



ANSI C80.3-2020

**Approved as an American National Standard
ANSI Approval Date: December 29, 2020**

*American National Standard for
Electrical Metallic Tubing—Steel (EMT-S)*

Secretariat:

National Electrical Manufacturers Association

Approved: December 29, 2020

American National Standards Institute, Inc.

NOTICE AND DISCLAIMER

The information in this publication was considered technically sound by the consensus of persons engaged in the development and approval of the document at the time it was developed. Consensus does not necessarily mean that there is unanimous agreement among every person participating in the development of this document.

American National Standards Institute, Inc., (ANSI) standards and guideline publications, of which the document contained herein is one, are developed through a voluntary consensus Standards development process. This process brings together volunteers and/or seeks out the views of persons who have an interest in the topic covered by this publication. While NEMA administers the process to promote fairness in the development of consensus, it does not write the document and it does not independently test, evaluate, or verify the accuracy or completeness of any information or the soundness of any judgments contained in its Standards and guideline publications.

NEMA disclaims liability for any personal injury, property, or other damages of any nature whatsoever, whether special, indirect, consequential, or compensatory, directly or indirectly resulting from the publication, use of, application, or reliance on this document. NEMA disclaims and makes no guaranty or warranty, expressed or implied, as to the accuracy or completeness of any information published herein, and disclaims and makes no warranty that the information in this document will fulfill any of your particular purposes or needs. NEMA does not undertake to guarantee the performance of any individual manufacturer or seller's products or services by virtue of this Standard or guide.

In publishing and making this document available, NEMA is not undertaking to render professional or other services for or on behalf of any person or entity, nor is NEMA undertaking to perform any duty owed by any person or entity to someone else. Anyone using this document should rely on his or her own independent judgment or, as appropriate, seek the advice of a competent professional in determining the exercise of reasonable care in any given circumstances. Information and other Standards on the topic covered by this publication may be available from other sources, which the user may wish to consult for additional views or information not covered by this publication.

NEMA has no power, nor does it undertake to police or enforce compliance with the contents of this document. NEMA does not certify, test, or inspect products, designs, or installations for safety or health purposes. Any certification or other statement of compliance with any health- or safety-related information in this document shall not be attributable to NEMA and is solely the responsibility of the certifier or maker of the statement.

AMERICAN NATIONAL STANDARD

Approval of an American National Standard requires verification by ANSI that the requirements for due process, consensus, and other criteria for approval have been met by the Standards developer.

Consensus is established when, in the judgment of the ANSI Board of Standards Review, substantial agreement has been reached by directly and materially affected interests. Substantial agreement means much more than a simple majority, but not necessarily unanimity. Consensus requires that all views and objections be considered, and that a concerted effort be made toward their resolution.

The use of American National Standards is completely voluntary; their existence does not in any respect preclude anyone, whether he has approved the Standards or not, from manufacturing, marketing, purchasing, or using products, processes, or procedures not conforming to the Standards.

The American National Standards Institute does not develop Standards and will in no circumstances give an interpretation of any American National Standard. Moreover, no person shall have the right or authority to issue an interpretation of an American National Standard in the name of the American National Standards Institute. Requests for interpretations should be addressed to the secretariat or sponsor whose name appears on the title page of this Standard.

Caution Notice: This American National Standard may be revised or withdrawn at any time. The procedures of the American National Standards Institute require that action be taken periodically to reaffirm, revise, or withdraw this Standard. Purchasers of American National Standards may receive current information on all Standards by calling or writing the American National Standards Institute, 25 West 43rd Street, 4th floor, New York, NY 10036, Tel: 212.642.4900.

Published by

**National Electrical Manufacturers Association
1300 North 17th Street, Rosslyn, VA 22209**

www.nema.org

© 2021 National Electrical Manufacturers Association. All rights reserved including translation into other languages, reserved under the Universal Copyright Convention, the Berne Convention for the Protection of Literary and Artistic Works, and the International and Pan American Copyright Conventions.

No part of this publication may be reproduced in any form, in an electronic retrieval system or otherwise, without the prior written permission of the publisher.

Printed in the United States of America

Foreword (This foreword is not part of American National Standard C80.3-2021)

This Standard was developed by the Accredited Standards Committee on Raceways for Electrical Wiring Systems, C80. The objective of the committee is to produce a comprehensive specification that will establish uniform dimensions and Standard construction requirements for Electrical Rigid Steel Conduit, Steel Electrical Metallic Tubing, Electrical Intermediate Metal Conduit, and Electrical Aluminum Rigid Conduit raceway products and their associated components.

This Standard was originally approved in 1950 and revised in 1953, 1959, 1963, 1966, 1977, 1983, 1990, 1994, 2004, 2005, and 2015.

Suggestions for improvement of this Standard are welcome. They should be sent to:

NEMA Technical Operations Department
National Electrical Manufacturers Association
1300 North 17th Street, Suite 900
Rosslyn, VA 22209

This Standard was processed and approved for submittal to ANSI by the Accredited Standards Committee (ASC C80), Raceways for Electrical Wiring Systems. Committee approval of the Standard does not necessarily imply that all committee Members voted for its approval. At the time it approved this Standard, the C80 Committee had the following Members:

J. Burris, Chairman

K. Shen, Secretary

Organization Represented:

ABB Inc.
Atkore International
Atkore International
Emerson Automation Solutions
IBEW
International Association of Electrical Inspectors
National Electrical Contractors Association
Nucor
SAPA Extrusions North America
STI
UL LLC
Western Tube (Division of Zekelman Industries)
Wheatland Tube Company

Name of Representative:

D. Kendall
R. Horner
E. Iverson
S. Blais
P. Hickman
D. Humphrey
M. Johnston
J. Broussard
H. Harper
J. Andre
D. Gerstetter
A. Nunez
J. Burris

The following Members of the NEMA Steel Conduit & Electrical Metallic Tubing - Codes/Communications/Technical Committee worked on this Standard prior to its publication:

J. Burris, Co-Chair

R. Horner, Co-Chair

K. Shen, Secretary

Organization Represented:

ABB Inc.
Atkore International
Atkore International
Atkore International
Consultant (STI)
Nucor
Nucor

Name of Representative:

D. Kendall
B. Deacy
R. Horner
E. Iverson
P. Dobrowsky
J. Broussard
N. Fraser

Nucor
Nucor
Robroy Industries, Inc.
Steel Tube Institute of North America
STI
Western Tube (Division of Zekelman Industries)
Wheatland Tube Company
Wheatland Tube Company

G. Fuentes
C. Wood
S. Voelzke
B. Sullivan
J. Andre
A. Nunez
J. Burris
G. Maurer

< This page is left blank intentionally. >

CONTENTS

1	Scope	1
2	Normative References	1
3	Definitions	1
4	Units of Measurement	2
5	General Requirements	2
5.1	Circular cross section	2
5.2	Wall thickness	2
5.3	Interior surface	2
5.4	Welding	2
5.5	Cleaning	2
5.6	Protective coating for corrosion resistance	2
5.7	Surface treatment	2
6	Detailed Requirements	2
6.1	Exterior coating	2
6.1.1	Zinc coating	3
6.1.2	Alternate corrosion resistant coating (ACRC)	3
6.2	Interior coating	3
6.3	Chamfering	3
6.4	Identification	3
6.5	Dimensions	3
6.6	Elbows	3
7	Test Procedures	3
7.1	Bending properties	3
7.1.1	Ductility of steel	3
7.1.2	Ductility of coatings at ambient temperature	3
7.2	Thickness of zinc coating	4
7.3	Alternate corrosion resistant coatings (ACRC)	4
7.4	Performance requirement of organic coating for use on interior surface	4
8	Examination of Product	4
8.1	Place of inspection	4
8.2	Visual inspection of tubing	4
8.3	Visual inspection of elbows	4
8.4	Retest	4
9	Markings	4
9.1	General	4
9.2	Nonmetallic alternate corrosion resistant coating temperature marking	5
9.3	Supplementary coating marking	5

TABLES

Table 1 Dimensions and weights for EMT-S.....	6
Table 2 Minimum dimensions for 90-degree elbows	7

1 Scope

This Standard covers the requirements for steel electrical metallic tubing for use as a raceway for wires or cables of an electrical system. Finished tubing is typically furnished in Standard 10-ft (3.05-m) lengths. The production of lengths shorter or longer than the Standard length shall be allowed. EMT is protected on the exterior surface with a metallic zinc coating or alternate corrosion protection coating (see UL 797 for alternate corrosion protection coating requirements) and on the interior surface with zinc or organic coating.

This Standard also covers electrical metallic tubing elbows.

Properly assembled systems of EMT-S, manufactured in accordance with this Standard, and other identified fitting provide for the electrical continuity required of an equipment grounding conductor.