



**Designation: D 1247 – 54**  
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By American National Standards Institute

## Standard Method of SAMPLING MANUFACTURED GAS<sup>1</sup>

This Standard is issued under the fixed designation D 1247; 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.

### 1. Scope

1.1 This method covers the procedures for securing representative samples of manufactured gas, and correlates the size or type of sample with the analysis to be done subsequently on that sample.

NOTE—The values stated in U.S. customary units are to be regarded as the standard.

### 2. General Considerations

2.1 In collecting samples of manufactured gas, consideration must be given to the purposes for which the samples are to be used and the conditions under which they must be secured. Consideration must also be given to the volume of sample required for the purpose intended, to the size and length of the sampling line, and to the size and design of containers. Account must be taken of the possible constituents in the gas with reference to any action upon the material of which the lines, containers, and auxiliary equipment are constructed. The procedure used should be capable of giving results that can be duplicated. Unless a representative sample has been obtained, the results of any subsequent analytical test, regardless of the accuracy of the test itself, will be erroneous and misleading.

### 3. Volume of Sample Required

3.1 The volume of sample collected is governed by the test to be made and the method to be used. The following volumes are minimum amounts sufficient for two determinations and necessary purging:

|                            |                                                          |
|----------------------------|----------------------------------------------------------|
| Chemical gas analysis      | 1000 cm <sup>3</sup>                                     |
| Fractionation gas analysis | 5 to 10 ft <sup>3</sup> (0.141 to 0.283 m <sup>3</sup> ) |
| Specific gravity           | 1 ft <sup>3</sup> (0.028 m <sup>3</sup> )                |
| Heating value (Btu)        | 3 to 5 ft <sup>3</sup> (0.085 to 0.141 m <sup>3</sup> )  |

|                                           |                                                          |
|-------------------------------------------|----------------------------------------------------------|
| Total sulfur by Referee's apparatus       | to 0.141 m <sup>3</sup>                                  |
| Determination of ammonia                  | 10 ft <sup>3</sup> (0.283 m <sup>3</sup> )               |
| Determination of naphthalene              | 10 ft <sup>3</sup> (0.283 m <sup>3</sup> )               |
| Hydrogen sulfide by Tutweiler method      | 5 to 10 ft <sup>3</sup> (0.141 to 0.283 m <sup>3</sup> ) |
| Hydrogen sulfide by cadmium precipitation | 1100 cm <sup>3</sup>                                     |
|                                           | 5 ft <sup>3</sup> (0.141 m <sup>3</sup> )                |

### 4. Description of Terms

4.1 **Manufactured Gas**—The expression "manufactured gas" as used in this method refers to fuel gas made from certain raw materials, primarily coal and oil. It may consist of one or more of such gases as carbureted water gas, coke oven gas, re-formed natural gas, producer gas, and oil gas. The principal constituents of this mixture are hydrogen, carbon monoxide, saturated and unsaturated hydrocarbons, carbon dioxide, nitrogen, and oxygen. Impurities may include organic sulfur, hydrogen sulfide, and ammonia.

4.2 **Sampling Probe** is that portion of the sampling line attached to, and possibly extending into, the main or vessel containing the gas to be sampled.

4.3 **Sampling Line** is that portion of the piping or tubing through which the sample is conducted from the sampling probe to the sample container.

4.4 **Sample Container** is the vessel in which the gas sample is collected, stored, and transported to the analytical apparatus.

### 5. Outline of Method

5.1 The method specifies the conditions for

<sup>1</sup> This method is under the jurisdiction of ASTM Committee D-3 on Gaseous Fuels.  
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