



Canadian Standards Association
Mississauga, Ontario
To the Part I Committee

Subject No. 3237

Chair: E. Zebedee

Date: March 22, 2005

Title: Changes to the Requirements for Enclosures, Rules 2-400 and 2-402 and Appendix B

Submitted by: Mike Smith of Rockwell Automation on February 16, 2005.

Proposal: Revise Rules 2-400 and 2-402 and Appendix B as follows:

2-400 Enclosures, Type Designations and Use (see Appendix B)

(1) The following designations of enclosures for electrical equipment other than motors and generators shall be recognized for the purposes of this Code for the intended use as specified in Table 65 and as follows:

- (a) Type 1 for use indoors in ordinary locations; and
- (b) Type 2 for use indoors where the enclosure may be subject to drops of falling liquid due to condensation or other causes; and
- (c) Type 3R for use outdoors; and
- (d) Type 4 for use where the enclosure may be subject to direct streams of water; and
- (e) Type 5 for use indoors where the atmosphere may contain settling nonhazardous dust, lint, fibres, or flyings; **and**

(f) General Purpose enclosures for use indoors in ordinary locations

~~(2) Other enclosure types tabulated in Table 65 shall be permitted to be substituted for those required in Subrule (1) provided that they give a degree of protection, at least equal to that required by Subrule (1) for the intended use, as indicated in Table 65.~~

(2) Other enclosure types tabulated in Table 65 shall be permitted to be substituted for those required in Subrule (1) provided that they:

- (a) give a degree of protection, at least equal to that required by Subrule (1) for the intended use, as indicated in Table 65,, and**
- (b) are marked in accordance with Rule 2-402(2)**

(3) Enclosures of equipment for use in a hazardous location shall be designated in accordance with Rule 18-052.

2-402 Marking of Enclosures

(1) ~~Except for Type 1 (general purpose)~~ **general purpose** enclosures all enclosures described in Table 65 shall be marked with a type or enclosure designation.

(2) In addition to the type or enclosure designation specified in 2-402(1), enclosures shall be permitted to be marked with an IP code to indicate the degree of protection (Ingress Protection) that the enclosure provides.

Add to Appendix B, Rule 2-400

Ingress protection (IP) describes the degree of protection an enclosure provides. **(See Ingress Protection table in Notes to Rule 18-106(5)).** The first number of the IP designation describes the degree of protection against physical contact (ie, fingers, tools, dust, etc) with internal parts; the second number designates the IP against liquids. For example, an IP54 rating will require an enclosure to be dust-protected and protected against water splashing from any direction. For further information on the “IP” designations, **refer to CSA standard C22.2 No. 60529. The “IP” designations are supplemental to the Enclosure Types specified in rule 2-400 and Table 65. There is no direct correlation between the “IP” designations and Enclosure Types, and furthermore standard C22.2 No. 60529 does not cover environmental considerations such as resistance to corrosion or the effects of ultra violet.**

Reasons for Request:

- 1) The committee for the standards for enclosures, C22.2 No. 94.1 & 94.2 has harmonized requirements with the UL and ANCE. The standard now requires a Type 1 enclosure to be marked “Type 1”.
- 2) CSA will be adopting IEC standard 60529, Degrees of protection provided by enclosures (IP Code), (with Canadian deviations).
- 3) The text of 2-400(2) has been re-arranged for clarity. The intent of the clause has not been changed.
- 4) 2-400(1)(f) is added to maintain the recognition of general purpose enclosures, that meet the construction requirements of Part II standards, (other than C22.2 No. 94). These enclosures may not be required to meet CSA standard C22.2 No. 94 and therefore these enclosures are not required be marked as a Type 1 enclosure.
- 5) An Appendix B explanatory note is added to section 2 to provide additional information.

Other Information: The proposed text for the Appendix B note is similar to the note for section 18. Information specific to section 18 has been omitted to make the note generic to all applications. Changes to the text in section 18 are marked in bold.

Chair’s Comments: I support the proposal.

Subcommittee Deliberations: All members who responded were in agreement with the proposal but requested a few editorial changes. The Chair discussed the suggested note to Appendix B with the submitter and his response was:

“I agree with the rule changes, but would rather see the full text of the Appendix B Note as originally proposed. The note in Section 18 starts off specific to hazardous locations, so some readers may not read the full text of the note. As well this will be new to many readers so the idea is to provide some explanation as to the meaning of the IP number. If we remove the second paragraph this part of the explanation is lost. In the proposal all the hazardous location references were removed so it was applicable to ordinary locations. Other than that for clarity it should be noted that the last paragraph is a change/addition to the Appendix B notes.

The Chair accepts the submitter's explanation and agrees to submit the Appendix B note as submitted.

Subcommittee Recommendation: That Rules 2-400 and 2-402 and the Appendix B Note to Rule 2-400 be revised to read:

2-400 Enclosures, Type Designations and Use (see Appendix B)

(1) The following designations of enclosures for electrical equipment other than motors and generators shall be recognized for the purposes of this Code for the intended use as specified in Table 65 and as follows:

- (a) Type 1 for use indoors in ordinary locations; and
- (b) Type 2 for use indoors where the enclosure may be subject to drops of falling liquid due to condensation or other causes; and
- (c) Type 3R for use outdoors; and
- (d) Type 4 for use where the enclosure may be subject to direct streams of water; and
- (e) Type 5 for use indoors where the atmosphere may contain settling nonhazardous dust, lint, fibers, or flyings; **and**

(f) General Purpose enclosures for use indoors in ordinary locations

(2) Other enclosure types tabulated in Table 65 shall be permitted to be substituted for those required in Subrule (1) provided that they:

- (a) give a degree of protection, at least equal to that required by Subrule (1) for the intended use, as indicated in Table 65,, and**
- (b) are marked in accordance with Rule 2-402**

(3) Enclosures of equipment for use in a hazardous location shall be designated in accordance with Rule 18-052.

2-402 Marking of Enclosures

(1) **Except for general purpose** enclosures all enclosures described in Table 65 shall be marked with a type or enclosure designation.

(2) "In addition to the type or enclosure designation specified in 2-402(1), enclosures shall be permitted to be marked with an Ingress Protection (IP) designation."

Add to Appendix B Note to Rule 2-400:

Ingress protection (IP) describes the degree of protection an enclosure provides from ingress of water or foreign bodies. (See Ingress Protection table in Notes to Rule 18-106(5))

For further information on the "IP" designations, refer to CSA standard C22.2 No. 60529. The "IP" designations are supplemental to the Enclosure Types specified in rule 2-400 and Table 65. There is no direct correlation between the "IP" designations and Enclosure Types, and furthermore standard C22.2 No. 60529 does not cover environmental considerations such as resistance to corrosion or the effects of ultraviolet."