

TAF-R-FR

FIRE RATED ACCESS
FLOOR DIFFUSER

APPLICATION GUIDE



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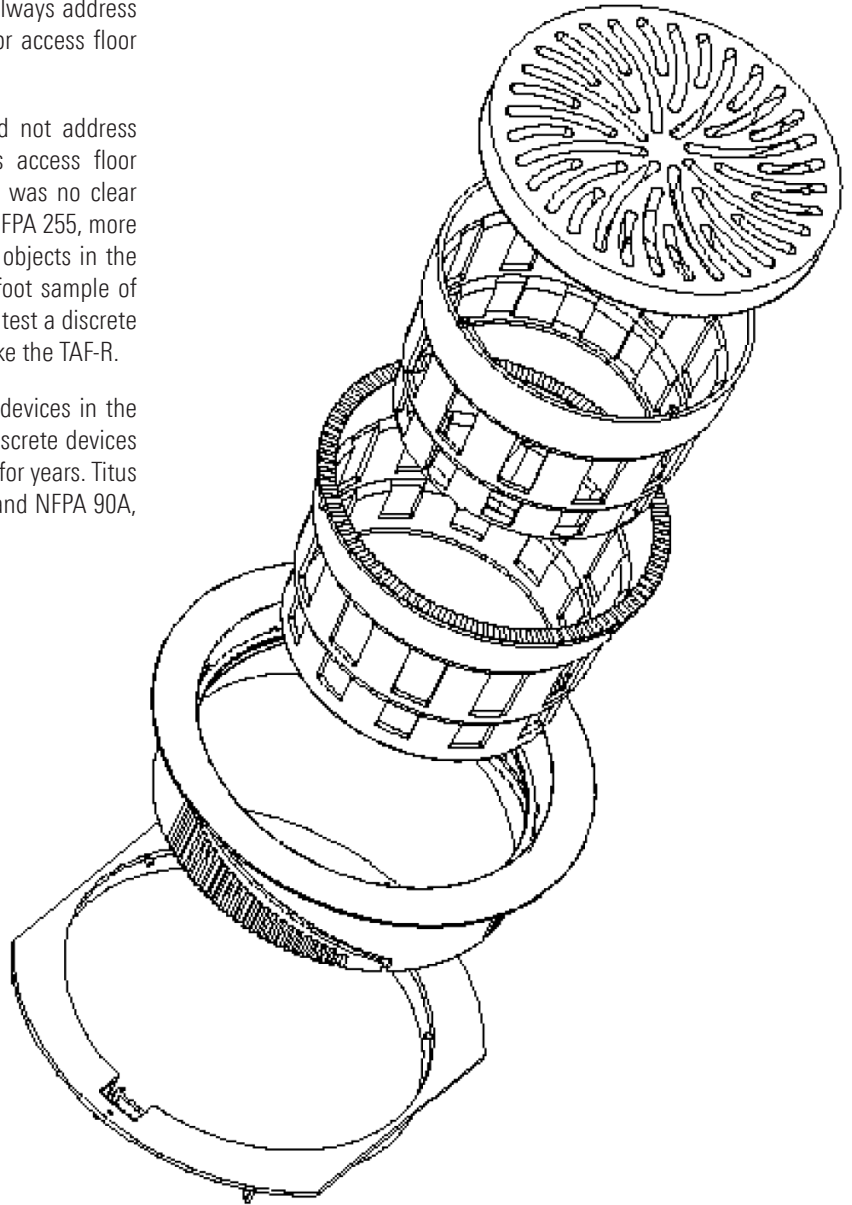
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Introduction

Access floor air distribution has gained popularity over the past 3 years. As with all new technology, standards and codes do not always address the issues related to the technology. This was the case for access floor diffusers and NFPA 90A.

The previous version of NFPA 90A, the 1999 edition, did not address discrete devices used in raised floor plenums, such as access floor diffusers. When asked if the TAF-R met NFPA 90A, there was no clear answer to the question. NFPA 90A, 1999 edition, required NFPA 255, more commonly known as ASTM E84 or the tunnel test, for all objects in the underfloor plenum. The tunnel test requires a 20" by 24 foot sample of the product, but there was no clear explanation on how to test a discrete product. The test was not applicable for a discrete device like the TAF-R.

The updated NFPA 90A, 2002 edition, addresses discrete devices in the underfloor plenum using UL 2043, a fire test method for discrete devices that has been accepted in the ceiling sections of NFPA 90A for years. Titus has developed a version of the TAF-R that meets UL 2043 and NFPA 90A, the TAF-R-FR.



TAF-R-FR Features

The TAF-R-FR has all of the same features as the standard TAF-R. The diffuser consists of a core, flow regulator, dust receptacle, trim ring, and mounting ring. The curved slots of the diffuser core create a high induction helical air pattern. The helical air pattern creates rapid mixing with room air. The flow regulator option allows each occupant to control the airflow of their TAF-R-FR diffuser by manually twisting the diffuser face, which positions the internal damper.

Like the TAF-R, the TAF-R-FR can be made in any color to match the interior color scheme. The diffuser is molded out of colored material so that it is colored throughout. The color will not scratch off the surface or chip.

NFPA 90A

The NFPA 90A, 1999 Edition, did not address air diffusers designed for raised floor applications. The standard test method for NFPA compliance was NFPA 255, the NFPA equivalent to ASTM E84, also called the tunnel test. This test required a 24 foot sample of product to be tested in a fire tunnel and was not applicable for discrete devices, such as the TAF-R.

NFPA 90A is reviewed every three years and updated as necessary. Titus worked with the NFPA 90A Technical Committee on Air Conditioning to have the standard updated to add the test used for discrete devices in the ceiling plenum, UL 2043, to the raised floor section of the standard. The test was added to the NFPA 90A, 2002 edition that went into effect on August 8, 2002.

Effective August 8, 2002, the NFPA 90A, 2002 Edition added UL 2043 as the test method for air diffusers designed for raised floor applications. Under section 4.3.10.6.5.6 of the 2002 Edition, "...discrete products, shall be permitted in the raised floor plenum where listed as having a maximum peak optical density of 0.5 or less, an average optical density of 0.15 or less, and a peak heat release rate of 100 kW or less when tested in accordance with UL 2043, Standard for Safety Fire Test for Heat and Visible Smoke Release for Discrete Products and Their Accessories Installed in Air- Handling Spaces."

The TAF-R-FR (fire rated TAF-R) has passed UL 2043 and meets the requirements for NFPA 90A.

UL 2043

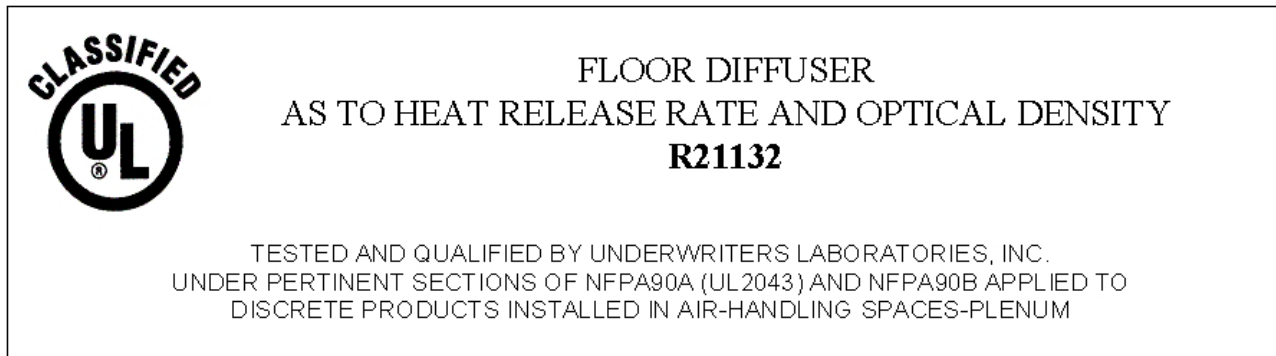
UL 2043 is the Fire Test for Heat and Visible Smoke Release for Discrete Products and Their Accessories Installed in Air-Handling Spaces. The test has been used for speakers and lighting used in ceiling plenums for many years under section 4.3.10.2.6.5, the ceiling cavity section of NFPA 90A.

ASTM 84 tests the distance that the flame and smoke of a product travels down the tunnel. Typical results would be stated as a flame and smoke rating of 25/50. Under the old version of NFPA 90A, a product had to meet 25/50 to be used in a raised floor plenum.

UL 2043 tests the product over an open flame for ten minutes and determines for the rate of heat release and optical density of the smoke. The standard requires that the peak rate of heat release to be 100kW or less, the peak normalized optical density to be 0.50 or less, and the average normalized optical density to be 0.15 or less. Four TAF-R-FR samples were tested. The results are shown in the table below.

Sample	Peak Heat Release Rate (kW)	Peak Optical Density	Average Optical Density
1	15	0.14	0.03
2	19	0.16	0.04
3	26	0.15	0.03
4	27	0.15	0.04

The TAF-R-FR exceeded the requirements for heat release and optical density required by UL 2043 and therefore exceeds the requirements for NFPA 90A. The TAF-R-FR is labeled with a UL classified sticker referencing UL file #R21132 as shown below.



Notes



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