



Canadian Standards Association  
Etobicoke, Ontario  
**To the Part I Committee**

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Subject No. 3060

Chair: R. Leduc

Date: November 21, 2002

Title: Sprinklered Equipment, Rule 26-008

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**Submitted by:** Mike Anderson of Manitoba Inspectors Advisory Coordinating Committee, 31-30 Fort Street, Winnipeg, Manitoba, Tel: (204) 986-5258, Fax: (204) 986-7307 on March 27, 2002.

**Proposal:** Change wording in Rule 26-008 to read as follows:

**26-008 Sprinklered Equipment (see Appendix B).** The electrical equipment contained in areas of a building that are sprinklered shall be protected where needed by noncombustible hoods or shields so arranged as to minimize interference with the sprinkler protection.

**Reasons for Request:** The wording in the existing rule does not require sprinkler protection of electrical equipment for all parts of a building.

**Supporting Information:** There are several instances in industrial facilities where sprinkler protection is not required for electrical distribution equipment, leaving the equipment exposed to the direct spray of a sprinkler head.

**Chair's Comments:** The proposal expands the requirement of the rule beyond just electrical vaults or electrical rooms to include all areas of a building. If we allow this expanded scope, it would require that shields protect equipment such as computers on office desks.

The intent of the current rule is to protect major switchgear and electrical equipment found in vaults and electrical rooms because when that type of equipment is subject to water, potentially costly additional damage may occur and even exacerbate the situation that the sprinkler is attempting to control.

Installation design accommodates the use and application of electrical equipment under normal operation. The activation of a sprinkler indicates an abnormal situation and should not dictate additional requirements unless we can foresee a significant increased risk to persons or property. The submitter has not provided any statistics or incident reports that would suggest that the current rule is inadequate or that it requires an expanded scope.

I would not oppose a rule that limited the requirement to distribution equipment in areas of buildings that are sprinklered however, that may require that we define what is meant by distribution equipment. I favour the status quo since we have no evidence of problems in this matter.

### **Subcommittee Deliberation (1<sup>st</sup> Round)**

Of 13 members 10 responded as follows:

- 2 agreed with the original submission (one with comments)
- 6 agreed with the Chair's suggestion to leave as status quo
- 2 disagreed with the submission (with comments)

One member originally agreeing with the status quo later provided comments that essentially agreed with the principles of the submission with comments for amending it. The two members disagreeing with the submission also offered suggestions that would essentially amend the original proposal. The one member agreeing with the original submission (also the submitter) offered revised wording based on the chair's original comments.

### **Chair's comments for 2<sup>nd</sup> round of deliberations**

Since the S/C has not reached consensus, the Chair suggests an amended proposal in an attempt to capture all of the comments received to date. The revised proposal would read as follows:

1. Revise Rule 26-008 to read as follows:

#### **26-008 Sprinklered Equipment (see Appendix B)**

Electrical service and distribution equipment with ventilation openings located in sprinklered buildings or spaces shall be protected where needed by noncombustible hoods or shields so arranged as to minimize interference with the sprinkler protection.

2. Add the following to the Appendix B not to Rule 26-008:

26-008    *The intent of the Rule is to protect electrical service/distribution and similar equipment within ventilated enclosures from the direct spray from sprinkler heads. This equipment may include switchgears, panelboards, motor control centres, distribution transformers and other similar electrical equipment installed in ventilated enclosures.*  
*The intent of the Rule is considered to be met when water:*  
*(a) Following a direct line of sight path from the sprinkler head cannot strike live parts within the enclosure through ventilation openings in sides and tops of electrical equipment; and*  
*(b) When accumulating on the top of the equipment, cannot flow into the interior through significant openings. Examples of significant openings are ventilation openings, openings around bus duct, and dry type armoured cable connectors. Bolts and seams can be considered as not presenting significant openings.*  
*The intent of the Rule can also be met through use of weatherproof equipment.*

### **Subcommittee Deliberations (2<sup>nd</sup> Round):**

Of 13 members, 9 responded. All but one agreed with the Chair's proposal. The member disagreeing along with another member had comments proposing revised wording as follows:

- 1) 26-008 Sprinklered Equipment (see Appendix B)  
" Electrical equipment with ventilation openings installed in sprinklered areas of buildings shall be protected where needed to minimize interference with a water spray from the sprinkler system."  
Reason: To ensure that all types of electrical equipment provided with ventilation openings and installed in sprinklered areas of a building are protected against sprinkler discharge regardless whether such discharge constitutes a direct or indirect spray. I'm also proposing to amend existing Note on Rule 26-008 in Appendix B as follows:  
a) by replacing word "apparatus" with word "equipment".

b) by deleting word "direct" from paragraph (b) - to ensure that protection is achieved when indirect spray (by splashing over other sides of equipment) results in water penetration.

c) by amending the last paragraph of the Note to read:

"The intent of this Rule can be met through use of the CSA Type 3 Enclosure.

Type 3 enclosure is designed and constructed to provide adequate protection against the water spray from sprinklers, if sprinkler heads are not located at an angle more than 45 Deg. from the vertical".

- 2) My suggestion would be to re-phrase 26-008 to state that a shield may be permitted to protect electrical equipment from the direct (line of sight) spray of a sprinkler head, and that equipment marked as ENCLOSURE 3, 3R or 3S may be used provided that a line from any opening on the equipment (e.g. louver) to the sprinkler head is not inclined at an angle greater than 45 degrees from the vertical. The forty-five degrees coordinates with the rain test done in C22.2 No. 94. Although the rain test is less pressure and water volume than a sprinkler stream, the results will not be significantly different.

This would require that the proposed Appendix B note be amended as well. Specifically, for Note (a) I would suggest that the present wording be prefaced with the words "For general purpose enclosures". A new note added as (b) to state: (b) For enclosures marked as ENCLOSURE 3, 3R or 3S following a direct line of sight path from the sprinkler head to an opening in the enclosure cannot exceed an angle of forty five degrees from the vertical. The angle being measured at the opening in the equipment. (b) would be re-labelled as (c)

#### **Chair's Comments:**

Both suggestions appear to be going back to using the term "electrical equipment" despite the concern expressed in the 1<sup>st</sup> round that such terminology could be construed as including such equipment as receptacles, or computers, monitors, and other similar office equipment with ventilation openings. The submitter agreed that it was not the intent to include such equipment. "Electrical Equipment" is a defined term and does not allow us any flexibility in excluding certain types of equipment. By using "electrical service and distribution equipment", we better describe the intent regarding which equipment the rule is attempting to address and we can further explain it in the Appendix B note.

I do believe however, that many of the suggestions in the comments can improve the clarity of the Rule and can be incorporated without affecting the intent. Diagrams may also help to clarify the Rule. Therefore, I declare Subcommittee consensus with the following:

#### **Subcommittee Recommendation:**

3. Revise Rule 26-008 to read as follows:

##### **26-008 Sprinklered Equipment (see Appendix B)**

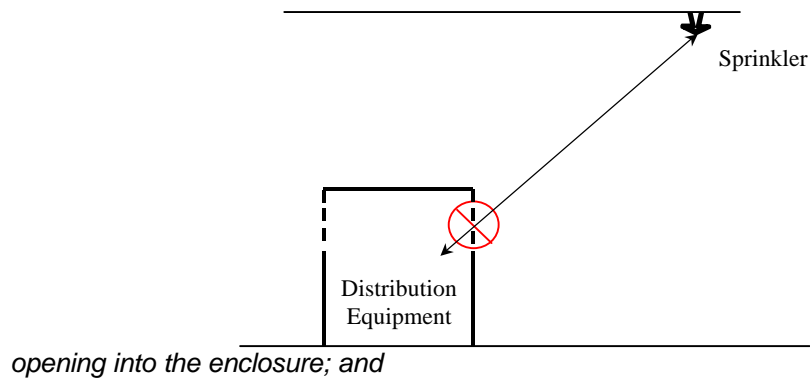
(1) Electrical service and distribution equipment installed in sprinklered areas of buildings shall be protected to minimize the effects of water spray from the sprinkler system on the equipment.

4. Add the following to the Appendix B note to Rule 26-008:

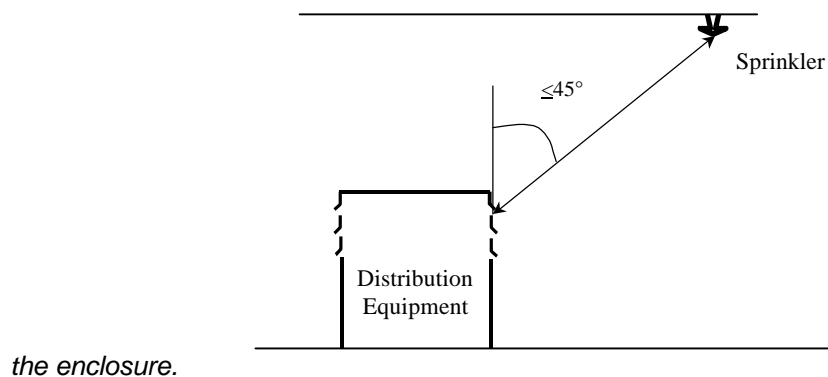
26-008     *The intent of the Rule is to protect electrical service, distribution and similar equipment within enclosures from the effects of water spray from sprinkler heads. This equipment may include switchgear, panelboards, motor control centres, transformers and other similar equipment, especially those with ventilation openings.*

*In determining the suitability of an installation:*

- a) *For general purpose enclosures, a direct line of sight path from the sprinkler head to any point on the enclosure should not extend through an*



- b) *For enclosure types 3, 3R or 3S, a direct line of sight path from the sprinkler head to an opening in the enclosure should not exceed an angle of 45 degrees from the vertical, the angle being measured at the opening in*



- c) *Where water can accumulate on the top of the equipment, it should not flow into the interior through significant openings. Examples of significant openings are ventilation openings, openings around bus duct, and dry type armoured cable connectors. Bolts and seams should not be considered as presenting significant openings.*

*The intent of the Rule can also be met through the use of enclosure types 4, 4X, 6, or 6P.*