Second Revision No. 5-NFPA 92-2023 [Section No. 2.3.1]

2.3.1 UL Publications.

Underwriters Laboratories Inc., 333 Pfingsten Road, Northbrook, IL 60062-2096.

UL 555, *Fire Dampers*, 2006, revised 2020.

UL 555S, *Smoke Dampers*, 2014, revised 2020.

UL 864, *Control Units and Accessories for Fire Alarm Systems*, ~~2018~~ 2014, revised 2020 .

Submitter Information Verification

Committee: SMO-AAA

Submittal Date: Mon May 01 10:19:02 EDT 2023

Committee Statement

Committee Statement: Updating reference documents to the most current edition per the NFPA Manual of Style.

Response Message: SR-5-NFPA 92-2023

Second Revision No. 6-NFPA 92-2023 [Section No. 2.4]

2.4 References for Extracts in Mandatory Sections.

NFPA 1, *Fire Code,* 2024 edition.

NFPA 3, *Standard for Commissioning of Fire Protection and Life Safety Systems,* ~~2021~~ 2024 edition.

NFPA *101*®, *Life Safety Code*®, ~~2021~~ 2024 edition.

NFPA 318, *Standard for the Protection of Semiconductor Fabrication Facilities,* 2022 edition.

Submitter Information Verification

Committee: SMO-AAA

Submittal Date: Mon May 01 10:19:54 EDT 2023

Committee Statement

Committee Statement: Updated extract documents to the most current per the NFPA Extract Policy. There are no associated technical changes with these extract updates.

Response Message: SR-6-NFPA 92-2023

Second Revision No. 3-NFPA 92-2023 [Section No. 6.4.1]

6.4.1*

Control systems shall be listed in accordance with UL 864, *Control Units and Accessories for Fire Alarm Systems*, ~~category UUKL, for their intended purpose~~ as smoke control system equipment .

A.6.4.1

Multiple system types, such as fire alarm, releasing, and voice evacuation, are evaluated to UL 864, *Control Units and Accessories for Fire Alarm Systems* . Equipment for use in smoke control applications is evaluated to the smoke control requirements within UL 864. Specifically, equipment is evaluated and tested to verify operation, power supply function, FSCS display, prioritization of signals, weekly self-test for dedicated systems per 6.4.8.6 , electrical supervision, software programming, and installation instructions that are consistent with Chapter 6 . The listing of smoke control equipment on UL's online certification directory uses the category code "UUKL." The term "UUKL weekly self-test" has become common industry terminology for the weekly self-test required by 6.4.8.6 . Use of this term does not prohibit testing and listing of smoke control equipment by other approved or nationally recognized test laboratories that test to UL 864 but use alternate category designations.

Submitter Information Verification

Committee: SMO-AAA

Submittal Date: Mon May 01 10:06:33 EDT 2023

Committee Statement

Committee Statement: UUKL is a UL-specific designation used to denote products tested and listed by UL to the smoke control system requirements in accordance with UL 864. The language was genericized to allow for testing and listing by other testing labs. See also SR-4.

Response Message: SR-3-NFPA 92-2023

Public Comment No. 5-NFPA 92-2022 [New Section after A.6.4]

Public Comment No. 3-NFPA 92-2022 [Section No. 6.4.1]

Second Revision No. 4-NFPA 92-2023 [Section No. 6.4.8.6]

6.4.8.6

Operational capability of individual components of dedicated smoke control systems shall be verified using the weekly self-test function provided by the ~~UUKL-~~ listed smoke control panel mandated by 6.4.1, except as specified in 6.4.8.7.

Submitter Information Verification

Committee: SMO-AAA

Submittal Date: Mon May 01 10:17:15 EDT 2023

Committee Statement

Committee Statement: UUKL is a UL-specific designation used to denote products tested and listed by UL to the smoke control system requirements in accordance with UL 864. The language was genericized to allow for testing and listing by other testing labs. See also SR-3.

Response Message: SR-4-NFPA 92-2023

Public Comment No. 4-NFPA 92-2022 [Sections 6.4.8.6, 6.4.8.7]

Second Revision No. 1-NFPA 92-2023 [Section No. A.4.5.1.1]

A.4.5.1.1

Suggested tenability criteria are discussed in Annex M. However, other references are available that present analytical methods for use in tenability analysis. The *SFPE Engineering Guide to Performance-Based Fire Protection* describes a process of establishing tenability limits. Additional guidance is given in the ASHRAE/ICC/NFPA/SFPE *Handbook of Smoke Control Engineering*.

The SFPE guide references D. A. Purser, "Combustion Toxicity," Chapter 62 of the *SFPE Handbook of Fire Protection Engineering*, which describes a fractional effective dose (FED) calculation approach, which is also contained in NFPA 269. The FED addresses the effects of carbon monoxide, hydrogen cyanide, carbon dioxide, hydrogen chloride, hydrogen bromide, and anoxia. It is possible to use the test data, combined with laboratory experience, to estimate the FED value that leads to the survival of virtually all people. This value is about 0.8.

When a communicating space where the design fire originates opens to a large volume space, the communicating space is generally not required to meet the tenability requirements, as a smoke control system cannot be reasonably expected to maintain tenability in the immediate vicinity of the fire. For very large communicating spaces containing the design fire, see also M.3.4 .

Submitter Information Verification

Committee: SMO-AAA

Submittal Date: Fri Apr 28 10:47:16 EDT 2023

Committee Statement

Committee Statement: This suggested change is in response to CI-17&18. This change addresses mistaken interpretations of where tenable conditions should be maintained. Smoke control systems are generally not designed nor capable of maintaining tenability within communicating spaces of fire origin or in the immediate vicinity of a fire.

The TG felt the language proposed in CI-18 was too strong (via use of the word "shall"). The proposed change captures the sentiment in CI-17 and points readers to section M.3.4 where a comment on this issue already exists in the standard. Adding it to the annex section for 4.5.1.1 was felt to be a better location for this discussion than creating a new annex section to section 4.4.4.2.2.1.

Response Message: SR-1-NFPA 92-2023

Public Comment No. 1-NFPA 92-2022 [Section No. A.4.5.1.1]

Second Revision No. 2-NFPA 92-2023 [Section No. M.3.8 [Excluding any Sub-Sections]]

Visibility through smoke should be maintained above the point which a sign internally illuminated at 80 lux (7.5 ft candles) is discernible at 30 m (100 ft) and doors and walls are discernible at ~~10~~ 11.25 m (~~33~~ 37 ft). These distances can be reduced if demonstrated by an engineering analysis.

Submitter Information Verification

Committee: SMO-AAA

Submittal Date: Fri Apr 28 11:22:45 EDT 2023

Committee Statement

Committee Statement: This change preserves the 8/3 ratio of the visibility distance of an internally illuminated sign to a reflective surface. The 8/3 ratio is based on research by T. Jin on visibility through smoke (1974, 1975, 1985) as summarized in Table 6.3 in Klote, et al. (2012).

Jin, T. 1974. Visibility through fire smoke, in main reports on production, movement and control in buildings. Japanese Association of Fire Science and Engineering, pp 100–153.

Jin, T. 1975. Visibility thorough fire smoke. Report of the Fire Research Institute of Japan 5(42).

Jin, T. 1985. Irritating effects of fire smoke on visibility. Fire Science and Technology 5(1).

John H. Klote; James A Milke; Paul G Turnbull; Ahmed Kashef; Michael J Ferreira, 2012. Handbook of

Smoke Control Engineering, Atlanta: ASHRAE.

Response Message: SR-2-NFPA 92-2023

Public Comment No. 2-NFPA 92-2022 [Section No. M.3.8 [Excluding any Sub-Sections]]

Second Revision No. 10-NFPA 92-2023 [Section No. N.1.2.2]

N.1.2.2 ASME Publications.

American Society of Mechanical Engineers, Two Park Avenue, New York, NY 10016-5990.

ASME A17.1, *Safety Code for Elevators and Escalators*, ~~2017~~ 2019 .

Submitter Information Verification

Committee: SMO-AAA

Submittal Date: Mon May 01 10:29:47 EDT 2023

Committee Statement

Committee Statement: Updated reference publication to the most current per the NFPA Manual of Style.

Response Message: SR-10-NFPA 92-2023

Second Revision No. 9-NFPA 92-2023 [Section No. N.1.2.3]

N.1.2.3 ASTM Publications.

ASTM International, 100 Barr Harbor Drive, P.O. Box C700, West Conshohocken, PA 19428-2959.

ASTM E1321, *Standard Test Method for Determining Material Ignition and Flame Spread Properties,* 2018.

ASTM E1354, *Standard Test Method for Heat and Visible Smoke Release Rates for Materials and Products Using an Oxygen Consumption Calorimeter,* ~~2017~~ 2023 .

Submitter Information Verification

Committee: SMO-AAA

Submittal Date: Mon May 01 10:27:45 EDT 2023

Committee Statement

Committee Statement: Updated reference document to the most current edition per the NFPA Manual of Style. At the time of the second draft meeting the ASTM website indicated the most current edition of ASTM E1354 as the 2023 edition.

Response Message: SR-9-NFPA 92-2023

Public Comment No. 6-NFPA 92-2023 [Section No. N.1.2.3]

Second Revision No. 8-NFPA 92-2023 [Section No. N.2.1]

N.2.1 ISO Publications.

International Organization for Standardization, ISO Central Secretariat, BIBC II, Chemin de Blandonnet 8, CP 401, 1214 Vernier, Geneva, Switzerland.

ISO 21927-1, *Smoke and heat control systems — Specification for smoke barriers*, 2008.

ISO 21927-2, *Smoke and heat control systems — Specification for natural smoke and heat exhaust ventilators*, ~~2006A1~~ 2018 .

ISO 21927-3, *Smoke and heat control systems — Specification for powered smoke and heat exhaust ventilators*, ~~2006A1~~ 2021 .

ISO 21927-7, *Smoke and heat control systems — Smoke ~~control ducts~~ duct sections* , ~~2013~~ 2017 .

ISO 21927-8, *Smoke and heat control systems — ~~Specification for smoke~~ Smoke control dampers*, ~~2013~~ 2017 .

ISO 21927-9, *Smoke and heat control systems — ~~Control panels and emergency control panels~~ Specification for control equipment* , 2012.

ISO 21927-10, *Smoke and heat control systems — ~~Power supplies~~ Specification for power output devices* , 2011.

Submitter Information Verification

Committee: SMO-AAA

Submittal Date: Mon May 01 10:24:56 EDT 2023

Committee Statement

Committee Statement: Updated reference documents to most current edition per NFPA Manual of Style. Corrected titles on several documents.

Response Message: SR-8-NFPA 92-2023