



Standard Practice for Describing and Measuring Performance of Dispersive Infrared Spectrometers¹

This standard is issued under the fixed designation E932; 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 reapproval. A superscript epsilon (ϵ) indicates an editorial change since the last revision or reapproval.

1. Scope

1.1 This practice covers the necessary information to qualify dispersive infrared instruments for specific analytical applications, and especially for methods developed by ASTM International.

1.2 This practice is not to be used as a rigorous test of performance of instrumentation.

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

1.4 *This standard does not purport to address all of the safety problems, 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.*

2. Referenced Documents

2.1 *ASTM Standards:*²

E131 Terminology Relating to Molecular Spectroscopy

E168 Practices for General Techniques of Infrared Quantitative Analysis

E387 Test Method for Estimating Stray Radiant Power Ratio of Dispersive Spectrophotometers by the Opaque Filter Method

E1252 Practice for General Techniques for Obtaining Infrared Spectra for Qualitative Analysis

3. Terminology

3.1 *Definitions and Symbols*—For definitions of terms and symbols, refer to Terminology **E131** and *Compilation of ASTM*

¹ This practice is under the jurisdiction of ASTM Committee **E13** on Molecular Spectroscopy and Separation Science and is the direct responsibility of Subcommittee **E13.03** on Infrared and Near Infrared Spectroscopy.

Current edition approved Jan. 1, 2013. Published January 2013. Originally approved in 1989. Last previous edition approved in 2007 as E932 – 89 (2007). DOI: 10.1520/E0932-89R13.

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.

*Standard Definitions.*³

4. Significance and Use

4.1 This practice is intended for all infrared spectroscopists who are using dispersive instruments for qualitative or quantitative areas of analysis.

4.2 The purpose of this practice is to set forth performance guidelines for testing instruments used in developing an analytical method. These guidelines can be used to compare an instrument in a specific application with the instrument(s) used in developing the method.

4.3 An infrared procedure must include a description of the instrumentation and of the performance needed to duplicate the precision and accuracy of the method.

5. Apparatus

5.1 For the purposes of this practice, dispersive instruments include those employing prisms, gratings, or filters to separate infrared radiation into its component wavelengths.

5.2 For each new method, describe the apparatus and instrumentation both physically and mechanically, and also in terms of performance as taught in this practice. That is, the description should give numerical values showing the frequency accuracy and the frequency and the photometric precision. State the spectral slit width maximum or slit width program if one is used. Where possible, state the maximum and minimum resolution if those data are a part of the instrument display. Show typical component spectra as produced by the instrument to establish the needed resolution.

5.3 If a computer program is used, describe the program. Include the programming language and availability, or whether the program is proprietary to a manufacturer.

6. Reference to this Practice in Standards

6.1 Reference to this practice should be included in all ASTM infrared methods. The reference should appear in the section on apparatus where the particular spectrometer is described.

³ Available from ASTM International Headquarters, 100 Barr Harbor Drive, PO Box C700, West Conshohocken, PA 19428.