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Foreword

This Standards publication for *Ampacities of Cables Installed in Cable Trays* (ICEA P-54-440, NEMA WC 51-2019) was developed by the Insulated Cable Engineers Association, Inc. (ICEA) and approved by the National Electrical Manufacturers Association (NEMA). It supersedes WC 51-2014.

ICEA/NEMA Standards are adopted in the public interest and are designed to eliminate misunderstanding between the manufacturer and the user and to assist the user in selecting and obtaining the proper product for their particular need. Existence of an ICEA/NEMA Standard does not, in any respect, preclude the manufacture or use of products not conforming to the Standard. The user of this Standard is cautioned to observe any health or safety regulations and rules relative to the manufacture and use of cable made in conformity with this Standard.

Requests for interpretation of this Standard must be submitted in writing to:

Insulated Cable Engineers Association, Inc.,
www.icea.net

An official written interpretation will be provided. ICEA will welcome any suggestions on ways to improve this Standard.
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**Scope**

This Standards Publication covers the ampacity ratings for 600-15,000 volt solid dielectric cables installed in cable trays. Ampacity ratings are tabulated for single conductor cables, triplexed assemblies of single conductor cables, and three-conductor cables incorporating an overall jacket.

Ampacities have been tabulated for the cable constructions and the operating conditions normally encountered for tray applications. Correction factors to adjust the tabulated values to better reflect specific conditions are provided. These include adjustments to account for ambient and operating temperatures, cable construction, tray covers, and diversification of the cable loading.

This Standard is intended primarily for use by the utility industry. It is not intended for use where compliance with the National Electrical Code® or other regulations is mandatory.

**History**

Ampacity tables for cables in trays were published in the Insulated Power Cable Engineers Association Publication No. P-33-440, April 2, 1959 (IPCEA is currently known as ICEA). It assumed a load diversity but did not specifically define the diversity. The demands of modern generating plants required a more precise definition of operating conditions for the determination of cable ampacities.

Experimental work with various cables and the loading of trays by J. Stolpe, Underwriters Laboratories Inc., Lee, and ICEA Publication P-46-426, IEEE S-135 Power Cable Ampacities, 1962 Edition provided a more accurate means of calculating ampacities of cables in trays. A joint committee of IPCEA and IEEE Insulated Conductors Committee utilized this work in preparing the ampacity tables. They were published in the IPCEA/NEMA Standards Publication for Ampacities of Cables in Open-top Cable Trays, IPCEA Publication No. P-54-440, NEMA Standards Publication No. WC 51-1972. They superseded the factors in Table B for cables without maintained spacing in the IPCEA "Factors for Calculating Ampacities of Cables Installed in Ladder Supports, Trays, and Troughs," P-33-440, April 2, 1959. Table A of that publication covering factors for cables with maintained spacing was not affected.

The 1975 edition of the IPCEA/NEMA Standards Publication was expanded to cover 15 kV cables and includes a great many editorial corrections that clarify the 1972 document. The document was revised in April 1976 and again in August 1979. NEMA reaffirmed the document on November 20, 1980. In October 1984, a correction was made in the earlier Appendix D and was included in that edition.

The Members of IEEE-IPCEA Joint Committee at the time of the initial writing were: R. C. Waldron, Chairman, D. A. Costello, E. Finch, E. L. Kolmorgen, M. J. Koulopoulos, R. H. Lee, R. A. Peterson, D. A. Silver, and J. Stolpe.

The extended information contained in this revision was made possible through recent theoretical and experimental work by W. Z. Black and B. L. Harche. This edition has been expanded to include tray fill depths up to four inches and adjustment factors to account for tray covers and load diversity. In addition, the tables have been revised to reflect current cable design practices and conductor sizes through 2000 kcmil inclusive.

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