

**NEMA Standards Publication WC 52-2005**

*High-Temperature and Electronic Insulated Wire,  
Impulse Dielectric Testing*

*Published by:*

**National Electrical Manufacturers Association**

1300 North 17th Street, Suite 1752  
Rosslyn, Virginia 22209

[www.nema.org](http://www.nema.org)

© Copyright 2005 by the National Electrical Manufacturers Association. All rights 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.

## 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.

The National Electrical Manufacturers Association (NEMA) 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 and establishes rules 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, express 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.

## CONTENTS

|  | Page |
|--|------|
| Foreword .....   | ii   |
| Adoption Notice .....  | iii  |
| Scope.....   | iv   |
| Section 1 TEST EQUIPMENT .....                                     | 1    |
| 1.1 Electrode.....   | 1    |
| 1.2 Wave Form .....  | 1    |
| 1.3 Voltmeter .....  | 1    |
| 1.4 Capacitive Regulation.....                                     | 1    |
| 1.5 Failure Detection Circuit .....                                | 1    |
| Section 2 TEST PROCEDURE .....                                     | 2    |
| 2.1 Set-up .....   | 2    |
| 2.2 Fault Identification .....                                     | 2    |
| 2.3 Calibration .....  | 2    |
| 2.4 Operation of Test Voltage Generator (Quick Check Method) ..... | 2    |

## Foreword

In the preparation of this Standards Publication input of users and other interested parties has been sought and evaluated. Inquiries, comments, and proposed or recommended revisions should be submitted to the concerned NEMA product Subdivision by contacting the:

Vice President, Technical Services  
National Electrical Manufacturers Association  
1300 North 17th Street, Suite 1752  
Rosslyn, Virginia 22209

At the time of the reaffirmation of this standard in 2005, the members of the NEMA High Performance Wire and Cable Section were:

|  |                      |
|--|----------------------|
| AFC Cable Systems                        | New Bedford, MA      |
| AmerCable                                | El Dorado, AR        |
| American Insulated Wire Corporation      | Pawtucket, RI        |
| Belden CDT, Inc.                         | Richmond, IN         |
| Berk-Tek a Nexans Company                | Elm City, NC         |
| Cable USA, Inc.                          | Naples, FL           |
| Coleman Cable Inc.                       | Waukegan, IL         |
| Draka Comteq USA Inc.                    | Franklin, MA         |
| Fisk Alloy Conductors, Inc.              | Hawthorne, NJ        |
| General Cable                            | Highland Heights, KY |
| Harbour Industries, Inc.                 | Shelburne, VT        |
| Judd Wire, Inc.                          | Turners Falls, MA    |
| Kaneka High-Tech Materials, Inc.         | Pasadena, TX         |
| Leoni Wire, Inc.                         | Chicopee, MA         |
| Leviton Manufacturing Co., Inc.          | Gardena, CA          |
| Phelps Dodge High Performance Conductors | Inman, SC            |
| Quirk Wire Company, Inc.                 | West Brookfield, MA  |
| Radix Wire Company                       | Euclid, OH           |
| Rea Magnet Wire Company, Inc.            | Fort Wayne, IN       |
| Rockbestos-Surprenant Cable Corporation  | East Granby, CT      |
| Southwire Company                        | Carrollton, GA       |
| Specialty Cable Corporation              | Wallingford, CT      |
| The Okonite Company                      | Ramsey, NJ           |
| Tyco Electronics/Raychem Wire & Cable    | Menlo Park, CA       |

## ADOPTION NOTICE

National Electrical Manufacturers Association (NEMA) Standard NEMA WC 52, *High Temperature and Electronic Insulated Wire, Impulse Dielectric Testing*, was adopted on 11 August 2000 for use by the Department of Defense (DoD). Proposed changes by DoD activities must be submitted to the DoD Adopting Activity: Defense Logistics Agency, Defense Supply Center, Columbus, ATTN: DSCC-VAI, P.O. Box 3990, Columbus, OH 43216-5000. DoD activities may obtain copies of this standard from the Document Automation and Production Service, Building 4/D, 700 Robbins Avenue, Philadelphia, PA 19111-5094. The private sector and other Government agencies may purchase the document from the National Electrical Manufacturers Association, 1300 North 17th Street, Rosslyn, VA 22209.

### CONCLUDING MATERIAL

Custodians:

Navy - SH  
Air Force - II  
DLA - CC

Adopting Activity:

DLA - CC

(Project 6145-2258)

Review activity:

Navy - AS

AMSC N/A

1 of 1

FSC 6145

DISTRIBUTION STATEMENT A. Approved for public release; distribution is unlimited.

## **Scope**

This procedure is intended for the dielectric testing of insulation of unshielded single conductor wires.  
This procedure is not intended for use with multi-conductor cable.