



Designation: E 165 – 02

Standard Test Method for Liquid Penetrant Examination¹

This standard is issued under the fixed designation E 165; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last approval. A superscript symbol (e.g., 2) indicates an editorial change since the last revision or approval.

1. Scope

1.1 This test method² covers procedures for penetrant examination of materials. They are nondestructive testing methods for detecting discontinuities that are open to the surface such as cracks, seams, laps, cold shuts, laminations, through leaks, or lack of fusion and are applicable to in-process, final, and maintenance examination. They can be effectively used in the examination of nonporous, metallic materials, both ferrous and nonferrous, and of nonmetallic materials such as glazed or fully densified ceramics, certain nonporous plastics, and glass.

1.2 This test method also provides a reference:

1.2.1 By which a liquid penetrant examination process recommended or required by individual organizations can be reviewed to ascertain its applicability and completeness.

1.2.2 For use in the preparation of process specifications dealing with the liquid penetrant examination of materials and parts. Agreement by the user and the supplier regarding specific techniques is strongly recommended.

1.2.3 For use in the organization of the facilities and personnel concerned with the liquid penetrant examination.

1.3 This test method does not indicate or suggest criteria for evaluation of the indications obtained. It should be pointed out, however, that after indications have been produced, they must be interpreted or classified and then evaluated. For this purpose there must be a separate code or specification or a specific agreement to define the type, size, location, and direction of indications considered acceptable, and those considered unacceptable.

1.4 The values stated in inch-pound units are to be regarded as the standard. SI units are provided for information only.

1.5 *This standard does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of the user of this standard to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.*

¹ This test method is under the jurisdiction of ASTM Committee E07 on Nondestructive Testing and is the direct responsibility of Subcommittee E07.02 on Liquid Penetrant and Magnetic Particle Methods.

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² For USNRC, Boiler and Pressure Vessel Code applications see related Recommended Test Method SE-665 in the Code.

2. Referenced Documents

2.1 *ASTM Standards:*

D 129 Test Method for Sulfur in Petroleum Products (General Bomb Method)³

D 516 Test Method for Sulfate Ion in Water⁴

D 808 Test Method for Chlorine in New and Used Petroleum Products (Bomb Method)⁵

D 1193 Specification for Reagent Water⁶

D 1552 Test Method for Sulfur in Petroleum Products (High-Temperature Method)⁷

D 4327 Test Method for Anions in Water by Chemically Suppressed Ion Chromatography⁸

E 473 Reference Photographs for Liquid Penetrant Inspection⁹

E 543 Practice for Evaluating Agencies that Perform Nondestructive Testing¹⁰

E 1208 Test Method for Fluorescent Liquid Penetrant Examination Using the Lipophilic Post-Emulsification Process¹¹

E 1209 Test Method for Fluorescent Liquid Penetrant Examination Using the Water-Washable Process¹²

E 1210 Test Method for Fluorescent Liquid Penetrant Examination Using the Hydrophilic Post-Emulsification Process¹³

E 1219 Test Method for Fluorescent Liquid Penetrant Examination Using the Solvent-Removable Process¹⁴

E 1220 Test Method for Visible Penetrant Examination Using the Solvent-Removable Process¹⁵

E 1316 Terminology for Nondestructive Examinations¹⁶

E 1418 Test Method for Visible Penetrant Examination Using the Water-Washable Process¹⁷

2.2 *ANSI Documents:*¹⁸

Recommended Practice SNT-TC-1A for Nondestructive Testing Personnel Qualification and Certification
ANSI/ASNT CP-189 Standard for Qualification and Certification of Nondestructive Testing Personnel

³ Annual Book of ASTM Standards, Vol 05.09.

⁴ Annual Book of ASTM Standards, Vol 11.01.

⁵ Annual Book of ASTM Standards, Vol 02.02.

⁶ Available from the American Society for Nondestructive Testing, 1711 Arden Lane, Columbus, OH 43228-0248.

Astm E165

Patrick Vollmar



Astm E165:

Handbook of Engineering Practice of Materials and Corrosion Jung-Chul (Thomas) Eun,2020-09-04 This handbook is an in depth guide to the practical aspects of materials and corrosion engineering in the energy and chemical industries The book covers materials corrosion welding heat treatment coating test and inspection and mechanical design and integrity A central focus is placed on industrial requirements including codes standards regulations and specifications that practicing material and corrosion engineers and technicians face in all roles and in all areas of responsibility The comprehensive resource provides expert guidance on general corrosion mechanisms and recommends materials for the control and prevention of corrosion damage and offers readers industry tested best practices rationales and case studies **Steel Castings Handbook, 6th Edition** Malcolm Blair,Thomas L. Stevens,1995-01-01 **Department Of Defense Index of Specifications and Standards Numerical Canceled Listing (APPENDIX) Part IV September 2005 , NIST Special Publication** ,2002 Directory of Accredited Laboratories NVLAP (Program : U.S.),2002 *Specification for Drilling and Production Hoisting Equipment (PSL 1 and PSL 2)* American Petroleum Institute. Production Department,1992 **New York Court of Appeals. Records and Briefs.** New York (State)., Advanced Materials and Manufacturing Processes for Strategic Sectors P. Ramesh Narayanan,S.V.S. Narayana Murty,2015-09-03 Selected peer reviewed papers from the International Conference on Advanced Materials and Manufacturing Processes for Strategic Sectors ICAMPS 2015 May 13 15 2015 Trivandrum India **Specification for Drilling and Production Hoisting Equipment (PSL 1 and PSL 2)** American Petroleum Institute. Exploration and Production Department,1990 **Manufacturing Sciences and Technologies IX** Sujan Debnath,2019-02-15 9th International Conference on Manufacturing Science and Technology ICMST 2018 Selected peer reviewed papers from the 9th International Conference on Manufacturing Science and Technology ICMST 2018 August 11 13 2018 Kuala Lumpur Malaysia **Steel Casting Design Engineering Data File: Specifications. Rev** Steel Founders' Society of America,1964 British Journal of Non-destructive Testing ,1962 The Production Engineer ,1963 *Advances in Powder Metallurgy & Particulate Materials* ,2005 **Advances in Powder Metallurgy & Particulate Materials, 2005: Parts 10-13** ,2005 **Materials Evaluation** ,1998 **Quality Control in Fabrication of Nuclear Pressure Vessels** Robert D. Wylie,Warren J. McGonnagle,1964 Specification for Drilling and Production Hoisting Equipment American Petroleum Institute. Production Department,1992 **API Specification** American Petroleum Institute. Production Dept,1992 **Welding Design & Fabrication** ,1985

Astm E165 Book Review: Unveiling the Power of Words

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