



Standard Terminology Relating to Optical Fiber Sensing Systems¹

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1. Scope

1.1 This terminology standard is a compilation of definitions of technical terms related to optical fiber sensing systems, used in the various sections of standards under the jurisdiction of ASTM Committee F36.

1.2 Where possible definitions are stated as a single sentence, with necessary supplementary information as a Discussion. This approach is used to simplify explanations of the meanings of technical terms for the benefit of those not conversant with them, to facilitate a precise understanding and interpretation of F36 ASTM standards.

1.3 The values stated in SI units are to be regarded as standard. No other units of measurement are included in this standard.

2. Referenced Documents

2.1 ASTM Standards:²

F2233 Guide for Safety, Access Rights, Construction, Liability, and Risk Management for Optical Fiber Networks in Existing Sewers

F2303 Practice for Selection of Gravity Sewers Suitable for Installation of Optical Fiber Cable and Conduits

F2304 Practice for Sealing of Sewers Using Chemical Grouting

F2349 Practice for Operation and Maintenance of Integrated Natural Gas Pipelines and Optical Fiber Systems

F2350 Practice for Selection of Natural Gas Pipelines Suitable for Installation of Optical Fiber Systems

F2414 Practice for Sealing Sewer Manholes Using Chemical Grouting

F2454 Practice for Sealing Lateral Connections and lines from the mainline Sewer Systems by the Lateral Packer Method, Using Chemical Grouting

F2462 Practice for Operation and Maintenance of Sewers

with Optical Fiber Systems

F2550 Practice for Locating Leaks in Sewer Pipes By Measuring the Variation of Electric Current Flow Through the Pipe Wall

F2551 Practice for Installing a Protective Cementitious Liner System in Sanitary Sewer Manholes

3. Significance and Use

3.1 Definitions in this standard are to be regarded as correct for the terms found in other ASTM standards of Committee F36. Certain terms may be found in more than one standard issued under the jurisdiction of this committee and many of these terms have been placed in this standard.

4. Terminology

absorption, *n*—the loss of some or all of the energy contained in an electromagnetic wave to the medium in which it is propagating, usually converted to heat.

acceptance angle, *n*—the maximum angle, measured from the optical fiber centerline to an incident light ray, within which the incident ray will be accepted for transmission by total internal reflection along the fiber.

DISCUSSION—If the incident angle is greater than the acceptance angle, total internal reflection will not occur and the incident ray will be lost by leakage.

access rights, *n*—agreements between various parties to obtain temporary and permanent access to property for the purpose of constructing, maintaining, or changing optical fiber networks. **F2233**

accuracy, *n*—the closeness of the measured value to the true or the ideal value of the parameter being measured and is affected by both bias and precision.

acoustic wave, *n*—longitudinal waves propagated by means of adiabatic compression and decompression.

acousto-optics, *n*—the science and technology of the interactions between sound waves and light waves passing through material media, especially as applied to the modulation and deflection of laser beams by ultrasonic waves.

acrylamide, *n*—organic solid of white, odorless, acrylic resinous material available in flake-like crystals and in liquid form. The greatest use of acrylamide is as a coagulant aid in

¹ This terminology is under the jurisdiction of ASTM Committee F36 on Technology and Underground Utilities and is the direct responsibility of Subcommittee F36.91 on Terminology.

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² For referenced ASTM standards, visit the ASTM website, www.astm.org, or contact ASTM Customer Service at service@astm.org. For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.