted that portable cooling units are big business, for example in hospitals, in those cases a permit needs to be required. Chair Feller and members agreed that a permit has to be issued.

Chair Feller proposed then, to add some modifications on the list, as portable cooling less than 5 ton will not require a permit, he clarified that everything cannot be cover but at least with some modifications on the list they can keep what is writing in the Code, about items that do not require a permit, this list would be a good reference to the Building and Mechanical Departments.

Mr. Walsh referred of cases where a large-scale A/C equipment replacement may include portable cooling units, inspections will be associated and permits. Chair Feller clarified that units that are not connected to a duct system or pipe system will not require a permit.

Mr. D'Attile, Art Plumbing & Air Conditioning, brought out the indoor Air quality equipment such air filtration equipment that do not specify the need of a permit, in some cases do not need to be electric.

Chair Feller concluded that the general rule would be "anything attached, cuts or interrupt into an existing system requires a permit". But any piece of equipment that take care of air filtration, cleaning the air filters, cleaning companies that take care of spills or dust, will not require a permit.

Mr. D'Attile, asked if the UV light will be also considered for a permit, because in some cases they require modifications to the ducts or air handlers and to make electrical connections to the 24 volts, or the line voltage. For those type of modifications Chair Feller said a permit should be required.

Mr. D'Attile asked the members if a steam, hot or chilled water piping will need a permit, Mr. London replied no if it is inside the equipment. Chair Feller said in these cases is impossible to draw a line because there will be always exemptions in terms of how a specific city run inspections and in what cases permits are required, this type of information should be share between cities. Mr. D'Attile disagreed and said that is Broward County and that it's in the Code, for that reason there should not be exemptions in the cities. Mr. Walsh added that there are service calls that require the replacing of large parts with new tags, new serial numbers, so permit is needed.

Mr. Soto, said that in regards to UV lights or any parts that are added to the system, the Building Code have some guidelines that refer to repairs or anything that is performed in the system to keep the listing and performance, he also mentioned that an alteration is something that, either replaces the whole component or adds parts to the component.

A MOTION WAS MADE BY MR. KAMM AND SECONDED BY MR. LAFFERTY TO APPROVE THE EXEMPTION OF THERMOSTATS REPLACEMENT FROM PERMIT REQUIREMENTS. THE MOTION PASSED BY 11-1. MR. D'ATTILE VOTED NO.

Item 4: **<u>Review of proposed draft of FORMAL INTERPRETATION (#22) "Direct venting of solid fuel pizza ovens".</u>**

Mr. Soto, mentioned that in the agenda there were two proposals for the interpretation, written as follows:

- **Draft #1:** The installation of solid fuel or combination of gas and solid fuel pizza ovens without a Type 1 (grease) hood using direct venting as allowed in NFPA 96-2014 is acceptable if the oven is listed to be vented directly. The venting system shall be constructed and installed per the listing conditions of the oven and of the duct or chimney used for venting. This applies to ovens listed with natural draft of forced draft venting.

- **Draft #2:** The installation of solid fuel or combination gas and solid fuel pizza ovens without a Type 1 (grease) hood using direct venting as allowed in NFPA 96-2014 is **not** acceptable **even** if the oven is listed to be vented directly.

Mr. Soto added that regarding this issue sometimes the Fire Chief approves it and the Mechanical Chief rejects it. He also noted that on 2018 BORA received and appeal for the same matter, it went to the Board and was rejected because the oven did have the listing to be vented under Type 1 hood.

Mr. Soto distributed an opinion list from the IMC Interpretation 142-15 Issued 3-28-2016 by the International Code Council (ICC) to the members, he clarified the use of the Florida Mechanical Code on this kind of exhaust systems, but ICC proposes and alternative method on this matter which sends back the issue to Building Officials and Mechanicals that try to define the right method.

Mr. London said that in most cases the installation of equipment is generally done according to the manufactures' specifications and typically it's approved that way, and if NFPA allows this method, it should be implemented.

Mr. Sanchez, Assistant B.O. Pembroke Pine, disagreed and stated that the Florida Mechanical Code does not use the NFPA 96, it was removed from standard.

Discussion followed between the members of the committee.

Mr. Kamm, Kamm Consulting, added that those are UL listed devices, and they have also standards for the venting, for that reason it should be allowed.

Chair Feller also said that UL is a recognized testing agency that certifies those devices, and in the case they are not certified, the Code has to be implemented for Type I hood. It is responsibility of the engineers, contractors and owners to be aware of the Code and to do things in accordance with the Code.

He also said that if the Building Official disagrees, it has to be brought to the Board for discussion and concluded that no interpretation is needed. Mr. London, Mr. Sanchez and Mr. Kamm disagreed and stated that the Formal Interpretation was needed.

Mr. London suggested that the interpretation should include a manufactures UL listing and Mr. Kamm proposed to approve Draft #1.

A MOTION WAS MADE BY MR. KAMM AND SECONDED BY MR. SANCHEZ TO APPROVE THE DRAFT #1 of FORMAL INTERPRETATION (#22) "Direct venting of solid fuel pizza ovens". THE MOTION PASSED BY UNANIMOUS VOTE.

Item 5: Review of staff opinion regarding section M1506.3 Exhaust openings of the 2017 FBC Residential (6th Edition)

Mr. Soto introduced the item and asked the members of the committee to support the Staff opinion regarding the location of environmental air exhaust locations. The staff opinion was requested by an architect, due to rejections in one of the Broward County municipalities.

The Committee decided that a Formal Interpretation was not required, and that no BORA action is needed.

Chairman Feller opened the floor for discussion.

Mr. Kamm inquired that if the Committee allowed a toilet exhaust to be installed next to a non-operable window, the decision will be valid in Broward County until the State of Florida say the opposite. The Committee members agreed.

Mr. Soto pointed out that a Code Amendment must be restrictive than the Code and that an Interpretation explains what is in the Code. Mr. Feller explained that a fixed piece of solid material in a building is no operable, it is never going to operate; and that a louver is a non-operable opening in a building.

Mr. Feller concluded that an opinion letter should be created and provided to all the municipalities in Broward County.

NO MOTION.

Public Comment – none

A MOTION WAS MADE BY MR. FELLER AND SECONDED BY MR. MITCHELL TO ADJOURN THE MEETING. THE MOTION PASSED BY UNANIMOUS VOTE.

Having no further business to go before the Committee, the meeting adjourned at 9:51 a.m.

Item 2

As you can see this policy was created in 2006 after hurricane Wilma. There are a couple of issues.

1. FBC Residential section M1804.2.6 is a little confusing.
2. We get complains from contractors that some mechanical and fire plans examiner still ask for 10" for the exhaust.
3. A policy is weaker than a formal interpretation, so I prepared two F.I. versions for your consideration.

Item 2

BROWARD COUNTY BOARD OF RULES & APPEALS Policy # 06-03 Effective 9/15/06
Amended: January 9, 2014
Amended: February 8, 2018

MINIMUM CODE REQUIREMENTS FOR PERMANENT RESIDENTIAL TYPE STAND-BY GENERATORS

1. Generators (Engines) shall be installed at least 5 feet from structures having combustible walls unless there is an adjacent wall that has a fire resistance rating of at least 1 hour between the structure and generator.

2. The generator shall be installed in compliance with floodplain management construction standards (same elevation above grade as the interior 1st floor of the building).

3. Generators that are exposed to wind shall be installed to resist the wind pressures according to ASCE (American Society of Civil Engineers) 7 –2007.

4. Generators installed at grade level shall be supported on a level minimum 4 inch nominal (3.5 inch actual) concrete slab or other approved material extending a minimum of 2 inches above adjoining finished grade. Such slabs shall be placed on clean, thoroughly compacted sand or crushed rock free from organics, debris or other deleterious materials.

5. Generator exhaust shall be located so as not to create a nuisance. Exhaust termination shall be a minimum of 10 feet from any openable openings (doors, windows, vents, etc.) or air intakes.

   Exception: Where a Carbon monoxide (CO) alarm(s) is installed in the residency in accordance with Section R315.1.1 CARBON MONOXIDE ALARMS of the 2017 Florida Building Code - Residential, Sixth Edition, or the alarm's manufacturer installation requirements and listing, whichever is more restrictive; the generator exhaust can be located in compliance with Section M1804.2.6 Mechanical draft systems of the 2017 Florida Building Code - Residential, Sixth Edition or with generator manufacturer installation requirements and listing, whichever is more restrictive.

6. Generators shall be listed and labeled. Generators shall be installed according to the manufacturer's recommendations and by the terms of their approval, in accordance with the conditions of the listing. Where conflicts between 1) the code, 2) the conditions of listing or, 3) the manufacturer's installation recommendations occur, the most restrictive of the three alternatives shall apply.

7. When applicable, the following Codes and Standards shall apply: 2017 Florida Building Code - Residential, Sixth Edition, NFPA 58-14 - Liquefied Petroleum Gas Code, NFPA 37-15 – Stationary Combustion Engines and Gas Turbines, NFPA 30-15 – Flammable and Combustible Liquids Code, ANSI/ASME B31.3-2012 Process Piping, and the 2017 Florida Fuel Gas Code 6th Edition.

8. Installations shall comply with the Florida Fire Prevention Code

9. Maximum allowable sound levels and property setbacks shall comply with local jurisdiction's zoning requirements.

10. Electrical installation shall comply with NFPA 70-2014 National Electrical Code.

Item 2

CHAPTER 13
GENERAL MECHANICAL SYSTEM REQUIREMENTS

SECTION M1301
GENERAL

M1301.1 Scope.

The provisions of this chapter shall govern the installation of mechanical systems not specifically covered in other chapters applicable to mechanical systems. Installations of mechanical *appliances, equipment* and systems not addressed by this code shall comply with the applicable provisions of the *Florida Building Code, Mechanical* and the *Florida Building Code, Fuel Gas Code*.

Item 2

501.3 Exhaust discharge.

The air removed by every mechanical exhaust system shall be discharged outdoors at a point where it will not cause a public nuisance and not less than the distances specified in Section 501.3.1. The air shall be discharged to a location from which it cannot again be readily drawn in by a ventilating system. Air shall not be exhausted into an attic, crawl space, or be directed onto walkways.

Exceptions:

1. Whole-house ventilation-type attic fans shall be permitted to discharge into the attic space of *dwelling units* having private attics.
2. Commercial cooking recirculating systems.
3. Where installed in accordance with the manufacturer's instructions and where mechanical or *natural ventilation* is otherwise provided in accordance with Chapter 4, *listed* and *labeled* domestic ductless range hoods shall not be required to discharge to the outdoors.

501.3.1 Location of exhaust outlets.

The termination point of exhaust outlets and ducts discharging to the outdoors shall be located with the following minimum distances:

1. For ducts conveying explosive or flammable vapors, fumes or dusts: 30 feet (9144 mm) from property lines; 10 feet (3048 mm) from operable openings into buildings; 6 feet (1829 mm) from exterior walls and roofs; 30 feet (9144 mm) from combustible walls and operable openings into buildings which are in the direction of the exhaust discharge; 10 feet (3048 mm) above adjoining grade.
2. For other product-conveying outlets: 10 feet (3048 mm) from the property lines; 3 feet (914 mm) from exterior walls and roofs; 10 feet (3048 mm) from operable openings into buildings; 10 feet (3048 mm) above adjoining grade.
3. For all *environmental air* exhaust: 3 feet (914 mm) from property lines; 3 feet (914 mm) from operable openings into buildings for all occupancies other than Group U, and 10 feet (3048 mm) from mechanical air intakes. Such exhaust shall not be considered hazardous or noxious.
4. Exhaust outlets serving structures in flood hazard areas shall be installed at or above the elevation required by Section 1612 of the *Florida Building Code, Building* for utilities and attendant equipment.
5. For specific systems see the following sections:
   - 5.1. Clothes dryer exhaust, Section 504.4.
   - 5.2. Kitchen hoods and other kitchen exhaust *equipment*, Sections 506.3.13, 506.4 and 506.5.
   - 5.3. Dust stock and refuse conveying systems, Section 511.2.
   - 5.4. Subslab soil exhaust systems, Section 512.4.
   - 5.5. Smoke control systems, Section 513.10.3.
   - 5.6. Refrigerant discharge, Section 1105.7.
   - 5.7. Machinery room discharge, Section 1105.6.1.

Item 2

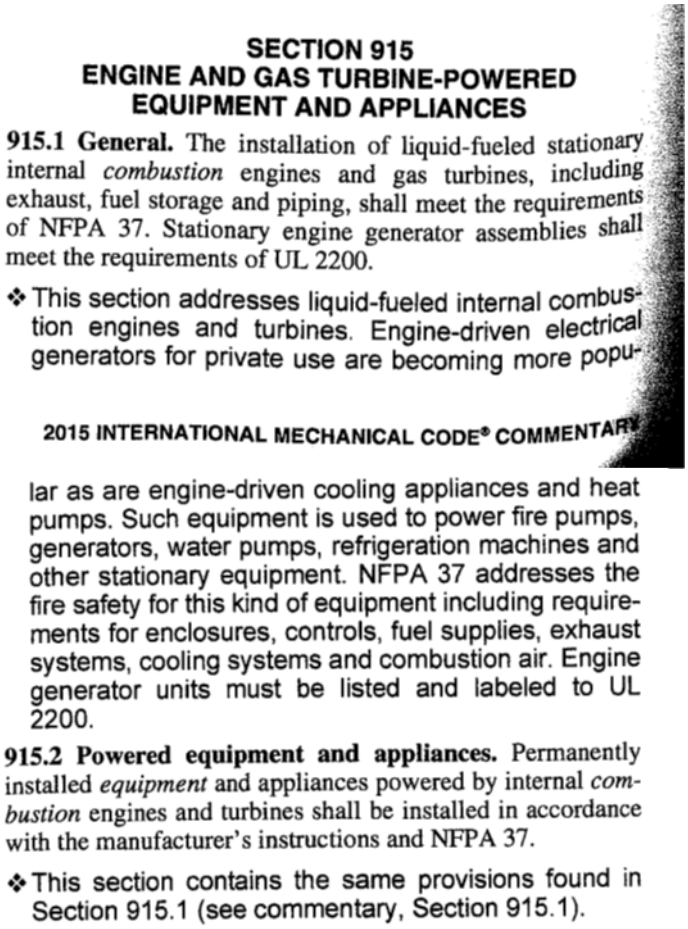
SECTION 915
ENGINE AND GAS TURBINE-POWERED EQUIPMENT AND APPLIANCES

915.1 General.

The installation of liquid-fueled stationary internal *combustion* engines and gas turbines, including exhaust, fuel storage and piping, shall meet the requirements of NFPA 37. Stationary engine generator assemblies shall meet the requirements of UL 2200.

915.2 Powered equipment and appliances.

Permanently installed *equipment* and appliances powered by internal *combustion* engines and turbines shall be installed in accordance with the manufacturer's instructions and NFPA 37.



SECTION 915
ENGINE AND GAS TURBINE-POWERED EQUIPMENT AND APPLIANCES

915.1 General. The installation of liquid-fueled stationary internal *combustion* engines and gas turbines, including exhaust, fuel storage and piping, shall meet the requirements of NFPA 37. Stationary engine generator assemblies shall meet the requirements of UL 2200.

❖ This section addresses liquid-fueled internal combustion engines and turbines. Engine-driven electrical generators for private use are becoming more popu-

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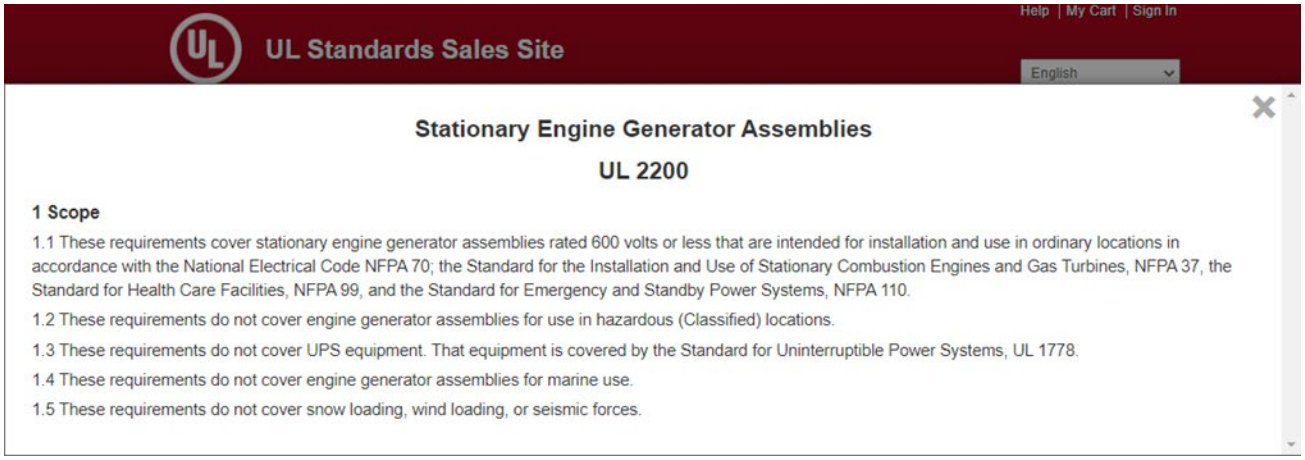
lar as are engine-driven cooling appliances and heat pumps. Such equipment is used to power fire pumps, generators, water pumps, refrigeration machines and other stationary equipment. NFPA 37 addresses the fire safety for this kind of equipment including requirements for enclosures, controls, fuel supplies, exhaust systems, cooling systems and combustion air. Engine generator units must be listed and labeled to UL 2200.

915.2 Powered equipment and appliances. Permanently installed *equipment* and appliances powered by internal *combustion* engines and turbines shall be installed in accordance with the manufacturer's instructions and NFPA 37.

❖ This section contains the same provisions found in Section 915.1 (see commentary, Section 915.1).

Item 2



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English

Stationary Engine Generator Assemblies

UL 2200

1 Scope

1.1 These requirements cover stationary engine generator assemblies rated 600 volts or less that are intended for installation and use in ordinary locations in accordance with the National Electrical Code NFPA 70; the Standard for the Installation and Use of Stationary Combustion Engines and Gas Turbines, NFPA 37, the Standard for Health Care Facilities, NFPA 99, and the Standard for Emergency and Standby Power Systems, NFPA 110.

1.2 These requirements do not cover engine generator assemblies for use in hazardous (Classified) locations.

1.3 These requirements do not cover UPS equipment. That equipment is covered by the Standard for Uninterruptible Power Systems, UL 1778.

1.4 These requirements do not cover engine generator assemblies for marine use.

1.5 These requirements do not cover snow loading, wind loading, or seismic forces.

NFPA® 37

Standard for the

Installation and Use of Stationary Combustion Engines and Gas Turbines

2018 Edition

T SYSTEMS 37-15

8.2.3 Exhaust System Termination.

8.2.3.1* Exhaust systems shall terminate outside the structure at a point where hot gases, sparks, or products of combustion will discharge to a safe location.

8.2.3.2 Exhaust system terminations shall not be directed toward combustible material or structures or into atmospheres containing flammable gases, flammable vapors, or combustible dusts.

8.2.3.3 Exhaust systems equipped with spark-arresting mufflers shall be permitted to terminate in Division 2 locations or Zone 2 locations, as defined in Article 500 and Article 505 of *NFPA 70*.

8.2.4 Where necessary to prevent personnel burns, exhaust systems shall be guarded.

8.2.5 Exhaust systems shall consist of metal, masonry, or factory-built chimneys where they pass through a floor, ceiling, attic, or concealed space.

8.2.5.1* If an engine exhaust system connects to the same flue as other fuel-burning appliances, the engine exhaust shall enter the flue a distance of at least 1½ times the equivalent diameter of the exhaust pipe or duct above or below the level of the other appliance vent(s).

8.2.5.1.1 Common venting shall be permitted where appropriate calculations demonstrate that the exhaust from the engine does not reduce the performance of the other appliance(s).

8.2.5.2* An engine exhaust system that will discharge at positive pressure (greater than atmospheric pressure) shall not enter the same flue as an appliance that relies on natural draft to vent.

8.2.5.2.1 Common venting shall be permitted where appropriate calculations demonstrate that the exhaust from the engine does not reduce the performance of the other appliance(s).

Item 2

5.4. Subslab soil exhaust systems, Section 512.4.

5.5. Smoke control systems, Section 513.10.3.

5.6. Refrigerant discharge, Section 1105.7.

5.7. Machinery room discharge, Section 1105.6.1.

❖ This section details the requirements for the termination points of exhaust ducts. Except for a few notable exceptions (see commentary, Section 501.2), the requirements for termination points for all exhaust ducts are conveniently located in this section. This section gives distances that must be maintained, depending on the type of exhaust, and is more specific than the general requirement that the discharge of exhaust must not create a public nuisance. In addition, see Chapter 8 and the IFGC for specific regulations for the location of exhaust vent terminations for fuel-fired appliances.

Item 1 details the requirements for termination points for exhaust ducts that convey explosive or flammable vapors, fumes or dusts, like those exhaust systems that serve operations involving the application of flammable finishes (see Section 502.7), hazardous exhaust systems (see Section 510), and dust, stock and refuse conveyor systems (see Section 511). The intent of this section is to reduce the exposure from the dangerous vapors in the exhaust. This is done to:

1. Protect other parts of the building;
2. Protect other buildings;
3. Reduce a potential reaction from materials that may be incompatible; and
4. Reduce the severity of a fire, in case of an ignition.

Flammable finishes, as well as vapors that are considered flammable, including dusts, have more restrictive termination requirements than other vapors due to the potential for ignition. To avoid recirculation of flammable vapors, fumes or dusts back into the building, the exhaust outlets and ducts must be designed and located to reduce such exposures. This may be achieved by separating the exhaust outlet from openings in the building, walls and roof where sources of ignition or incompatible materials may be present [see Commentary Figures 501.3.1(1) and 501.3.1(2)].

For health and safety reasons, hazardous exhaust cannot be directed onto adjacent property. Maintaining the required distance allows the hazardous contents of the exhaust to disperse into the atmosphere, thereby minimizing the exposure of the adjoining property to the potential ignition hazard of a burning ember or spark, or the hazardous, noxious and objectionable odors emitted from such systems. Wind and wind-induced eddy currents can react with building structural surfaces to create air pressure zones that can diminish exhaust flow or redirect exhaust into nearby building openings, such as fresh air or combustion air intakes and operable windows.

Exhaust systems sometimes incorporate rotating hoods over the discharge opening to prevent the winds from restricting the flow of exhaust gases out the system. The hoods align themselves with the direction of the wind to allow the unimpeded and sometimes, induced discharge from the exhaust outlet. The termination height specified for combustible walls is more restrictive to allow the concentration of explosive or flammable constituents in the exhaust to diminish before landing or accumulating on a combustible wall. The code official must consider prevailing wind conditions in locating hazardous exhaust outlets with respect to other building openings.

Item 2 details the provisions regarding the termination points of other product-conveying ducts, such as those exhausting nonflammable and nonexplosive dusts and waste products. This item states the location of exhaust outlets to be well into the undisturbed wind stream and away from the cavity and wake (eddy) zones around the building. This counteracts the negative effects of wind-induced conditions and also prevents the reentry of exhaust products into the building through openings and fresh air intakes.

Item 3 details the provisions for termination points for exhaust ducts that convey environmental air. "Environmental air" is defined in Section 202 as "air that is conveyed to or from occupied areas through ducts which are not part of the heating or air-conditioning system, such as ventilation for human use, domestic kitchen range exhaust, bathroom exhaust, domestic clothes dryer exhaust and parking garage exhaust." In general, air that is exhausted from an occupied space, where the occupied space is not subject to any contaminants from a process or operation, would have to meet the termination requirements in Item 3. Note that since the definition of "Environmental air" includes domestic kitchen range exhaust, bathroom exhaust and domestic clothes dryer exhaust, these exhaust terminations would not be required to be 3 feet (914 mm) from openable openings into a building (i.e., windows and doors). Since these three exhaust sources are common in multiple-family residential buildings where the dwelling units are naturally ventilated, the exhaust termination that penetrate through the exterior wall will not need to be located 3 feet (914 mm) from windows that are providing natural ventilation to the dwelling unit.

Considering that the exhaust from a dwelling unit is not considered to be hazardous or noxious and is of low volume, the 3-foot (914 mm) separation from windows seems reasonable. In accordance with Section 401.4, Item 2, mechanical and gravity outdoor air intakes must be located not less than 10 feet (3048 mm) from any hazardous or noxious contaminant; however, environmental air exhaust is not considered to be hazardous or noxious. Therefore, a 3-foot (914 mm) separation from gravity openings and a 10-

Item 2

Draft version 1

Formal Interpretation of the following sections:
2020 Florida Building Code – Residential
2020 Florida Building Code – Mechanical,

Formal Interpretation.
Generator exhaust shall be located so as not to create a nuisance. Exhaust termination shall be a minimum of 10 feet from any openable openings (doors, windows, vents, etc.) or air intakes.

> Exception: Where a Carbon monoxide (CO) alarm(s) is installed in the residency in accordance with Section R315.1.1 CARBON MONOXIDE ALARMS of the 2020 Florida Building Code - Residential, 7th Edition, or the alarm's manufacturer installation requirements and listing, whichever is more restrictive; the generator exhaust can be located minimum of 5 feet from any openable openings (doors, windows, vents, etc.) or in compliance with generator manufacturer installation requirements and listing, whichever is more restrictive.

Draft version 2

Formal Interpretation of the following sections:
2020 Florida Building Code - Mechanical, 7th Edition,

Formal Interpretation.
Generator exhaust shall be located so as not to create a nuisance. Exhaust termination shall be a minimum of 10 feet from any openable openings (doors, windows, vents, etc.) or air intakes.

> Exception: Where a Carbon monoxide (CO) alarm(s) is installed in the residency in accordance with Section R315.1.1 CARBON MONOXIDE ALARMS of the 2020 Florida Building Code - Residential, 7th Edition, or the alarm's manufacturer installation requirements and listing, whichever is more restrictive; the generator exhaust can be located in compliance with Section M1804.2.6 Mechanical draft systems of the 2017 Florida Building Code - Residential, Sixth Edition or with generator manufacturer installation requirements and listing, whichever is more restrictive.

Item 2

2020 Florida Building Code, Residential, 7th Edition

CHAPTER 18 CHIMNEYS AND VENTS

First Printing: Jul 2020

M1804.2.6Mechanical draft systems.
Mechanical draft systems shall comply with UL 378 and shall be installed in accordance with their listing, the manufacturer's instructions and, except for direct-vent appliances, the following requirements:

1.The vent terminal shall be located not less than 3 feet (914 mm) above a forced air inlet located within 10 feet (3048 mm).

2.The vent terminal shall be located not less than 4 feet (1219 mm) below, 4 feet (1219 mm) horizontally from, or 1 foot (305 mm) above any door, window or gravity air inlet into a dwelling.

3.The vent termination point shall be located not closer than 3 feet (914 mm) to an interior corner formed by two walls perpendicular to each other.

4.The bottom of the vent terminal shall be located not less than 12 inches (305 mm) above finished ground level.

5.The vent termination shall not be mounted directly above or within 3 feet (914 mm) horizontally of an oil tank vent or gas meter.

6.Power exhauster terminations shall be located not less than 10 feet (3048 mm) from lot lines and adjacent buildings.

7.The discharge shall be directed away from the building.

2020 Florida Building Code, Residential, 7th Edition

CHAPTER 3 BUILDING PLANNING

First Printing: Jul 2020

SECTIONR315
CARBON MONOXIDE ALARMS

R315.1Carbon monoxide protection.
Every separate building or an addition to an existing building for which a permit for new construction is issued and having a fossil-fuel-burning heater or appliance, a fireplace, an attached garage, or other feature, fixture, or element that emits carbon monoxide as byproduct of combustion shall have an operational carbon monoxide alarm installed within 10 feet of each room used for sleeping purposes.

Exception: This section shall not apply to existing buildings that are undergoing alterations or repair unless the alteration is an addition as defined in Section R315.1.3.

R315.1.1Carbon monoxide alarm.
The requirements of Section R315.1 shall be satisfied by providing for one of the following alarm installations:

1. 1.A hard-wired carbon monoxide alarm.
2. 2.A battery-powered carbon monoxide alarm.
3. 3.A hard-wired combination carbon monoxide and smoke alarm.

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4. 4.A battery-powered combination carbon monoxide and smoke alarm.

R315.1.2Combination alarms.

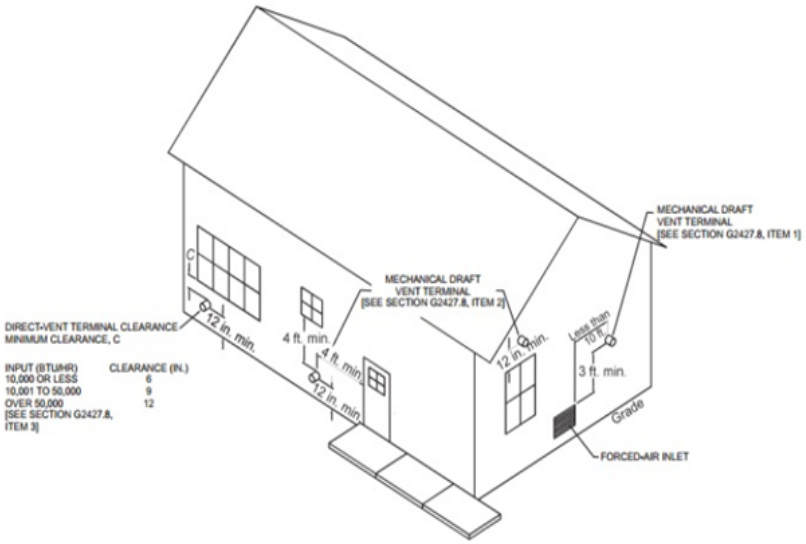
Combination smoke/carbon monoxide alarms shall be listed and labeled by a nationally recognized testing laboratory.

R315.1.3Addition shall mean.

An extension or increase in floor area, number of stories or height of a building or structure.

EXIT TERMINALS OF MECHANICAL DRAFT AND DIRECT-VENT VENTING SYSTEMS

(This appendix is informative and is not part of the code. This appendix is an excerpt from the Florida Building Code, Fuel Gas, 6th Edition(2017) coordinated with the section numbering of the Florida Building Code, Residential.)



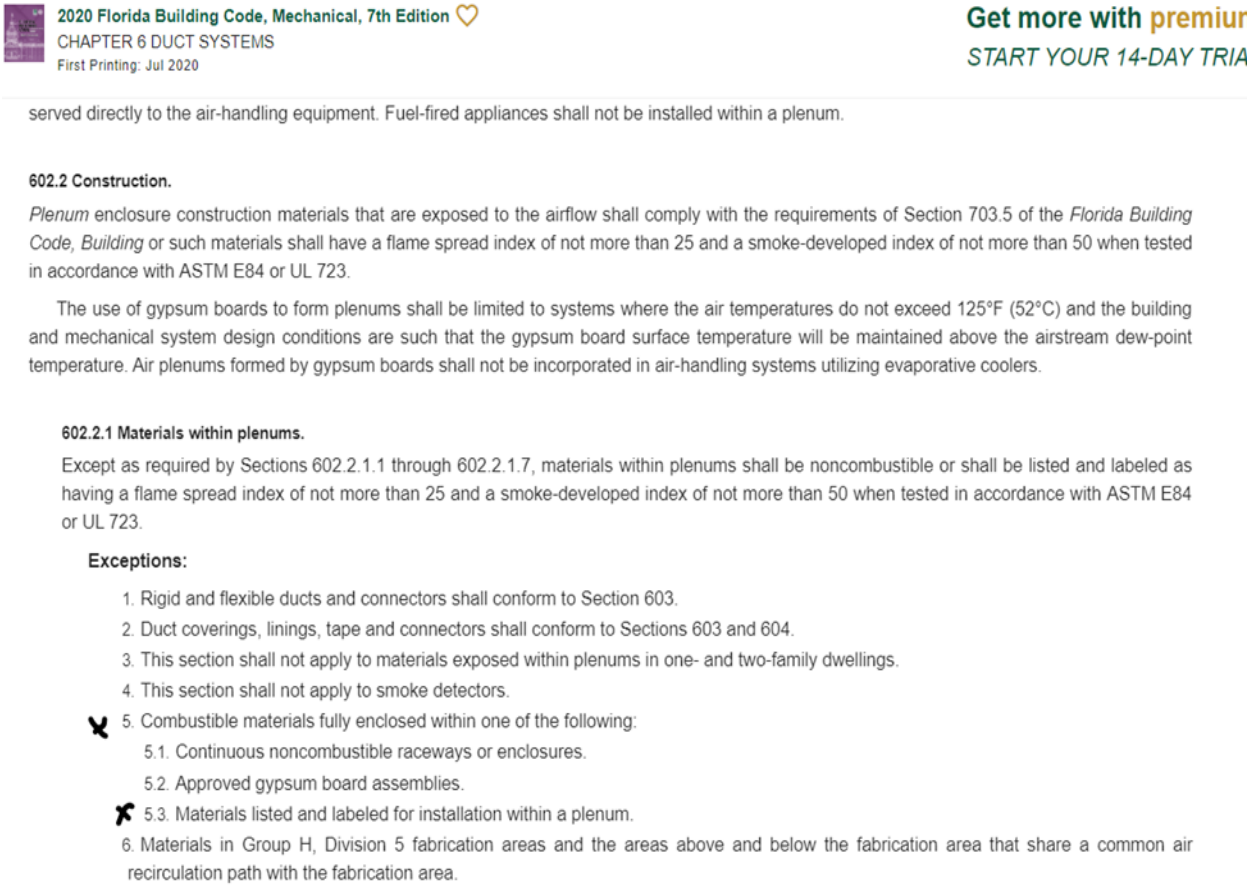
For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm, 1 British thermal unit per hour = 0.2931 W.

APPENDIX C
EXIT TERMINALS OF MECHANICAL DRAFT AND DIRECT-VENT VENTING SYSTEMS

Item 3

Analysis and committee recommendation for possible interpretation of FMC section 602.2.1 Materials within plenums.

The issue here is to clarify the meaning of the 2020 Florida Building Code – Mechanical, section 602.2.1, Materials within plenums, Exception 5.3. In particular if PVC drain pipes fully enclosed with plenum rated insulation are acceptable in air handler closets used as plenums in the residential portion of R-2 and R-3 occupancies.
ICC interpretation below is confusing.
On one hand they say that the enclosing material has to be plenum rated.
Also, that enclosing a combustible on a material having a flame spread index of not more than 25 and a smoke-developed index of not more than 50 when tested in accordance with ASTM E84 or UL 723 is not sufficient.
But the acceptance criteria for plenum rating is exactly a flame spread index of not more than 25 and a smoke-developed index of not more than 50 when tested in accordance with ASTM E84 or UL 723. So what gives?



2020 Florida Building Code, Mechanical, 7th Edition
CHAPTER 6 DUCT SYSTEMS
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served directly to the air-handling equipment. Fuel-fired appliances shall not be installed within a plenum.

602.2 Construction.

Plenum enclosure construction materials that are exposed to the airflow shall comply with the requirements of Section 703.5 of the *Florida Building Code, Building* or such materials shall have a flame spread index of not more than 25 and a smoke-developed index of not more than 50 when tested in accordance with ASTM E84 or UL 723.

The use of gypsum boards to form plenums shall be limited to systems where the air temperatures do not exceed 125°F (52°C) and the building and mechanical system design conditions are such that the gypsum board surface temperature will be maintained above the airstream dew-point temperature. Air plenums formed by gypsum boards shall not be incorporated in air-handling systems utilizing evaporative coolers.

602.2.1 Materials within plenums.

Except as required by Sections 602.2.1.1 through 602.2.1.7, materials within plenums shall be noncombustible or shall be listed and labeled as having a flame spread index of not more than 25 and a smoke-developed index of not more than 50 when tested in accordance with ASTM E84 or UL 723.

Exceptions:

1. Rigid and flexible ducts and connectors shall conform to Section 603.
2. Duct coverings, linings, tape and connectors shall conform to Sections 603 and 604.
3. This section shall not apply to materials exposed within plenums in one- and two-family dwellings.
4. This section shall not apply to smoke detectors.
5. Combustible materials fully enclosed within one of the following:
   - 5.1. Continuous noncombustible raceways or enclosures.
   - 5.2. Approved gypsum board assemblies.
   - 5.3. Materials listed and labeled for installation within a plenum.
6. Materials in Group H, Division 5 fabrication areas and the areas above and below the fabrication area that share a common air recirculation path with the fabrication area.

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use, where it is separated from the airflow in the plenum by not less than a 1 inch (25 mm) thickness of masonry or concrete.

602.2.1.7 Plastic plumbing piping and tubing.

Plastic piping and tubing used in plumbing systems shall be *listed* and *labeled* as having a flame spread index of not greater than 25 and a smoke-developed index of not more than 50 when tested in accordance with ASTM E84 or UL 723.

Exception: Plastic water distribution piping and tubing listed and labeled in accordance with UL 2846 as having a peak optical density not greater than 0.50, an average optical density not greater than 0.15 and a flame spread distance not greater than 5 feet (1524 mm), and installed in accordance with its listing.

602.2.1.8 Pipe and duct insulation within plenums.

Pipe and duct insulation contained within *plenums*, including insulation adhesives, shall have a flame spread index of not more than 25 and a smoke-developed index of not more than 50 when tested in accordance with ASTM E84 or UL 723 using the specimen preparation and mounting procedures of ASTM E2231. Pipe and duct insulation shall not flame, glow, smolder or smoke when tested in accordance with ASTM C411 at the temperature to which they are exposed in service. The test temperature shall not fall below 250°F (121°C). Pipe and duct insulation shall be listed and labeled.

Item 3

area of a Group M occupancy shall not exceed the quantities in Table 414.2.5(1).

SECTION 310
RESIDENTIAL GROUP R

310.1 Residential Group R.

Residential Group R includes, among others, the use of a building or structure, or a portion thereof, for sleeping purposes when not classified as an Institutional Group I or when not regulated by the *Florida Building Code, Residential*.

2020 Florida Building Code, Building, 7th Edition
CHAPTER 3 USE AND OCCUPANCY CLASSIFICATION
First Printing: Jul 2020

Motels (*transient*)

310.4 Residential Group R-2.

Residential Group R-2 occupancies containing *sleeping units* or more than two *dwelling units* where the occupants are primarily permanent in nature, including:

Apartment houses
Boarding houses (nontransient)
Congregate living facilities (nontransient) with more than 16 occupants
Convents
Dormitories
Fraternities and sororities
Hotels (nontransient)
Live/work units
Monasteries
Motels (nontransient)
Vacation timeshare properties

310.5 Residential Group R-3.

Residential Group R-3 occupancies where the occupants are primarily permanent in nature and not classified as Group R-1, R-2, R-4 or I, including:

Buildings that do not contain more than two *dwelling units*
Boarding houses (nontransient) with 16 or fewer occupants
Boarding houses (*transient*) with 10 or fewer occupants
Care facilities that provide accommodations for five or fewer persons receiving care
Congregate living facilities (nontransient) with 16 or fewer occupants
Congregate living facilities (*transient*) with 10 or fewer occupants
Owner-occupied lodging houses with five or fewer *guest rooms* and 10 or fewer occupants

Item 3

ICC commentary

CHAPTER 6
DUCT SYSTEMS

SECTION 602.2.1
2015 Edition
IMC Interpretation No. 64-17
Issued: 05-01-2018
ME_15_64_17

602.2.1 Materials within plenums. Except as required by Sections 602.2.1.1 through 602.2.1.7, materials within plenums shall be noncombustible or shall be listed and labeled as having a flame spread index of not more than 25 and a smoke-developed index of not more than 50 when tested in accordance with ASTM E 84 or UL 723.

Exceptions:

1. Rigid and flexible ducts and connectors shall conform to Section 603.
2. Duct coverings, linings, tape and connectors shall conform to Sections 603 and 604.
3. This section shall not apply to materials exposed within plenums in one- and two-family dwellings.
4. This section shall not apply to smoke detectors.
5. Combustible materials fully enclosed within one of the following:
    - 5.1. Continuous noncombustible raceways or enclosures.
    - 5.2. Approved gypsum board assemblies.
    - 5.3. Materials listed and labeled for installation within a plenum.
6. Materials in Group H, Division 5 fabrication areas and the areas above and below the fabrication area that share a common air recirculation path with the fabrication area.

• • • • • • • • • • •

Q: Does Exception 5 permit the use of any material as an approved enclosure of combustible items provided that the material is listed and labeled as having a flame spread index of not more than 25 and a smoke-developed index of not more than 50 when tested in accordance with ASTM E 84 or UL 723?

A: No.

The material within the plenum is permitted to be any material labeled as having a flame spread index of not more than 25 and a smoke-developed index of not more than 50 when tested in accordance with ASTM E 84 or UL 723. Exception 5 provides three methods of protecting the combustible material found within the plenum where such material does not meet the flame spread / smoke-developed index. Exception 5, part 5.3 requires the material that encloses the combustible material to be listed and labeled for installation within a plenum. Simply because the material meets the flame spread and smoke-developed index of this section does not mean that it can be used to enclose combustible material.

The material that encloses the combustible material must be specifically listed and labeled for installation within a plenum.

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Electrical *equipment* exposed within a *plenum* shall comply with Sections 602.2.1.4.1 and 602.2.1.4.2.

9. The answer to Petitioner's question is yes, pursuant to section 602.2.1, Florida Building Code, Mechanical, 5th Edition (2014), in order for the product in question to be installed in plenum-rated spaces, it must be noncombustible or it must be listed and labeled as having a flame spread index of not more than 25 and a smoke-developed index of not more than 50 when tested in accordance with ASTM E 84 or UL 723.

DONE AND ORDERED this 11th day of October, 2017, in Jacksonville, Duval County, State of Florida.

Richard S. Browdy

RICHARD S. BROWDY
Chairman, Florida Building Commission

Item 3

From: kartik.a.patel@armacell.com
To: Soto, Rolando
Subject: RE: armacell listing
Date: Monday, September 14, 2020 1:42:08 PM
Attachments: ATT00002.png
ATT00005.png

Hi Rolando

Hope all is well with you and the family. We are well, thank you for asking.

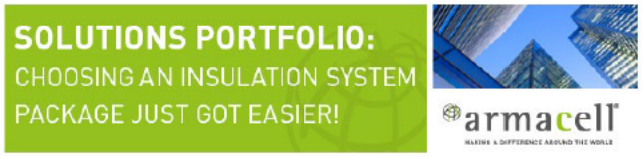
The ArmaFlex has been tested on steel plates per ASTM E 2231, which is "Standard Practice for Specimen Preparation and Mounting of Pipe and Duct Insulation Materials to Assess Surface Burning Characteristics" for testing according to ASTM E 84. The ArmaFlex has not been tested on PVC pipes only metal pipes.

Please let me know if you have any questions. Thank you

Regards
Kartik A Patel
Technical Services Manager Advanced Insulation
Armacell LLC
A company of Armacell Group

M: (919) 451-5431
O: (919) 304-3846 ext. 112100
O: (919) 304-8907
E: kartik.a.patel@armacell.com

www.armacell.us



From: "Soto, Rolando" <ROSOTO@broward.org>
To: "kartik.a.patel@armacell.com" <kartik.a.patel@armacell.com>
Date: 09/14/2020 10:48 AM
Subject: RE: armacell listing [{EXTERNAL}]

Good morning Mr. Patel,
Hope you and your family are safe and doing well. I apologize for not getting back to you sooner, other projects required my attention and had to put this one in the back burner.
The product I am asking about is AP ArmaFlex Tubes, minimum R-3 value (1/2" walls), for ¾" or 1" nominal pipe sizes PVC pipes. The application is residential multifamily, mainly new construction.
Was the product ASTM E85 testing done with a PVC pipe inside or only with copper or steel pipes?
Can you provide me with a copy of the listing?
Thank you in advance for your assistance,

Rolando Soto
Mechanical Chief Code Compliance Officer
Broward Co. Board of Rules and Appeals
1 N University Dr. Suite 3500B
Plantation Fl 33324
954-765-4500
http://www.broward.org/CodeAppeals/Pages/Default.aspx

Item 3

From: kartik.a.patel@armacell.com
To: Soto, Rolando
Subject: RE: armacell listing
Date: Tuesday, September 15, 2020 11:43:00 PM

External Email Warning: This email originated from outside the Broward County email system. Do not reply, click links, or open attachments unless you recognize the sender's **email address** (not just the name) as legitimate and know the content is safe. Report any suspicious emails to ETSSecurity@broward.org.

Hi Rolando

I am out of the office and do not have access to my computer files.

The AP Armaflex is FM approved, this can be verified by visiting www.approvalguide.com, you will need to register. If you have problems let me know and I will send the print out from the FM website upon my return to the office next week.

AP Armaflex is air plenum rated per ASTM E84 and mounting method ASTM E2231 for a 25/50 rating.

Thanks

Regards,
Kartik A. Patel
(919) 451 5431

Soto, Rolando --- RE: armacell listing [{EXTERNAL}] ---

From: "Soto, Rolando" <ROSOTO@broward.org>
To: "'kartik.a.patel@armacell.com'" <kartik.a.patel@armacell.com>
Date: Tue, Sep 15, 2020 15:43
Subject: RE: armacell listing [{EXTERNAL}]

Good afternoon Mr. Patel,
I'm going to have to abuse your kindnees and ask a follow up question.
Is the Armacflex listed for use in air plenums? If it is, can you provide me with a copy of the listing. I tried looking in Factoty Mutual and could not find it.
I'm working on a local code interpretation to clarify if covering a PVC drain pipe with Armaflex will make the installation code compliant as provided in th IMC 602.2.1 Exception 5.3.
I greatly appreciate you input and assistance.
Respectfully,

Item 3

Draft version 1

Formal Interpretation of the following section:
2020 Florida Building Code – Mechanical, section 602.2.1, Materials within plenums, Exception 5.3

Formal Interpretation:
The use of PVC pipes and fittings in air handler closets used as plenums in the residential portion of R-2 and R-3 occupancies, is acceptable if the pipes and fitting are fully enclosed with materials listed and labeled for installation within a plenum.
Approval is limited to 3/4" (nominal) and 1" (nominal) diameter.

Draft version 2

Formal Interpretation of the following section:
2020 Florida Building Code – Mechanical, section 602.2.1, Materials within plenums, Exception 5.3

Formal Interpretation:
The use of PVC pipes and fittings in air handler closets used as plenums in the residential portion of R-2 and R-3 occupancies, is acceptable if the pipes and fitting are fully enclosed with materials listed and labeled as having a flame spread index of not more than 25 and a smoke-developed index of not more than 50 when tested in accordance with ASTM E84 or UL 723.
Approval is limited to 3/4" (nominal) and 1" (nominal) diameter.

Draft version 3

Formal Interpretation of the following section:
2020 Florida Building Code – Mechanical, section 602.2.1, Materials within plenums, Exception 5.3

Formal Interpretation:
The use of PVC pipes and fittings fully enclosed with materials listed and labeled for installation within a plenum in air handler closets used as plenums in the residential portion of R-2 and R-3 occupancies, is not acceptable unless the pipes, fitting and enclosing materials are rated to be plenum rated together as an assembly.