



Public Comment No. 12-NFPA 79-2023 [Section No. 1.7]

~~1.7 – Referenced Publication Dates.~~

~~Unless a publication referenced in the annex(es) includes a date, the reference shall be considered the latest edition of the publication.~~

Statement of Problem and Substantiation for Public Comment

This new requirement for undated references only applies to informative references. As such, it should not be a normative requirement but reworded as informative and located in Annex K. See related PC

Related Public Comments for This Document

Related Comment

Public Comment No. 13-NFPA 79-2023 [Section No. K.1 [Excluding any Sub-Sections]]

Relationship

Requirement relocated to Annex K and reworded as informational.

Related Item

- FR49

Submitter Information Verification

Submitter Full Name: Jay Tamblingson

Organization: Rockwell Automation

Street Address:

City:

State:

Zip:

Submittal Date: Tue Jan 03 10:28:38 EST 2023

Committee: EEI-AAA

Committee Statement

Committee Action: Rejected

Resolution: The language is necessary and reflects the same concept as 2023 NEC 90.5(C). The statement is appropriately located in Chapter 1 Administration to ensure users are aware of formatting methods in the Standard. Additionally, NFPA 79 is not as widely adopted as NFPA 70. When a new edition of NFPA 70 is adopted in a municipality that also adopts NFPA 79, a conflict is created because NFPA 79 will reference an earlier edition. Also, when product standards are revised the testing laboratory will use the latest edition for evaluating the item but NFPA 79 will still reference an earlier edition.

**Public Comment No. 9-NFPA 79-2022 [Section No. 1.7]****1.7 Referenced Publication Dates.**

Unless a publication referenced in the annex(es) includes a date, the reference shall be considered the latest edition of the publication.

Additional Proposed Changes

<u>File Name</u>	<u>Description</u>	<u>Approved</u>
CN_8.pdf	79_CN8	

Statement of Problem and Substantiation for Public Comment

NOTE: The following CC Note No. 8 appeared in the First Draft Report on First Revision No. 49.

The Correlating Committee directs the technical committee to reconsider inclusion of this requirement in respect to compliance with 3.6.3.1 of the NFPA Manual of Style.

Related Item

- First Revision No. 49

Submitter Information Verification

Submitter Full Name: CC on NEC-AAC

Organization: NEC Correlating Committee

Street Address:

City:

State:

Zip:

Submittal Date: Thu Nov 17 13:35:18 EST 2022

Committee: EEI-AAA

Committee Statement

Committee Action: Rejected

Resolution: The language is necessary and reflects the same concept as 2023 NEC 90.5(C). The statement is appropriately located in Chapter 1 Administration to ensure users are aware of formatting methods in the Standard. Additionally, NFPA 79 is not as widely adopted as NFPA 70. When a new edition of NFPA 70 is adopted in a municipality that also adopts NFPA 79, a conflict is created because NFPA 79 will reference an earlier edition. Also, when product standards are revised the testing laboratory will use the latest edition for evaluating the item but NFPA 79 will still reference an earlier edition.



Correlating Committee Note No. 8-NFPA 79-2022 [Section No. 1.7]

Submitter Information Verification

Committee: NEC-AAC

Submittal Date: Tue Aug 09 10:29:22 EDT 2022

Committee Statement and Meeting Notes

Committee Statement: The Correlating Committee directs the technical committee to reconsider inclusion of this requirement in respect to compliance with 3.6.3.1 of the NFPA Manual of Style.

[FR-49-NFPA 79-2022](#)

Ballot Results

✓ **This item has passed ballot**

12 Eligible Voters

0 Not Returned

12 Affirmative All

0 Affirmative with Comments

0 Negative with Comments

0 Abstention

Affirmative All

Ayer, Lawrence S.

Deike, Jr., Roland E.

Fiske, William T.

Gallo, Ernest J.

Hickman, Palmer L.

Holub, Richard A.

Hunter, Dean C.

Kendall, David H.

Kovacik, John R.

Manche, Alan

Schultheis, Timothy James

Williams, David A.



Public Comment No. 17-NFPA 79-2023 [Section No. 3.3.60]

3.3.60* Identified (as applied to equipment).

Recognizable as suitable for the specific purpose, function, use, environment, application, and so forth, where described in a particular code or standard requirement.- [**70**, -2023]

Statement of Problem and Substantiation for Public Comment

As NFPA 79 is a "standard" not a "code", removing "or standard" in definition of "identified" effectively makes the term not applicable to requirements in NFPA 79 but only to requirements contained in other codes. The proposed text reverts the definition to 2021 text.

Related Public Comments for This Document

<u>Related Comment</u>	<u>Relationship</u>
Public Comment No. 16-NFPA 79-2023 [Section No. A.3.3.60]	associated annex note
Public Comment No. 16-NFPA 79-2023 [Section No. A.3.3.60]	

Related Item

- FR90

Submitter Information Verification

Submitter Full Name: Jay Tamblingson
Organization: Rockwell Automation
Street Address:
City:
State:
Zip:
Submittal Date: Tue Jan 03 10:50:16 EST 2023
Committee: EEI-AAA

Committee Statement

Committee Action: Rejected but see related SR
Resolution: SR-4-NFPA 79-2023
Statement: NFPA 79 is a "standard" not a "code". The term "or standard" has been added and the reference to the NEC has been maintained as it is permitted to deviate from the NEC under the NFPA extract policy.



Public Comment No. 19-NFPA 79-2023 [Section No. 3.3.61]

3.3.61* Industrial Control Panel.

An assembly of two or more components consisting of one of the following: (1) power circuit components only, such as motor controllers, overload relays, fused ~~disconnecting means~~ disconnect switches , and circuit breakers; (2) control circuit components only, such as pushbuttons, pilot lights, selector switches, timers, switches, and control relays; (3) a combination of power and control circuit components. These components, with associated wiring and terminals, are mounted on, or contained within, an enclosure or mounted on a subpanel. [70, 2023]

Statement of Problem and Substantiation for Public Comment

The term "disconnect switches" should be retained as the definition is giving examples of types of power circuit components, some of which may be or may not be used as disconnecting means. The proposed text aligns with the 2023 NFPA 70 definition.

Related Item

- FR16

Submitter Information Verification

Submitter Full Name: Jay Tamblingson

Organization: Rockwell Automation

Street Address:

City:

State:

Zip:

Submittal Date: Tue Jan 03 12:00:46 EST 2023

Committee: EEI-AAA

Committee Statement

Committee Action: Rejected

Resolution: The term "disconnecting means" is a defined term in NFPA 79 with a general application and is consistent with uses elsewhere in the Standard. Conversely, "disconnect switches" is not a defined term and may be considered redundant to the other references to switches in the section.

**Public Comment No. 3-NFPA 79-2022 [Section No. 3.3.61]****3.3.61*** Industrial Control Panel.

An assembly of two or more components consisting of one of the following: (1) power circuit components only, such as motor controllers, overload relays, fused disconnecting means, and circuit breakers; (2) control circuit components only, such as pushbuttons, pilot lights, selector switches, timers, switches, and control relays; (3) a combination of power and control circuit components. These components, with associated wiring and terminals, are mounted on, or contained within, an enclosure or mounted on a subpanel. [70, 2023]

Additional Proposed Changes

<u>File Name</u>	<u>Description</u>	<u>Approved</u>
CN_2.pdf	79_CN2	

Statement of Problem and Substantiation for Public Comment

NOTE: The following CC Note No. 2 appeared in the First Draft Report on First Revision No. 16.

The Correlating Committee directs the technical committee to refer to the Manual of Style for NFPA Technical Committee Documents, 2.6.1 General Extract Requirements, and either align the definition with NFPA 70 or remove the extract reference. The term fused disconnect was revised to fused disconnecting means and no longer matches the NFPA 70 definition.

Related Item

- First Revision No. 16

Submitter Information Verification

Submitter Full Name: CC on NEC-AAC

Organization: NEC Correlating Committee

Street Address:

City:

State:

Zip:

Submittal Date: Thu Nov 17 13:21:35 EST 2022

Committee: EEI-AAA

Committee Statement

Committee Action: Rejected but see related SR

Resolution: SR-14-NFPA 79-2023

Statement: To comply with 2.6.1 of the NFPA Manual of Style for extracted text, the reference brackets are removed since the language no longer reflects exact text from the 2023 NEC.



Correlating Committee Note No. 2-NFPA 79-2022 [Section No. 3.3.61]

Submitter Information Verification

Committee: NEC-AAC

Submittal Date: Tue Aug 09 10:15:05 EDT 2022

Committee Statement and Meeting Notes

Committee Statement: The Correlating Committee directs the technical committee to refer to the Manual of Style for NFPA Technical Committee Documents, 2.6.1 General Extract Requirements, and either align the definition with NFPA 70 or remove the extract reference. The term fused disconnect was revised to fused disconnecting means and no longer matches the NFPA 70 definition.

FR-16-NFPA 79-2022

Ballot Results

✓ This item has passed ballot

12 Eligible Voters

0 Not Returned

12 Affirmative All

0 Affirmative with Comments

0 Negative with Comments

0 Abstention

Affirmative All

Ayer, Lawrence S.

Deike, Jr., Roland E.

Fiske, William T.

Gallo, Ernest J.

Hickman, Palmer L.

Holub, Richard A.

Hunter, Dean C.

Kendall, David H.

Kovacik, John R.

Manche, Alan

Schultheis, Timothy James

Williams, David A.



Public Comment No. 4-NFPA 79-2022 [Section No. 3.3.66]

3.3.66 In Sight From (Within Sight From, Within Sight).

Where this code specifies that one equipment shall be “in sight from,” “within sight from,” or “within sight of” another equipment, the specified equipment shall be visible and not more than 15 m (50 ft) distant from the other. [70, 2023]

Additional Proposed Changes

<u>File Name</u>	<u>Description</u>	<u>Approved</u>
CN_3.pdf	79_CN3	

Statement of Problem and Substantiation for Public Comment

NOTE: The following CC Note No. 3 appeared in the First Draft Report on First Revision No. 8.

The Correlating Committee directs the technical committee to refer to the Manual of Style for NFPA Technical Committee Documents, 2.6.1 General Extract Requirements, and either align the definition with NFPA 70 or remove the extract reference.

Related Item

- First Revision No. 8

Submitter Information Verification

Submitter Full Name: CC on NEC-AAC

Organization: NEC Correlating Committee

Street Address:

City:

State:

Zip:

Submittal Date: Thu Nov 17 13:24:17 EST 2022

Committee: EEI-AAA

Committee Statement

Committee Action: Rejected but see related SR

Resolution: SR-15-NFPA 79-2023

Statement: The text is revised to the exact 2023 NEC language to comply with 2.6.1 of the NFPA Manual of Style for extracted text.

The revision to Annex A comes from the definition in the 2023 NEC and is added for clarity and to correlate with the NEC.



Correlating Committee Note No. 3-NFPA 79-2022 [Section No. 3.3.66]

Submitter Information Verification

Committee: NEC-AAC

Submittal Date: Tue Aug 09 10:15:44 EDT 2022

Committee Statement and Meeting Notes

Committee Statement: The Correlating Committee directs the technical committee to refer to the Manual of Style for NFPA Technical Committee Documents, 2.6.1 General Extract Requirements, and either align the definition with NFPA 70 or remove the extract reference.

FR-8-NFPA 79-2022

Ballot Results

✓ This item has passed ballot

12 Eligible Voters

0 Not Returned

12 Affirmative All

0 Affirmative with Comments

0 Negative with Comments

0 Abstention

Affirmative All

Ayer, Lawrence S.

Deike, Jr., Roland E.

Fiske, William T.

Gallo, Ernest J.

Hickman, Palmer L.

Holub, Richard A.

Hunter, Dean C.

Kendall, David H.

Kovacik, John R.

Manche, Alan

Schultheis, Timothy James

Williams, David A.

**Public Comment No. 5-NFPA 79-2022 [Section No. 3.3.71.2]****3.3.71.2** Location, Wet (Wet Location).

A location that is one or more of the following: (1) unprotected and exposed to weather, (2) subject to saturation with water or other liquids, (3) underground, and (4) in concrete slabs or masonry in direct contact with the earth. [70,2023]

Additional Proposed Changes

<u>File Name</u>	<u>Description</u>	<u>Approved</u>
CN_4.pdf	79_CN4	

Statement of Problem and Substantiation for Public Comment

NOTE: The following CC Note No. 4 appeared in the First Draft Report on First Revision No. 10.

The Correlating Committee directs the technical committee to refer to the Manual of Style for NFPA Technical Committee Documents, 2.6.1 General Extract Requirements, and either align the definition with NFPA 70 or remove the extract reference. The addition of the word “and” between items (3) and (4) alters the definition and may be interpreted as a requirement.

Related Item

- First Revision No. 10

Submitter Information Verification

Submitter Full Name: CC on NEC-AAC

Organization: NEC Correlating Committee

Street Address:

City:

State:

Zip:

Submittal Date: Thu Nov 17 13:26:00 EST 2022

Committee: EEI-AAA

Committee Statement

Committee Action: Rejected but see related SR

Resolution: SR-16-NFPA 79-2023

Statement: The text is revised for clarity and grammar, the reference NFPA 70 is removed to comply with 2.6.1 of the NFPA manual of style for extracted text.



Correlating Committee Note No. 4-NFPA 79-2022 [Section No. 3.3.71.2]

Submitter Information Verification

Committee: NEC-AAC

Submittal Date: Tue Aug 09 10:16:17 EDT 2022

Committee Statement and Meeting Notes

Committee Statement: The Correlating Committee directs the technical committee to refer to the Manual of Style for NFPA Technical Committee Documents, 2.6.1 General Extract Requirements, and either align the definition with NFPA 70 or remove the extract reference. The addition of the word "and" between items (3) and (4) alters the definition and may be interpreted as a requirement.

FR-10-NFPA 79-2022

Ballot Results

✓ This item has passed ballot

12 Eligible Voters

0 Not Returned

12 Affirmative All

0 Affirmative with Comments

0 Negative with Comments

0 Abstention

Affirmative All

Ayer, Lawrence S.

Deike, Jr., Roland E.

Fiske, William T.

Gallo, Ernest J.

Hickman, Palmer L.

Holub, Richard A.

Hunter, Dean C.

Kendall, David H.

Kovacik, John R.

Manche, Alan

Schultheis, Timothy James

Williams, David A.



Public Comment No. 1-NFPA 79-2022 [Section No. 3.3.79]

3.3.79 Overcurrent Protective Device, Branch-Circuit (Branch-Circuit Overcurrent Protective Device).

A device capable of providing protection for service, feeder, and branch circuits and equipment over the full range of overcurrents between its rated current and its interrupting rating.- Such devices are provided with interrupting ratings appropriate for the intended use but no less than 5000 amperes. _ [70, 2023]

Statement of Problem and Substantiation for Public Comment

The last sentence was deleted in the 2023 NEC and was proposed to be removed in PI 106 but was mistakenly not deleted in FR-11.

Related Item

- FR-11 • PI-106

Submitter Information Verification

Submitter Full Name: Daniel Neeser

Organization: Eaton's Bussmann Division

Street Address:

City:

State:

Zip:

Submittal Date: Thu Oct 06 14:38:32 EDT 2022

Committee: EEI-AAA

Committee Statement

Committee Action: Rejected but see related SR

Resolution: SR-17-NFPA 79-2023

Statement: The text is revised to the exact 2023 NEC language to comply with 2.6.1 of the NFPA Manual of Style for extracted text..

**Public Comment No. 6-NFPA 79-2022 [Section No. 3.3.79]**

3.3.79 Overcurrent Protective Device, Branch-Circuit (Branch-Circuit Overcurrent Protective Device).

A device capable of providing protection for service, feeder, and branch circuits and equipment over the full range of overcurrents between its rated current and its interrupting rating. Such devices are provided with interrupting ratings appropriate for the intended use but no less than 5000 amperes. [70, 2023]

Additional Proposed Changes

<u>File Name</u>	<u>Description</u>	<u>Approved</u>
CN_5.pdf	79_CN5	

Statement of Problem and Substantiation for Public Comment

NOTE: The following CC Note No. 5 appeared in the First Draft Report on First Revision No. 11.

The Correlating Committee directs the technical committee to refer to the Manual of Style for NFPA Technical Committee Documents, 2.6.1 General Extract Requirements, and either align the definition with NFPA 70 or remove the extract reference. The second sentence does not exist in the NFPA 70 definition.

Related Item

- First Revision No. 11

Submitter Information Verification

Submitter Full Name: CC on NEC-AAC

Organization: NEC Correlating Committee

Street Address:

City:

State:

Zip:

Submittal Date: Thu Nov 17 13:28:33 EST 2022

Committee: EEI-AAA

Committee Statement

Committee Action: Rejected but see related SR

Resolution: SR-17-NFPA 79-2023

Statement: The text is revised to the exact 2023 NEC language to comply with 2.6.1 of the NFPA Manual of Style for extracted text..



Correlating Committee Note No. 5-NFPA 79-2022 [Section No. 3.3.79]

Submitter Information Verification

Committee: NEC-AAC

Submittal Date: Tue Aug 09 10:17:01 EDT 2022

Committee Statement and Meeting Notes

Committee Statement: The Correlating Committee directs the technical committee to refer to the Manual of Style for NFPA Technical Committee Documents, 2.6.1 General Extract Requirements, and either align the definition with NFPA 70 or remove the extract reference. The second sentence does not exist in the NFPA 70 definition.

FR-11-NFPA 79-2022

Ballot Results

✓ This item has passed ballot

12 Eligible Voters

0 Not Returned

12 Affirmative All

0 Affirmative with Comments

0 Negative with Comments

0 Abstention

Affirmative All

Ayer, Lawrence S.

Deike, Jr., Roland E.

Fiske, William T.

Gallo, Ernest J.

Hickman, Palmer L.

Holub, Richard A.

Hunter, Dean C.

Kendall, David H.

Kovacik, John R.

Manche, Alan

Schultheis, Timothy James

Williams, David A.



Public Comment No. 10-NFPA 79-2022 [New Section after 4.9]

4.10* - Cybersecurity

Industrial Machinery that is connected to a communication network and permitted to control any part of the machinery shall be permitted to comply with (1) and (2).

1. A Cybersecurity Assessment conducted on the connected system determine vulnerabilities to cyber-attacks.

2. A Cybersecurity Commissioning Certification conducted on the connected system to ensure they are designed against cyber-attacks and known vulnerabilities.

Provide documentation of the assessment and certification to those authorized to inspect, operate, and maintain.

A4.10 ANSI/ISA 62443 Cybersecurity Standards series can be utilized to meet the assessment requirement. Another way is thru the NIST Framework for Improving Critical Infrastructure Cybersecurity, Version 1.1 and UL 2900-2-3 for Security and Life Safety Signaling Systems.

Examples the commissioning certification could be one of the following:

(1) The ISA Security Compliance Institute (ISCI) conformity assessment program

(2) Certification of compliance by a nationally recognized test laboratory

(3) Manufacturer certification for the specific type and brand of system provided

Additional Proposed Changes

<u>File Name</u>	<u>Description</u>	<u>Approved</u>
Public_Comment_New_Wording_for_Cybersecurity_addition.docx	New wording for Cybersecurity plus the accompanying Annex A material	

Statement of Problem and Substantiation for Public Comment

In reviewing the response to the original PI, I still feel that cybersecurity is essential to properly protecting industrial machinery and a consensus standard is the best way to protect these systems in lieu of 51 different requirements from the federal government and the individual states. However, I understand that we need to create a starting point to learn the best methods before setting full requirements. The change to the PI to make the requirement “shall be permitted” vs “shall” is a good first step into creating the safety and reliability protections. Cybersecurity should be considered as an aspect of safety and reliability in addition to the other factors affecting industrial machinery. If an attacker can affect the machinery control system, individual sensors or other IoT devices to the point of either preventing normal operation or displaying the appearance of normal operation while failing the system, creates an unsafe condition. The increase in cyber-attacks on industrial, utility, and other installations where industrial machinery can be made to create unsafe conditions. Examples of these unsafe conditions can be changing overcurrent protection rating of a circuit breaker, arc energy reduction settings, SCADA systems, emergency stop functions, motor controllers, or Fire Protection

Systems. The public input is focused only on electrical systems that can be controlled from external communication networks such as the internet. These connections can be wired, wireless, or use other data media. cybersecurity is essential to expand the safety and security of industrial machinery. Cybersecurity should be considered as an aspect of safety and reliability in addition to the other factors affecting industrial machinery. If an attacker can affect the machinery control system, individual sensors or other IoT devices to the point of either preventing normal operation or displaying the appearance of normal operation while failing the system, creates an unsafe condition. The increase in cyber-attacks on industrial, utility, and other installations where industrial machinery can be made to create unsafe conditions. Examples of these unsafe conditions can be changing overcurrent protection rating of a circuit breaker, arc energy reduction settings, SCADA systems, emergency stop functions, motor controllers, or Fire Protection Systems. The public input is focused only on electrical systems that can be controlled from external communication networks such as the internet. These connections can be wired, wireless, or use other data media. cybersecurity is essential to expand the safety and security of industrial machinery. The IEC Machinery Directive is working to include Cybersecurity in this standard.

There was a Cyber security survey conducted this year by Trend Micro (May 2022). Several hundred members of the manufacturing, electricity generation/distribution & Oil/Gas Industry were part of the survey. The data covered the last year where the those surveyed where asked about how many of them were affected by cybersecurity attacks. There was an average of 57% of the respondents that were attacked and of those attacked 56% were disrupted for 4 or more days. The survey results show 50% of the attacks were on OT systems with an average cost per incident of \$2.8M.

Related Item

- PI 22

Submitter Information Verification

Submitter Full Name: Keith Waters

Organization: Schneider Electric

Affiliation: Schneider Electric

Street Address:

City:

State:

Zip:

Submittal Date: Thu Dec 29 12:45:36 EST 2022

Committee: EEI-AAA

Committee Statement

Committee Action: Rejected but see related SR

Resolution: SR-2-NFPA 79-2023

Statement: The concerns about cybersecurity and how these attacks can affect the safety of industrial machinery and the facilities in which they are utilized need to have a methodology that can be used. This new language provides for solutions to meet cybersecurity protection verification which may be desired.

4.10* Cybersecurity

Industrial Machinery that is connected to a communication network and permitted to control any part of the machinery shall be permitted to comply with (1) and (2).

1. A Cybersecurity Assessment conducted on the connected system determine vulnerabilities to cyber-attacks.

2. A Cybersecurity Commissioning Certification conducted on the connected system to ensure they are designed against cyber-attacks and known vulnerabilities.

Provide documentation of the assessment and certification to those authorized to inspect, operate, and maintain.

A4.10 ANSI/ISA 62443 Cybersecurity Standards series can be utilized to meet the assessment requirement. Another way is thru the NIST Framework for Improving Critical Infrastructure Cybersecurity, Version 1.1 and UL 2900-2-3 for Security and Life Safety Signaling Systems.

Examples the commissioning certification could be one of the following:

(1) The ISA Security Compliance Institute (ISCI) conformity assessment program

(2) Certification of compliance by a nationally recognized test laboratory

(3) Manufacturer certification for the specific type and brand of system provided



Public Comment No. 20-NFPA 79-2023 [Sections 5.1.9.2, 5.1.9.3]

Sections 5.1.9.2, 5.1.9.3

5.1.9.2*

Each machine supply circuit disconnecting means shall be legibly marked on or adjacent to the device to indicate the equipment it disconnects.

5.1.9.3 –

~~A machine supply circuit disconnecting means shall be marked as “Machine Supply Circuit Disconnecting Means” on or adjacent to the device.~~

Statement of Problem and Substantiation for Public Comment

With the change in FR20, 5.1.9.2 and 5.1.9.3 can be combined into a single requirement. The requirement for specific marking text was removed as the the annex note for 5.1.9.2 provides different and suitable guidance on marking.

Related Item

- FR20

Submitter Information Verification

Submitter Full Name: Jay Tamblingson

Organization: Rockwell Automation

Street Address:

City:

State:

Zip:

Submittal Date: Tue Jan 03 12:10:00 EST 2023

Committee: EEI-AAA

Committee Statement

Committee Action: Rejected but see related SR

Resolution: SR-5-NFPA 79-2023

Statement: The text has been revised to combine the requirements for marking the machine supply circuit disconnecting means and the equipment that it supplies.



Public Comment No. 21-NFPA 79-2023 [Section No. 5.1.9.4]

5.1.9.4

Where a machine is supplied by more than one supply circuit, a marking shall be installed provided at each machine supply circuit disconnecting means location denoting the location of all the other machine supply circuit disconnecting means.

Statement of Problem and Substantiation for Public Comment

As NFPA79 is not an installation code, the term "installed" was changed to "provided".

Related Item

- FR21

Submitter Information Verification

Submitter Full Name: Jay Tamblingson

Organization: Rockwell Automation

Street Address:

City:

State:

Zip:

Submittal Date: Tue Jan 03 12:16:58 EST 2023

Committee: EEI-AAA

Committee Statement

Committee Action: Rejected but see related SR

Resolution: SR-6-NFPA 79-2023

Statement: The wording was changed for consistency with NEC Section 110.21(A)(1) and other requirements in this document.



Public Comment No. 11-NFPA 79-2023 [Section No. 5.1.13.4]

5.1.13.4

Where the excepted circuits are not disconnected by the machine supply circuit disconnecting means, all of the following requirements shall be met:

- (1) A permanent safety sign(s) shall be placed adjacent to the machine supply circuit disconnecting means operating handle(s) indicating that it does not de-energize all the exposed live parts when it is in the open (off) position as in 16.2.4.
- (2) A statement containing the information from 16.2.4 shall be included in the machine documentation.
- (3) One or more of the following shall apply:
 - (4) A permanent safety sign shall be placed on a nonremovable part inside the control enclosure in proximity to each excepted circuit

~~and shall~~

- (a) ;
- (b) The conductors shall be identified by color as defined in 13.2.4 ;
- (c) The excepted circuits are separated from other circuits .

Statement of Problem and Substantiation for Public Comment

The change in the requirement to provide both a warning sign for each excepted circuit and identify each by color should be available but not required. The proposed text aligns with IEC 60204-1 regarding identification of excepted circuits. Using a globally consistent methodology for identification of excepted circuits increases safety for maintenance personnel.

Related Item

- FR26

Submitter Information Verification

Submitter Full Name: Jay Tamblingson

Organization: Rockwell Automation

Street Address:

City:

State:

Zip:

Submission Date: Tue Jan 03 10:10:26 EST 2023

Committee: EEI-AAA

Committee Statement

Committee Action: Rejected but see related SR

Resolution: SR-7-NFPA 79-2023

Statement: The requirements have been revised to indicate that either a permanent safety sign or identified by color are acceptable methods to identify excepted circuits.



Public Comment No. 22-NFPA 79-2023 [Section No. 6.2.3.1]

6.2.3.1* Enclosure Access.

~~Opening an enclosure without the use of a key or tool and without disconnecting the live parts shall be permitted only when all the live parts~~

Opening an enclosure (e.g., door, lid, cover) that contains live parts operating at or greater than ~~50~~ than 50 volts ac rms or 60 volts dc shall be permitted only under one or more of the following conditions:

- (1) The use of a key or tool is necessary for access to live parts operating at or above 50 volts rms ac or 60 volts dc.
- (2) ~~All the live parts mounted on the inside of doors or covers are protected from unintentional direct contact by the inherent design of components or the application of barriers or obstacles such that a 50 mm (2 in.) sphere cannot contact them.~~
- (3) The disconnecting means supplying the enclosure is interlocked with the enclosure door(s) in accordance with 6.2.3.2.

6.2.3.1.1 –

- (1) All the live parts inside that are operating at or greater than 50 volts ac rms or 60 volts dc are separately enclosed or guarded from direct contact by the inherent design of components or the application of barriers or obstacles such that a 12.5 mm ($\frac{1}{2}$ in) jointed test finger, as shown in Figure 6.2.3 , cannot contact them.

6.2.3.1.1 _

All the live parts mounted on the inside of doors or covers are protected from unintentional direct contact by the inherent design of components or the application of barriers or obstacles such that a 50 mm (2 in.) sphere cannot contact them. .

6.2.3.1.2

A safety sign shall be provided on enclosures in accordance with 16.2.4.

Statement of Problem and Substantiation for Public Comment

The proposed text restores the important safety requirement that live components mounted on the inside of enclosure doors be protected from unintentional contact to protect maintenance personnel from an enclosure door swinging into them. The requirements were rearranged and the three options (key/tool access, interlocking, none with finger protection) for clarity.

Related Item

- FR71

Submitter Information Verification

Submitter Full Name: Jay Tamblingson

Organization: Rockwell Automation

Street Address:

City:

State:

Zip:

Submittal Date: Tue Jan 03 12:23:11 EST 2023
Committee: EEI-AAA

Committee Statement

Committee Action: Rejected but see related SR

Resolution: SR-8-NFPA 79-2023

Statement: The revised text clarifies the permitted options for enclosure access by moving 6.2.3.1.1 to a new list item 6.2.3.1(3) and clarifying the requirements for protection of live parts mounted to the inside surface of doors and covers.



Public Comment No. 23-NFPA 79-2023 [Section No. 7.8.1]

7.8.1* Surge-Protective Devices (SPDs).

Industrial machinery with safety circuits shall have SPD(s) to protect against the effects of overvoltages due to ~~hazardous~~ transients or switching surges. The type of SPD(s) shall be selected to protect, at a minimum, the safety circuit devices and shall be permitted to be integral to secondary derived voltage sources.

Exception: SPD(s) shall not be required where the risks associated with the effects of overvoltages are mitigated such that the safety performance determined by a risk assessment is met.

7.8.1.1

The type of SPD(s) shall be selected to protect, at a minimum, the safety circuit devices.

7.8.1.2

The type of SPD(s) shall be permitted to be integral to secondary derived voltage sources.

Statement of Problem and Substantiation for Public Comment

The term "hazardous" was deleted as it is unclear as what types of transients would apply.

Related Item

- FR74

Submitter Information Verification

Submitter Full Name: Jay Tamblingson

Organization: Rockwell Automation

Street Address:

City:

State:

Zip:

Submittal Date: Tue Jan 03 21:16:13 EST 2023

Committee: EEI-AAA

Committee Statement

Committee Action: Rejected but see related SR

Resolution: SR-18-NFPA 79-2023

Statement: The term "hazardous" is removed to comply with 2.2.2 Unenforceable Terms in the NFPA Manual of Style.

**Public Comment No. 7-NFPA 79-2022 [Section No. 7.8.1]****7.8.1* Surge-Protective Devices (SPDs).**

Industrial machinery with safety circuits shall have SPD(s) to protect against the effects of overvoltages due to hazardous transients or switching surges. The type of SPD(s) shall be selected to protect, at a minimum, the safety circuit devices and shall be permitted to be integral to secondary derived voltage sources.

Exception: SPD(s) shall not be required where the risks associated with the effects of overvoltages are mitigated such that the safety performance determined by a risk assessment is met.

7.8.1.1

The type of SPD(s) shall be selected to protect, at a minimum, the safety circuit devices.

7.8.1.2

The type of SPD(s) shall be permitted to be integral to secondary derived voltage sources.

Additional Proposed Changes

<u>File Name</u>	<u>Description</u>	<u>Approved</u>
CN_6.pdf	79_CN6	

Statement of Problem and Substantiation for Public Comment

NOTE: The following CC Note No. 6 appeared in the First Draft Report on First Revision No. 74.

The Correlating Committee directs the Technical Committee to reconsider use of the term “hazardous” in the first sentence. The use of vague or unenforceable terms is prohibited by the Manual of Style for NFPA Technical Committee Documents, 2.2.2 Unenforceable Terms.

Related Item

- First Revision No. 74

Submitter Information Verification

Submitter Full Name: CC on NEC-AAC

Organization: NEC Correlating Committee

Street Address:

City:

State:

Zip:

Submittal Date: Thu Nov 17 13:31:19 EST 2022

Committee: EEI-AAA

Committee Statement

Committee Action: Rejected but see related SR

Resolution: SR-18-NFPA 79-2023

Statement: The term “hazardous” is removed to comply with 2.2.2 Unenforceable Terms in the NFPA Manual of Style.



Correlating Committee Note No. 6-NFPA 79-2022 [Section No. 7.8.1]

Submitter Information Verification

Committee: NEC-AAC

Submittal Date: Tue Aug 09 10:18:00 EDT 2022

Committee Statement and Meeting Notes

Committee Statement: The Correlating Committee directs the Technical Committee to reconsider use of the term “hazardous” in the first sentence. The use of vague or unenforceable terms is prohibited by the Manual of Style for NFPA Technical Committee Documents, 2.2.2 Unenforceable Terms.

FR-74-NFPA 79-2022

Ballot Results

✓ This item has passed ballot

12 Eligible Voters

0 Not Returned

12 Affirmative All

0 Affirmative with Comments

0 Negative with Comments

0 Abstention

Affirmative All

Ayer, Lawrence S.

Deike, Jr., Roland E.

Fiske, William T.

Gallo, Ernest J.

Hickman, Palmer L.

Holub, Richard A.

Hunter, Dean C.

Kendall, David H.

Kovacik, John R.

Manche, Alan

Schultheis, Timothy James

Williams, David A.

**Public Comment No. 24-NFPA 79-2023 [Section No. 8.2.2.4]****8.2.2.4**

~~Equipment~~ Conductors used for equipment grounding conductors and bonding jumpers shall not be smaller than is shown in Table 8.2.2.4, but shall not be required to be larger than the circuit conductors supplying the equipment.

Table 8.2.2.4 Minimum Size of Equipment Grounding Conductors and Bonding Jumpers

<u>Rating or Setting of Automatic Overcurrent Device in Circuit Ahead of the Equipment</u>	<u>Copper Conductor Size</u>
<u>(Not Exceeding Amperes)</u>	<u>(AWG or kcmil)</u>
10	16
15	14
20	12
30	10
40	10
60	10
100	8
200	6
300	4
400	3
500	2
600	1
800	1/0
1000	2/0
1200	3/0
1600	4/0
2000	250
2500	350
3000	400
4000	500
5000	700
6000	800

Statement of Problem and Substantiation for Public Comment

Adding "Conductors used for.." clarifies that this requirement applies to conductors not other types of devices used as EGC's or bonding jumpers.

Related Item

- FR62

Submitter Information Verification

Submitter Full Name: Jay Tamblingson

Organization: Rockwell Automation

Street Address:

City:

State:

Zip:

Submittal Date: Tue Jan 03 21:37:54 EST 2023

Committee: EEI-AAA

Committee Statement

Committee Rejected

Action:

Resolution: The existing language is clear that conductors are required for equipment grounding conductors and bonding jumpers.



Public Comment No. 25-NFPA 79-2023 [Section No. 12.6.1.1]

12.6.1.1

~~16 AWG~~ 16 AWG conductors shall be permitted if ~~under the following conditions:~~

- (1) Where the conductors are part of a jacketed multiconductor cable assembly or flexible cord, or

~~part of~~

- (1) are individual conductors used in a cabinet or enclosure

~~under the following conditions:~~

- (1) .
- (2) In non-motor power circuits of 8 amperes or less, provided all the following conditions are met:
- (3) The circuit is protected in accordance with Chapter 7 .
 - (4) Overcurrent protection does not exceed 10 amperes.
 - (5) Overcurrent protection is provided by one of the following:
 - (6) A listed molded-case circuit breaker marked for use with 16 AWG conductors
 - (7) Listed fuses marked for use with 16 AWG conductors
 - (8) Class CC, Class J, Class CF, or Class T fuses
- (9) In motor power circuits supplying a motor having a full-load current rating of 8 amperes or less, provided all the following conditions are met:
- (10) The circuit is protected in accordance with Chapter 7 .
 - (11) The circuit is provided with Class 10 overload protection.
 - (12) Overcurrent protection is provided by one of the following:
 - (13) A listed molded-case circuit breaker marked for use with 16 AWG conductors
 - (14) Listed fuses marked for use with 16 AWG conductors
 - (15) Class CC, Class J, Class CF, or Class T fuses
- (16) In motor power circuits supplying a motor having a full-load current rating of 5.5 amperes or less, provided all the following conditions are met:
- (17) The circuit is protected in accordance with Chapter 7 .
 - (18) The circuit is provided with Class 20 overload protection.
 - (19) Overcurrent protection is provided by one of the following:
 - (20) A listed molded-case circuit breaker marked for use with 16 AWG conductors
 - (21) Listed fuses marked for use with 16 AWG conductors
 - (22) Class CC, Class J, Class CF, or Class T fuses

Statement of Problem and Substantiation for Public Comment

The proposed text clarifies that 16AWG conductors can be used if part of a cable or cord, or if they are individual conductors in an enclosure. This requirements was added as a new list item (1). Underline text in Terraview does not correctly show the edits which only apply to the first sentence as follows.

"

16 AWG conductors shall be permitted under the following conditions:

(1) Where the conductors are part of a jacketed multiconductor cable assembly or flexible cord, or are individual conductors used in a cabinet or enclosure.

..

Related Item

- FR63

Submitter Information Verification

Submitter Full Name: Jay Tamblingson

Organization: Rockwell Automation

Street Address:

City:

State:

Zip:

Submittal Date: Tue Jan 03 21:51:50 EST 2023

Committee: EEI-AAA

Committee Statement

Committee Action: Rejected but see related SR

Resolution: SR-9-NFPA 79-2023

Statement: The language has been revised to clarify that jacketed multiconductor cable assembly or flexible cord is not required to be used in a cabinet or enclosure.



Public Comment No. 26-NFPA 79-2023 [Section No. 12.6.1.2]

12.6.1.2

~~18 AWG~~ 18 AWG conductors shall be permitted if ~~under the following conditions:~~

- (1) Where the conductors are part of a jacketed multiconductor cable assembly or flexible cord, or

~~part of~~

- (1) are individual conductors used in a cabinet or enclosure

~~, under the following conditions:~~

- (1) .
- (2) In non-motor power circuits of 5.6 amperes or less, provided all the following conditions are met:
- (3) The circuit is protected in accordance with Chapter 7 .
 - (4) Overcurrent protection does not exceed 7 amperes.
 - (5) Overcurrent protection is provided by one of the following:
 - (6) A listed molded-case circuit breaker marked for use with 18 AWG conductors
 - (7) Listed fuses marked for use with 18 AWG conductors
 - (8) Class CC, Class J, or Class CF, Class T fuses
- (9) In motor power circuits supplying a motor having a full-load current rating of 5 amperes or less, provided all the following conditions are met:
- (10) The circuit is protected in accordance with Chapter 7 .
 - (11) The circuit is provided with Class 10 overload protection.
 - (12) Overcurrent protection is provided by one of the following:
 - (13) A listed molded-case circuit breaker marked for use with 18 AWG conductors
 - (14) Listed fuses marked for use with 18 AWG conductors
 - (15) Class CC, Class J, Class CF, or Class T fuses
- (16) In motor power circuits supplying a motor having a full-load current rating of 3.5 amperes or less, provided all the following are met:
- (17) The circuit is protected in accordance with Chapter 7 .
 - (18) The circuit is provided with Class 20 overload protection.
 - (19) Overcurrent protection is provided by one of the following:
 - (20) A listed molded-case circuit breaker marked for use with 18 AWG conductors
 - (21) Listed fuses marked for use with 18 AWG conductors
 - (22) Class CC, Class J, Class CF, or Class T fuses

Statement of Problem and Substantiation for Public Comment

The proposed text clarifies that 18AWG conductors can be used if part of a cable or cord, or if they are individual conductors in an enclosure. This requirements was added as a new list item (1). Underline text in Terraview does not correctly show the edits which only apply to the first sentence as follows.

"

18 AWG conductors shall be permitted under the following conditions:

(1) Where the conductors are part of a jacketed multiconductor cable assembly or flexible cord, or are individual conductors used in a cabinet or enclosure.

..

Related Item

- FR64

Submitter Information Verification

Submitter Full Name: Jay Tamblingson

Organization: Rockwell Automation

Street Address:

City:

State:

Zip:

Submittal Date: Tue Jan 03 21:58:07 EST 2023

Committee: EEI-AAA

Committee Statement

Committee Action: Rejected but see related SR

Resolution: [SR-10-NFPA 79-2023](#)

Statement: The language has been revised to clarify that jacketed multiconductor cable assembly or flexible cord is not required to be used in a cabinet or enclosure..

**Public Comment No. 27-NFPA 79-2023 [Section No. 12.6.1.4]****12.6.1.4**

16 AWG and 18 AWG conductors shall be ~~permitted if~~ permitted under the following conditions:

(1) Where the conductors are part of a jacketed multiconductor cable assembly or flexible cord , or

~~part of~~

(1) are individual conductors used in a cabinet or enclosure

~~under the following conditions:-~~

(1) ~~...~~

(2) The conductors are supplied by power conversion equipment that is listed and marked "Suitable for Output Motor Conductor Protection."

(3) The power conversion equipment is marked suitable for protecting the size of the conductor used.

Statement of Problem and Substantiation for Public Comment

The proposed text clarifies that 16AWG and 18AWG conductors can be used if part of a cable or cord, or if they are individual conductors in an enclosure. This requirements was added as a new list item (1). Underline text in Terraview does not correctly show the edits which only apply to the first sentence as follows.

"

16 AWG and 18 AWG conductors shall be permitted under the following conditions:

(1) Where the conductors are part of a jacketed multiconductor cable assembly or flexible cord, or are individual conductors used in a cabinet or enclosure.

..

Related Item

- FR 76

Submitter Information Verification

Submitter Full Name: Jay Tamblingson

Organization: Rockwell Automation

Street Address:

City:

State:

Zip:

Submission Date: Tue Jan 03 22:01:50 EST 2023

Committee: EEI-AAA

Committee Statement

Committee Rejected but see related SR

Action:**Resolution:** SR-11-NFPA 79-2023**Statement:** The language has been revised to clarify that jacketed multiconductor cable assembly or flexible cord is not required to be used in a cabinet or enclosure.



Public Comment No. 28-NFPA 79-2023 [Section No. 13.2.4.1]

13.2.4.1*

Ungrounded conductors that remain energized shall be identified with the following:

- (1) The color ORANGE shall be used to identify ungrounded ac conductors that remain energized when the main supply circuit disconnecting means is in the off position. This color identification shall be strictly reserved for this application only.
- (2) The color ORANGE with BLUE stripe shall be used to identify ungrounded dc conductors that remain energized when the main supply circuit disconnecting means is in the off position. This color identification shall be strictly reserved for this application only.

Exception No. 1: Internal wiring on individual devices purchased completely wired

Exception No. 2: Where the insulation used is not available in the colors required (e.g., high temperature insulation, chemically resistant insulation)

Statement of Problem and Substantiation for Public Comment

The proposed text restores the strict reservation of the color ORANGE for AC excepted circuits.

Related Item

- FR69

Submitter Information Verification

Submitter Full Name: Jay Tamblingson

Organization: Rockwell Automation

Street Address:

City:

State:

Zip:

Submittal Date: Tue Jan 03 22:05:05 EST 2023

Committee: EEI-AAA

Committee Statement

Committee Action: Accepted

Resolution: SR-12-NFPA 79-2023

Statement: The revision clarifies that "This color identification shall be strictly reserved for this application only." applies for both conditions (1) and (2).



Public Comment No. 14-NFPA 79-2023 [Section No. A.3.3.39]

A.3.3.39 Enclosure.

See Table 110.28 in *NFPA 70* for See Annex F for examples of enclosure types.- [**70**, -2023]

Statement of Problem and Substantiation for Public Comment

Annex F provides detailed information on enclosures and enclosure types. The new annex note for the definition of "Enclosure" should refer to Annex F not NEC 110.28 for examples of enclosure types which are applicable to electrical equipment for machinery.

Related Item

- FR88

Submitter Information Verification

Submitter Full Name: Jay Tamblingson

Organization: Rockwell Automation

Street Address:

City:

State:

Zip:

Submittal Date: Tue Jan 03 10:42:28 EST 2023

Committee: EEI-AAA

Committee Statement

Committee Action: Rejected but see related SR

Resolution: SR-19-NFPA 79-2023

Statement: Annex F provides detailed information on enclosures and enclosure types. When practicable the user should be able to obtain referenced information within the same document. To comply with 2.6.1 of the NFPA Manual of Style for extracted text, the reference brackets are removed since the language no longer reflects exact text from the 2023 NEC.

**Public Comment No. 2-NFPA 79-2022 [Section No. A.3.3.39]****A.3.3.39** Enclosure.

See Table 110.28 in *NFPA 70* for examples of enclosure types. [70, 2023]

Additional Proposed Changes

<u>File Name</u>	<u>Description</u>	<u>Approved</u>
CN_1.pdf	79_CN1	

Statement of Problem and Substantiation for Public Comment

NOTE: The following CC Note No. 1 appeared in the First Draft Report.

The Correlating Committee directs the technical committee to refer to the Manual of Style for NFPA Technical Committee Documents, 2.6.1 General Extract Requirements, and either align the definition with NFPA 70 or remove the extract reference. By adding the words “in NFPA 70”, the extract no longer matches NFPA 70. In addition, the information source is provided in the extract reference and therefore not needed within the main text.

Related Item

- Correlating Committee Note No. 1

Submitter Information Verification

Submitter Full Name: CC on NEC-AAC

Organization: NEC Correlating Committee

Street Address:

City:

State:

Zip:

Submittal Date: Thu Nov 17 13:17:15 EST 2022

Committee: EEI-AAA

Committee Statement

Committee Action: Rejected but see related SR

Resolution: [SR-19-NFPA 79-2023](#)

Statement: Annex F provides detailed information on enclosures and enclosure types. When practicable the user should be able to obtain referenced information within the same document. To comply with 2.6.1 of the NFPA Manual of Style for extracted text, the reference brackets are removed since the language no longer reflects exact text from the 2023 NEC.



Correlating Committee Note No. 1-NFPA 79-2022 [Section No. A.3.3.39]

Submitter Information Verification

Committee: NEC-AAC

Submittal Date: Tue Aug 09 10:13:50 EDT 2022

Committee Statement and Meeting Notes

Committee Statement: The Correlating Committee directs the technical committee to refer to the Manual of Style for NFPA Technical Committee Documents, 2.6.1 General Extract Requirements, and either align the definition with NFPA 70 or remove the extract reference. By adding the words "in NFPA 70", the extract no longer matches NFPA 70. In addition, the information source is provided in the extract reference and therefore not needed within the main text.

Ballot Results

✔ This item has passed ballot

12 Eligible Voters

0 Not Returned

12 Affirmative All

0 Affirmative with Comments

0 Negative with Comments

0 Abstention

Affirmative All

Ayer, Lawrence S.

Deike, Jr., Roland E.

Fiske, William T.

Gallo, Ernest J.

Hickman, Palmer L.

Holub, Richard A.

Hunter, Dean C.

Kendall, David H.

Kovacik, John R.

Manche, Alan

Schultheis, Timothy James

Williams, David A.



Public Comment No. 15-NFPA 79-2023 [Section No. A.3.3.56]

A.3.3.56 Grounding Conductor, Equipment (EGC) (Equipment Grounding Conductor).

It is recognized that the equipment grounding conductor also performs bonding. ~~See 250.118 of NFPA 70 for~~ See 8.2 for a list of acceptable equipment grounding conductors. ~~[70, 2023]~~

Statement of Problem and Substantiation for Public Comment

The annex note should refer to 8.2 not 250.118 for a list of acceptable grounding conductors. The new section 8.2.1.2.4 as the result of FR-77 now permits a metal mounting plated internal to an industrial enclosure panel to serve as equipment grounding conductor which does not appear in NEC 250.118

Related Item

- FR6

Submitter Information Verification

Submitter Full Name: Jay Tamblingson

Organization: Rockwell Automation

Street Address:

City:

State:

Zip:

Submittal Date: Tue Jan 03 10:46:29 EST 2023

Committee: EEI-AAA

Committee Statement

Committee Action: Rejected but see related SR

Resolution: SR-13-NFPA 79-2023

Statement: The Annex note was revised to point users of the Standard to 8.2 of NFPA 79 which recognizes grounding methods not included in NEC 250.118.



Public Comment No. 16-NFPA 79-2023 [Section No. A.3.3.60]

A.3.3.60 Identified (as applied to equipment).

Some examples of ways to determine suitability of equipment for a specific purpose, environment, or application include investigations by a qualified testing laboratory (listing and labeling), an inspection agency, or other organizations concerned with product evaluation.- [70, 2023]

Statement of Problem and Substantiation for Public Comment

As NFPA 79 is a "standard" not a "code", removing "or standard" in definition of "identified" effectively makes the term not applicable to requirements in NFPA 79 but only to requirements contained in other codes. The proposed text removes the reference to NFPA70 as the PC17 reverts the definition to 2021 text.

Related Public Comments for This Document

Related Comment

Public Comment No. 17-NFPA 79-2023 [Section No. 3.3.60]

Public Comment No. 17-NFPA 79-2023 [Section No. 3.3.60]

Relationship

Term which is referenced by this annex note

Related Item

- FR90

Submitter Information Verification

Submitter Full Name: Jay Tamblingson

Organization: Rockwell Automation

Street Address:

City:

State:

Zip:

Submittal Date: Tue Jan 03 10:48:07 EST 2023

Committee: EEI-AAA

Committee Statement

Committee Action: Rejected

Resolution: The annex note correlates with the NEC informational note to "identified". The reference to the NEC remains.



Public Comment No. 8-NFPA 79-2022 [Section No. J.2]

J.2 *NFPA 70* Terms.

Bonded (Bonding). Connected to establish electrical continuity and conductivity. [70, 2023]

Discussion. Bonding is accomplished if items are connected together regardless of whether or not there is a connection to ground (earth).

Bonding Conductor (Bonding Jumper). A conductor that ensures the required electrical conductivity between metal parts that are required to be electrically connected. [70, 2023]

Discussion. Bonding conductor sizes are provided in the specific requirements related to what the bonding is intended to accomplish such as being suitable for fault current or minimizing voltage differences.

Bonding Jumper, Equipment. (Equipment Bonding Jumper) The connection between two or more portions of the equipment grounding conductor. [70, 2023]

Discussion. Equipment bonding jumpers are typically short in length and used to ensure a reliable connection such as between an enclosure and its hinged door.

Bonding Jumper, Supply-Side (Supply-Side Bonding Jumper). A conductor installed on the supply side of a service or within a service equipment enclosure(s), or for a separately derived system, that ensures the required electrical conductivity between metal parts required to be electrically connected. [70:2023]

Discussion. Conductors that are intended to carry fault current for ungrounded conductors that do not have overcurrent protection at their supply point are considered supply-side bonding jumpers. Examples are those for tap conductors and transformer secondary conductors. Conductor sizing is based on a percentage of the ungrounded conductors.

Bonding Jumper, System. (System Bonding Jumper) The connection between the grounded circuit conductor and the supply-side bonding jumper, or the equipment grounding conductor, or both, at a separately derived system. [70, 2023]

Discussion. System bonding jumpers provide a fault current path for grounded systems. They can be conductors, busbars, or other suitable means.

Discussion. Equipment made of conductive materials that contains electrical conductors is commonly considered to be "likely to become energized" because an insulation failure can occur and energize the equipment. This type of equipment is generally required to be provided with an effective ground-fault current path. An equipment grounding conductor or bonding jumper is commonly used to provide an effective ground-fault current path. The earth is not permitted as the only path for this fault current.

Ground. The earth. [70, 2023]

Discussion. Systems or equipment are either connected to the earth or are considered ungrounded systems.

Ground Fault. An unintentional, electrically conductive connection between an ungrounded conductor of an electrical circuit and the normally non-current-carrying conductors, metal enclosures, metal raceways, metal equipment, or earth. [70, 2023]

Discussion. An insulation failure is a common example of a condition that results in a ground fault.

Grounded (Grounding). Connected (connecting) to ground or to a conductive body that extends the ground connection. [70, 2023]

Discussion. Equipment that is connected to an equipment grounding conductor can be considered grounded, as the equipment grounding conductor extends the ground connection.

Grounded, Solidly. (Solidly Grounded) Connected to ground without inserting any resistor or impedance device. [70, 2023]

Discussion. Solidly grounded is a type of system grounding. Using resistors or reactors are other options for grounding some types of systems.

Grounded Conductor. A system or circuit conductor that is intentionally grounded. [70, 2023]

Discussion. The grounded conductor is commonly grounded by a grounding electrode conductor. Depending on the type of electrical system, this can be a neutral conductor, phase

conductor, or line conductor. Insulated grounded conductors are generally required to be identified with white or gray coloring.

Ground-Fault Current Path. An electrically conductive path from the point of a ground fault on a wiring system through normally non-current-carrying conductors, grounded conductors, equipment, or the earth to the electrical supply source. [70, 2023]

Informational Note: Examples of ground-fault current paths are any combination of equipment grounding conductors, metallic raceways, metallic cable sheaths, electrical equipment, and any other electrically conductive material such as metal, water, and gas piping; steel framing members; stucco mesh; metal ducting; reinforcing steel; shields of communications cables; grounded conductors; and the earth itself. [70, 2023]

Discussion. Current will take all the paths that exist when a voltage difference exists. Some of these paths can be effective ground-fault current paths and others, such as the earth, cannot.

Ground-Fault Current Path, Effective.(Effective Ground-Fault Current Path) An intentionally constructed, low-impedance electrically conductive path designed and intended to carry current during ground-fault events from the point of a ground fault on a wiring system to the electrical supply source and that facilitates the operation of the overcurrent protective device or ground-fault detectors. [70, 2023]

Grounding Conductor, Equipment. (Equipment Grounding Conductor) (EGC) A conductive path(s) that is part of an effective ground-fault current path and connects normally non-current-carrying metal parts of equipment together and to the system grounded conductor or to the grounding electrode conductor, or both. [70, 2023]

Informational Note No. 1: It is recognized that the equipment grounding conductor also performs bonding. [70, 2023]

Informational Note No. 2: See 250.118 [of NFPA 70] for a list of acceptable equipment grounding conductors. [70, 2023]

Discussion. Equipment grounding conductors are commonly used to provide effective ground-fault current paths. Insulated equipment grounding conductors are generally required to be identified with a green coloring.

Grounding Electrode. A conducting object through which a direct connection to earth is established. [70, 2023]

Discussion. Underground metal water pipes, concrete encased steel reinforcing rods, and ground rods are typical grounding electrodes.

Grounding Electrode Conductor (GEC). A conductor used to connect the system grounded conductor or the equipment to a grounding electrode or to a point on the grounding electrode system. [70, 2023]

Discussion. Grounding electrode conductors are what actually accomplish the grounding of equipment or systems.

Wireways, Metal. (Metal Wireways) Sheet metal troughs with hinged or removable covers for housing and protecting electrical wires and cable and in which conductors are laid in place after the raceway has been installed as a complete system. [70:2023]

Discussion. Wireways are a type of raceway used to contain electrical conductors and are commonly available in square cross sections.

Neutral Conductor. The conductor connected to the neutral point of a system that is intended to carry current under normal conditions. [70, 2023]

Discussion. Neutral conductors only exist if the system has a neutral point and are generally also grounded conductors.

Neutral Point. The common point on a wye-connection in a polyphase system or midpoint on a single-phase, 3-wire system, or midpoint of a single-phase portion of a 3-phase delta system, or a midpoint of a 3-wire, direct-current system. [70, 2023]

Informational Note: At the neutral point of the system, the vectorial sum of the nominal voltages from all other phases within the system that utilize the neutral, with respect to the neutral point,

is zero potential. [70, 2023]

Discussion. A neutral point only exists on systems that have multiple "connection points" with a connection point in the middle.

Separately Derived System. An electrical power supply output, other than a service, having no direct connection(s) to circuit conductors of any other electrical source other than those established by grounding and bonding connections. [70, 2023]

Discussion. Transformers, generators, and batteries that are not directly connected to other sources are examples of separately derived systems. System bonding jumpers, equipment grounding conductors, and grounding electrode conductors are not considered direct connections.

Service. The conductors and equipment connecting the serving utility to the wiring system of the premises served. [70, 2023]

Discussion. Services only exist if a utility is supplying the electricity.

Ungrounded. Not connected to ground or to a conductive body that extends the ground connection. [70, 2023]

Discussion. Systems that have no direct connection to ground (earth) are considered ungrounded, such as vehicle-supplied battery systems and transformer or generator systems that are not connected to ground. A slang term commonly used for these types of systems is "floating."

Additional Proposed Changes

<u>File Name</u>	<u>Description</u>	<u>Approved</u>
CN_7.pdf	79_CN7	

Statement of Problem and Substantiation for Public Comment

NOTE: The following CC Note No. 7 appeared in the First Draft Report on First Revision No. 13.

The Correlating Committee directs the technical committee to consider the informational note provided within NFPA 70 for the term "Grounded Conductor" and determine if inclusion would provide clarity.

Related Item

- First Revision No. 13

Submitter Information Verification

Submitter Full Name: CC on NEC-AAC

Organization: NEC Correlating Committee

Street Address:

City:

State:

Zip:

Submittal Date: Thu Nov 17 13:33:11 EST 2022

Committee: EEI-AAA

Committee Statement

Committee Action: Rejected but see related SR

Resolution: SR-20-NFPA 79-2023

Statement: Extracting the informational note from the 2023 NEC provides clarity to the user that the equipment grounding conductor is not to be considered a current-carrying conductor under normal operating conditions.



Correlating Committee Note No. 7-NFPA 79-2022 [Section No. J.2]

Submitter Information Verification

Committee: NEC-AAC

Submittal Date: Tue Aug 09 10:26:51 EDT 2022

Committee Statement and Meeting Notes

Committee Statement: The Correlating Committee directs the technical committee to consider the informational note provided within NFPA 70 for the term "Grounded Conductor" and determine if inclusion would provide clarity.

Committee Notes:

<u>Date</u>	<u>Submitted By</u>
Aug 9, 2022	Sarah Caldwell J.2 Grounded Conductor

FR-13-NFPA 79-2022

Ballot Results

✔ This item has passed ballot

12 Eligible Voters

0 Not Returned

12 Affirmative All

0 Affirmative with Comments

0 Negative with Comments

0 Abstention

Affirmative All

Ayer, Lawrence S.

Deike, Jr., Roland E.

Fiske, William T.

Gallo, Ernest J.

Hickman, Palmer L.

Holub, Richard A.

Hunter, Dean C.

Kendall, David H.

Kovacik, John R.

Manche, Alan

Schultheis, Timothy James

Williams, David A.



Public Comment No. 13-NFPA 79-2023 [Section No. K.1 [Excluding any Sub-Sections]]

The documents or portions thereof listed in this annex are referenced within the informational sections of this standard and are not part of the requirements of this document unless also listed in Chapter 2 for other reasons. Unless a publication referenced includes a date, the reference pertains to the latest edition of the publication.

Statement of Problem and Substantiation for Public Comment

The proposed text relocates the FR text from 1.7 to Annex K and rewords as informational as it only applies to information references.

Related Public Comments for This Document

<u>Related Comment</u>	<u>Relationship</u>
Public Comment No. 12-NFPA 79-2023 [Section No. 1.7]	Relocated from 1.7
<u>Related Item</u>	
• FR49	

Submitter Information Verification

Submitter Full Name: Jay Tamblingson
Organization: Rockwell Automation
Street Address:
City:
State:
Zip:
Submittal Date: Tue Jan 03 10:31:07 EST 2023
Committee: EEI-AAA

Committee Statement

Committee Action: Rejected
Resolution: The statement is appropriately located in Chapter 1 Administration to ensure users are aware of formatting methods in the Standard.