



International Association for Radio, Telecommunications and Electromagnetics, Inc.
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Product Safety Certification Application Package

---FORMS MAY BE PHOTOCOPIED---

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**Application
Forms**

About iNARTE Product Safety Certification

NARTE was established by industry leaders in 1982 in response to the FCC's deregulation and encouragement of industry certified personnel. As an objective third party certification body, NARTE developed an evaluation process based not only on examination, but real world skills and work experience.

Traditionally, the electrical safety of a product or system has only been fully understood and implemented by a small number of specialists. The rapid advancement of electronic technology, the increased use of software operating systems and the wide application of Legislative Requirements in the United States of America, the European Union (European Economic Community) and Internationally, has resulted in a shortage of specialists in electrical safety. To avoid a dilution of capabilities in the face of expanding expectations or a critical shortage of electrical safety engineers and technicians it is desirable to establish a career path for professional development.

Early in 1987, it was determined that a credential certification process for EMC Engineers and Technicians was needed to help improve the quality of direct technical support to the Naval Air Systems Command (NAVAIR) and eventually to the US Navy. The same criteria apply to Product Safety. In addition to improving the technical quality of support, it was determined that certification of personnel to a recognized standard would also provide a basis for differentiating offers from contractors not having experienced, qualified personnel on staff. Additionally, certification provides a demonstrable benchmark to which government activities can train or replace professional technical staff.

The purpose of the Product Safety Certification Program is to foster technical "excellence" in Product Safety engineering. This approach establishes technical competency criteria for Product Safety and enforces these criteria for personnel designing, manufacturing and assessing product electrical safety. The program benefits the engineering community as a whole by establishing a standard of excellence in Product Safety engineering that will endure and extend across the boundaries of private and government agencies.

Submission of the application form implies agreement to adhere to the **iNARTE Code of Ethics**, available from iNARTE HQ or online at <http://www.narte.org/h/codeofethics.asp>



PS ENGINEER Certification Criteria

1. Complete the PS Application Form (Page 5) and submit a \$90 **non-refundable** application fee. Submission of the application form implies agreement to adhere to the iNARTE Code of Ethics. Available at: <http://www.narte.org/h/codeofethics.asp>
2. Provide specific record of nine (9) years or more of experience in engineering work. Provide an up-to-date resume or complete the PS Detailed Work History Form (Pages 6-7).
 - a) Graduation from a iNARTE-approved engineering curriculum of four years shall be considered equivalent to four years of such required experience.
 - b) The satisfactory completion of each year of such an approved engineering curriculum shall be considered equivalent to a year of such required experience.
 - c) Graduation in a physical science curriculum other than engineering will be evaluated by iNARTE.
 - d) Graduation from a college with Bachelors in Engineering Technology (BSET) shall be considered as equivalent to two years of such required experience.
 - e) Graduation in a curriculum other than engineering or physical science will be evaluated by iNARTE.
 - f) Postgraduate study in engineering may be given credit up to one year.
 - g) Teaching: Engineering teaching of a character satisfactory to iNARTE shall be considered as experience not in excess of two years.
No more than 5 years experience credit will be allowed for education and/or teaching as outlined above. The mere execution or the supervision of construction of such work as a foreman, first line supervisor or superintendent shall not be deemed to be the practice of engineering.
3. Provide evidence of education and training. Official school transcripts are required. Photocopies of applicable training certificates may be submitted.
4. References: Using the iNARTE reference form (Pages 8-9), submit a minimum of 1 supervisory reference and 2 additional references each supporting character and competency as a PS Engineer. Reference forms must be signed and forwarded directly to iNARTE by the reference.
5. Compose 10 multiple choice questions with correct answers and supporting references (see Page 10).
6. Pass the iNARTE PS Engineer examination.

PS TECHNICIAN Certification Criteria

1. Complete the PS Application Form (Page 5) and submit a \$80 **non-refundable** application fee. Submission of the application form implies agreement to adhere to the iNARTE Code of Ethics. Available at: <http://www.narte.org/h/codeofethics.asp>.
2. Provide specific record of six (6) years or more of experience in PS technician work. Provide an up-to-date resume or complete the PS Detailed Work History Form (Pages 6-7).
 - a) The satisfactory completion of each year of such an approved technician curriculum is considered equivalent to one year experience.
 - b) Graduation from other technician training programs will be evaluated by iNARTE.
 - c) Teaching: Engineering teaching of a character satisfactory to iNARTE may be considered as a maximum of two years experience.
No more than 5 years experience credit will be allowed for education and/or teaching as outlined above. The mere execution or the supervision of construction of such work as a foreman, first line supervisor or superintendent shall not be deemed to be the practice of engineering.
3. Provide evidence of education and training. Official school transcripts are required. Photocopies of applicable training certificates may be submitted.
4. References: Using the iNARTE reference forms (Pages 8-9), submit a minimum of 1 supervisory reference and 2 additional references each supporting character and competency as a PS Technician. Reference forms must be signed and forwarded directly to iNARTE by the reference.
5. Compose 10 multiple choice questions with correct answers and supporting references (see Page 10).
6. Pass the iNARTE PS Technician examination.

Preparing for the iNARTE Product Safety Examination

Coordination & Procedures

Where?

iNARTE has testing centers at over 180 locations in the US and at military education offices worldwide. iNARTE also administers the certification exam at the IEEE EMC Society Symposium annually. If no testing location is near you, iNARTE will coordinate an examination session at your workplace. Contact iNARTE at 1-800-89-iNARTE for locations or see the test center listing online at <http://www.narte.org/h/testcenters.asp>

When?

Most test locations will coordinate an appointment quarterly. Indicate your preferred testing month on your application form. Once your Certification application fee is received, iNARTE will effect the necessary coordination and arrangements for a testing date, time, location and point of contact.

How?

The examination for PS engineers or PS technicians is approximately one day duration in two sessions. All examinations are given with open book (see exam strategy below). Examinations are graded at iNARTE Headquarters and the applicant will be advised of a pass/fail within 15 working days. Passing score is 70%. Should a candidate fail the examination, a retake is permissible following a 90 day period. Examinations may be retaken any number of times, however, an examination processing fee of \$40 is required each time the exam is taken.

Basic Exam Strategy

The iNARTE Product Safety examination is open book. The Product Safety Exam consists of two sections of 48 questions. You must answer 40 of the 48 questions on each part of the exam. Review all questions, then answer those you are most sure of first.

You will be graded on the first 40 questions you answer. *For example: if you answer Questions numbered 1 through 43, you will be graded on questions 1 through 40.*

Examination Subjects & Reference Titles

| Product Safety Examination Subjects |
|---|
| Connection to supply |
| Isolation of supply |
| Mechanical hazards |
| Earthing |
| Types of Insulation |
| Protection against electrical shock |
| Resistance to fire |
| Fire hazards |
| Limits on fuel |
| Limits on heat |
| Insulation damage |
| Creepage and clearance |
| Inter system and intra system design |
| Equipment design |
| Hazard analysis |
| Risk assessment |
| Design review |
| Legislation US,EEC and International |
| Military and Civil Electrical Safety Standards |
| Safety tests |
| Assessment authorities |
| Competent Bodies |
| Safety certification |
| Declarations of Conformity |
| Operating and maintenance instructions and handbooks. |

Reference Titles

Product Safety Management and Engineering, Willie Hammer, 1993, ISBN: 0939874903

Product Safety Engineering for Managers: A Practical Handbook and Guide, R. Matthiew Seiden, 1984, ISBN: 013724097X

Product Safety Evaluation Handbook, Shayne Cox Gad, 1988, ISBN: 0824778294

Product Safety Handbook: The Manufacturer's Guide to Legal Requirements and Management Strategies, Stanley R. Kalin, JD, PE, and Susan A. Longacre, 2000, ISBN: 0865876835

Practical Guide to the Low Voltage Directive, Gregg Kervill, 1998, ISBN: 0750637455

Application Instructions

1. **APPLICATION (Page 5):** Complete the application form and submit to iNARTE with the \$90 **non-refundable** application fee for Engineer or \$80 **non-refundable** application fee for Technician. When application and fees are received, iNARTE will begin to compile the application file and schedule testing.

Upon signing the application form, you agree to abide by the iNARTE Code of Ethics as printed in the iNARTE Membership Handbook and online at <http://www.narte.org/h/codeofethics.asp>

2. **TESTING:** iNARTE will coordinate the necessary arrangements for a testing date and time at the location chosen by applicant. Accredited Testing Center listings are available from iNARTE HQ or online at <http://www.narte.org/h/testcenters.asp>. Examinations are graded at iNARTE Headquarters and the applicant will be advised of a pass/fail within 15 working days by mail or they may call Headquarters for their results. Passing score is 70%. Should a candidate fail the examination, a retake is permissible following a **90 day** period. Examinations may be retaken any number of times, however, an examination processing fee of \$40 is required each time the exam is taken

3. **DETAILED WORK HISTORY (Pages 6-7):** Provide detailed evidence of experience in the appropriate field using a current resume, or the iNARTE Detailed Work History Form. Some credit for college education/degrees may be awarded based on review of official transcripts.

4. **REFERENCES (Reference Form Pages 8-9):** Initiate action with those individuals who will serve as references. Using the reference form provided (**Pages 8-9**), these individuals must attest to the applicant's competency at the certification level requested and also serve as character references. One Reference must be from a supervisor. Reference forms should be sent directly to iNARTE.

5. **EVIDENCE OF EDUCATION & TRAINING:** Evidence of completing courses of study or training programs in related areas as offered by educational institutions and/or through internal corporate training programs are given consideration as part of certification. Official school transcripts may be required for experience credit. Photocopies of applicable training certificates may be submitted.

7. **QUESTIONS (Page 10):** Submit ten (10) original multiple choice questions with correct answers and supporting references. Questions which relate to real world workplace engineering or technical/testing situations are preferred. Questions must conform to the format outlined on the iNARTE question form (**Page 10**).

Application Checklist

- Application
- \$90 PS Engineer(non-refundable)
- \$80 PS Technician(non-refundable)
- Detailed Work History
- 1 Supervisor reference
- 2 Peer references
- 10 questions
- Transcripts/certificates
- Examination

Notes about the Application Process

- Once any component of your application package is received, iNARTE will begin to compile your file.
- You will receive updates on the progress of your application by mail every 6 weeks, or you may contact us to check on the status of your file by calling **1-800-89-NARTE**.
- Once the application form and fees are received, iNARTE will initiate examination scheduling.
- Reference forms should be sent *directly* to iNARTE from the reference provider by mail or **fax at 1-508-533-3815**.

All application materials should be sent to **iNARTE, 840 Queen St., New Bern, NC 28560**

Forms may be faxed to 252-672-0111

Contact iNARTE with any questions at 1-800-89-NARTE



**APPLICATION for PRODUCT SAFETY (PS) CERTIFICATION by
INTERNATIONAL ASSOCIATION FOR RADIO,
TELECOMMUNICATIONS & ELECTROMAGNETICS, INC.
840 Queen St., New Bern, NC 28560 1-800-89-NARTE or (252) 672-0200**

| FOR OFFICE USE ONLY | |
|-----------------------------|--------------|
| Certification Number: _____ | Date: _____ |
| Test Type: _____ | Score: _____ |

Name _____
(First) (Middle Initial) (Last)

Name _____
(As to be shown on Certificate)

Address _____

City _____ State _____ Zip _____ Email Address _____

Phone:(Work) _____ (Home) _____

Date of Birth _____ Sex M F Citizen of _____

Requested Test Center: _____
See listing at <http://www.narte.org/h/testcenters.asp>

Requested Dates: _____

I hereby make application for iNARTE certification as a \$90 PS Engineer, or \$80 PS Technician.

I hereby authorize iNARTE, in accordance with iNARTE's privacy policy www.narte.org/h/privacy.htm to publish my name, city, state, country and any certification it may issue to me in all of its directories or registries. In addition, iNARTE is authorized to confirm my certification to inquiries on my behalf. I have read and agree to abide by the iNARTE Code of Ethics as published at www.narte.org/h/codeofethics.asp.

Signature of Applicant

Date

Payment

Check enclosed for \$ _____

Charge: _____
MC VISA AMEX CVV # Exp. Date

Applicant's Signature

References

Name _____ Telephone _____

1. _____
2. _____
3. _____



Additional Contributions: Include title and dates of any published papers; recognized contributions to the Scientific or engineering profession; contributions to technical or engineering courses in a "school of recognized standing".

TECHNICAL/PROFESSIONAL AWARDS

TECHNICAL/PROFESSIONAL LICENSES

PROFESSIONAL SOCIETY AFFILIATIONS & GRADES OF MEMBERSHIP

Signature

Date





Applicant's Name _____

Address: _____

Date: _____

Dear _____ (Name of Reference)

I have applied for certification in the field of Product Safety (PS), and request that you serve as one of the references on my application. If you are willing to do so, please provide the information requested on this form and return the form to iNARTE at 840 Queen St., New Bern, NC 28560. The certification requirements for PS Engineer and PS Technician are quoted below and I have enclosed a copy of my work experience.

Thank you for your help. Please send the completed forms to iNARTE at your earliest convenience. iNARTE will not process my application until all references submit their forms.

THIS FORM MAY BE DUPLICATED

Signature of Applicant

Date of Application to iNARTE

REQUIREMENTS FOR CERTIFICATION AS A PRODUCT SAFETY ENGINEER

- 9 years of engineering experience*, or equivalent based on a combination of education and Product Safety work experience, which demonstrated competence in Product Safety engineering.
- Satisfactory performance on a written exam in PS engineering fundamentals as administered by iNARTE.

Equivalencies granted for study at schools approved by iNARTE are based on the schedule below. Engineering teaching experience may qualify the applicant for up to two years of experience equivalency.

| Education | Curriculum | Equivalency |
|--|---------------------------------|--|
| 1-4 years undergraduate study without degree | Engineering | 1 year of each year of study; maximum of 4 years |
| BS | Engineering of physical science | 4 years |
| BSET | Engineering technology | 2 years |
| BS/BA | Other than above | 2 years |
| Postgraduate study | Engineering or physical science | Up to one year |

REQUIREMENTS FOR CERTIFICATION AS A PRODUCT SAFETY TECHNICIAN

- 6 years of technician experience*, or equivalent based on a combination of education and PS work experience, which demonstrated competence as a PS technician.
- Satisfactory performance on a written exam in PS technology as administered by iNARTE.

Two years of experience may be granted for graduation from a iNARTE-approved school in a curriculum that includes an electronics technology or applied electronics course. The teaching of electronics or engineering technology may qualify the applicant for up to two years of experience equivalency.

***Experience records will be reviewed by iNARTE. The mere execution of work designed by a PS Engineer or the supervision of such work is not considered to be the practice of engineering.**



iNARTE PS CERTIFICATION REFERENCE FORM Page 2– This Form May Be Duplicated

Name of Applicant _____

Do you know the applicant well? _____ Casually? _____ How Long? _____

What is your professional relationship to the applicant? _____



Has the applicant been engaged as a PS Engineer _____ or PS Technician _____ for one year prior to "Date of Application"? (Candidate is eligible for certification even if they are not currently practicing their craft.)

Check the areas for which this applicant qualifies:

_____ PS Engineer _____ PS Technician _____ Both

Please evaluate the applicant in the space below:

| ENG | TECH | |
|------------|-------------|---|
| _____ | _____ | Exceptionally well qualified |
| _____ | _____ | Well qualified |
| _____ | _____ | Marginally qualified |
| _____ | _____ | Unqualified (explain below) |
| _____ | _____ | Number of year's experience (Based on your personal knowledge) |

Engineer or Technician? In a nutshell:
Engineers know the math and the physics of PS. Technicians know the instruments and test setups. Engineers need good writing and verbal skills. Technicians need to know the pitfalls of real measurements. Applicants do not have to be competent across the whole spectrum of Product Safety, but do have to be competent in the fundamentals as well as the specifications which apply to their particular specialty.

Additional comments:

Your name (print)

Your business or affiliation

Your street address

Signature

Date





INTERNATIONAL ASSOCIATION FOR RADIO, TELECOMMUNICATIONS & ELECTRONICS, INC.

840 Queen St., New Bern, NC 28560 • Phone (252) 672-0200 • Fax (252) 672-0111 • email: narte@narte.org

PS CERTIFICATION QUESTION SUBMISSION FORM

The following format must be used. This form may be copied and used for each question.

SAMPLE QUESTION

A type 'B' connector must be used when Earth Leakage Current exceeds:

- a) 0.5 mA b) 0.8 mA c) 1.5 mA d) 3.5 mA

Answer: D Time: 5 Minutes Reference: IEC 950 Category: B Isolation of Supply For: E & T

1. Question: (Try to avoid any possible misinterpretations of the question. If question is negative, i.e., "Which item does **NOT** include the following?", the **NOT** should be bolded and capitalized.)

2. Answers: (Only 4 answers) {Include all calculations if the answer is calculated}

- A.
- B.
- C.
- D.

3. Correct Answer: _____

4. Applicability Engineer Technician Both

5. Time required to answer question: _____ Minutes

6. Reference(s) _____

7. Category (From list below) _____

****Please visit:** <http://www.narte.org/n/203/NARTENewsV20N3p16-18.pdf> for Question Strategy article.**

CATEGORIES OF PRODUCT SAFETY QUESTIONS

- A. Connection to supply
- B. Isolation of supply
- C. Mechanical hazards
- D. Earthing
- E. Types of Insulation
- F. Protection against electrical shock
- G. Resistance to fire
- H. Fire hazards
- I. Limits on fuel
- J. Limits on heat
- K. Insulation damage
- L. Creepage and clearance
- M. Inter system and intra system design
- N. Equipment design
- O. Hazard analysis
- P. Risk assessment
- Q. Design review
- R. Legislation US,EEC and International
- S. Military and Civil Electrical Safety Standards
- T. Safety tests
- U. Assessment authorities
- V. Competent Bodies
- W. Safety certification
- X. Declarations of Conformity
- Y. Operating and maintenance instructions and handbooks.

