



Designation: **E2680–09 (Reapproved 2015) E2680 – 09 (Reapproved 2015)<sup>ε1</sup>**

## Standard Test Method for Appearance of Clear, Transparent Liquids (Visual Inspection Procedure)<sup>1</sup>

This standard is issued under the fixed designation E2680; 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 ( $\epsilon$ ) indicates an editorial change since the last revision or reapproval.

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<sup>ε1</sup> NOTE—Editorial change was made in Subsections 1.2, 8.1, and 8.2 in May 2016.

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### 1. Scope

1.1 This test method describes the visual assessment of the appearance of clear, transparent liquids for clarity and the presence of undesirable components (contamination) such as suspended matter, free water (or oil) and particulates when examined by transmitted light. Measurements requiring instrumentation are not included in this method. This test method was originally designed for application to glycols and methanol wall washes of marine vessels but may be applicable to other clear transparent liquids.

1.1.1 This method can be used as a field test at storage temperatures or as a laboratory test at room temperatures.

1.1.2 This method provides a rapid pass/fail test for clarity and contamination of clear, transparent liquids. It is a qualitative assessment only.

1.2 Review the current appropriate Material Safety Data Sheets (MSDS)(SDS) for detailed information concerning toxicity, first aid procedures, and safety precautions.

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 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.* Specific hazards statements are given in the section on Hazards, Section 8.

### 2. Referenced Documents

2.1 *ASTM Standards:*<sup>2</sup>

[D4176 Test Method for Free Water and Particulate Contamination in Distillate Fuels \(Visual Inspection Procedures\)](#)

[E300 Practice for Sampling Industrial Chemicals](#)

<https://standards.iteh.ai/catalog/standards/sis/50afid7a6-1c4f-42a6-b2af-805b53ef9d8d/astm-e2680-092015e1>

### 3. Terminology

3.1 *Definitions of Terms Specific to This Standard:*

3.1.1 *appearance, n*—the visual perception of a clear, transparent liquid.

3.1.2 *clear and bright (also referred to as clean and bright), n*—a condition in which the liquid is free of haze, particulates or suspended matter particles.

3.1.2.1 *bright*—a condition in which the liquid is transparent with no haze or visible free water (or free oil) in organic (or aqueous) liquids.

3.1.2.2 *clear*—a condition in which the liquid contains no visible contaminants (not more than the maximum allowed number of suspended matter particles no greater than 1 mm in diameter or particulates of sufficient size to be easily noted).

3.1.3 *free water (or free oil), n*—water or oil in excess to that soluble in the liquid at ambient temperature which may appear as haze, cloudiness, droplets or a water or oil layer in an organic sample.

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<sup>1</sup> This test method is under the jurisdiction of ASTM Committee E15 on Industrial and Specialty Chemicals and is the direct responsibility of Subcommittee E15.02 on Product Standards.

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<sup>2</sup> For referenced ASTM standards, visit the ASTM website, [www.astm.org](http://www.astm.org), or contact ASTM Customer Service at [service@astm.org](mailto:service@astm.org). For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.

### 3.1.3.1 Discussion—

For aqueous samples, the determination of free oil is equally important and may have an appearance similar to that of free water or oil in organic samples.

3.1.4 *haze or cloudiness, n*—is a scatter of light from an accumulation of tiny suspended particles in the liquid.

### 3.1.4.1 Discussion—

Cloudiness is considered synonymous with haze. Quantification of haze requiring instrumentation is out of the scope of this standard.

3.1.5 *particulates, n*—any foreign material in the liquid that floats or settles to the bottom of the sample bottle.

### 3.1.5.1 Discussion—

These particulates may be small solid or semi-solid particles, sometimes referred to as silt or sediment and may be the result of contamination by dust, corrosion, protective coating deterioration or product instability.

3.1.6 *suspended matter particles, n*—any foreign material that is in suspension in the liquid (does not float or sink) and is insoluble or separated matter.

### 3.1.6.1 Discussion—

This usually refers to things like filter fibers, droplets, lint from materials used to dry compartments, prior cargo material or fine pieces of tank or vessel coating.

3.1.7 *transparent, n*—liquid is translucent to transmitted light.

## 4. Summary of Test Method

4.1 An amount of liquid sample at storage or room temperature is visually examined for clarity and presence of contaminants. The sample is collected in a transparent glass container and held against a bright, transmitted light to examine for clarity, suspended matter, haze and the presence of free water (or oil) and subsequently swirled to create a vortex to detect the presence of particulate matter. For different categories of glycols, the number of recommended maximum allowed suspended matter particles to qualify for a pass is defined. (Table 1). For other clear, transparent liquids, other numbers may be defined (for example, on the relevant product specifications).

## 5. Significance and Use

5.1 This method provides a pass/fail test for appearance of clear, transparent liquids. Many liquid organic products have a product specification requiring them to be clear and bright and free of visible particulate matter and of liquid phases other than the main liquid. Producers of these liquid organic products need a test method to confirm the quality of their products meets product specifications for appearance. Appearance is a manufacturing and sales specification test for ethylene glycol products and a loading specification test for methanol wall washes of marine vessels. This test method was originally designed for application to glycols and methanol wall washes of marine vessels, but may be applicable to other clear, transparent liquids. Individuals using this test method for other clear transparent liquids should assure themselves that the method is sufficient for use.

5.2 There are many factors that could affect the appearance during and after sampling of a liquid product. These factors may include transferring of the liquid into a different sample container, contamination by the sample container or contamination by ambient atmosphere. Sampling and evaluation procedures need to be followed to avoid undesirable effects and assure the appearance of the sample is typical for the liquid as manufactured.

**TABLE 1 Recommended Maximum Number of Suspended Particles Allowed for a Sample to Pass**

Sample Type	Recommended Number of Particles Allowed	Typical Sample Volume (mL)
Ethylene Glycol	0 – 6	500
Diethylene Glycol	0 – 6	500
Triethylene Glycol	0 – 6	500
Tetraethylene Glycol	0 – 6	500
Methanol Wall Wash	0 – 20	400