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Collecting and Handling of Natural Gas Samples for Analysis by Gas Chromatography

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Contents

1	Scope	1
2	Normative References	1
3	Terms, Definitions, Acronyms, and Abbreviations	1
3.1	Terms and Definitions	1
3.2	Acronyms and Abbreviations	5
4	Hydrocarbon Dew Point	5
4.1	General	5
4.2	Initial Sampling of a Gas Stream of Unknown Hydrocarbon Dew Point and Composition	5
5	General Considerations for the Design of a Natural Gas Sampling System	6
5.1	General	6
5.2	The Components of Typical Sampling Systems	6
6	Flow Characteristics	8
6.1	General	8
6.2	Single-phase Flow	9
6.3	Causes of Gas Sample Distortion	9
6.4	Phase Changes	9
6.5	Flowing and Sampling Conditions	9
6.6	Adsorption	11
6.7	Liquid/Gas Interfaces	11
6.8	Plastic Tubing	11
6.9	Residual Impurities	12
6.10	Revaporization	12
6.11	Cleanliness	12
6.12	General Discussion of Heating	13
7	Sample Probes	15
7.1	General Design Considerations	15
7.2	Application	16
7.3	Types	17
7.4	Probe Installation	18
8	Sample Loops and Transfer Lines	21
8.1	General Design Considerations	21
8.2	Pressure Drop in a Sample Loop	21
8.3	Tubing	21
8.4	Pressure Regulators	23
8.5	Pumps	23
8.6	Filters	23
8.7	Separators	24
9	Sample Containers	24
9.1	General Design Considerations	24
9.2	Types of Sample Containers	25
9.3	Pressure Regulators and Regulating Probes	28
9.4	Composite Sampling Systems	29
9.5	Calibration Standards	29
10	Materials for Sweet and Sour Gas Service	29
10.1	General Considerations	29
10.2	Carbon Steel	29
10.3	Dissimilar Materials	29

11	System Considerations	30
11.1	General	30
11.2	Timers	30
11.3	Flow Computers	30
11.4	Power Supplies	30
12	Spot Sampling Methods	30
12.1	General	30
12.2	Evacuated Container Method	31
12.3	Reduced Pressure Method	33
12.4	Helium Pop Method	35
12.5	Floating Piston Container Method	35
12.6	Glycol or Water Displacement Method	37
12.7	Purging-fill and Empty Method	39
12.8	Purging-controlled Rate Method	43
12.9	Vacuum-gathering System Method	45
12.10	Portable and Online Gas Chromatograph Method (see GPA 2261)	48
12.11	Use of Thermal Isolation and Throttling Devices	49
13	Automatic Sampling	50
13.1	Composite Samplers	50
13.2	Continuous Sampling Systems for Online Analyzers	51
14	Sampling Intervals	51
14.1	General Considerations	51
14.2	Composite Sample Intervals	51
14.3	Spot Sampling Intervals	51
15	Labeling, Handling, and Transportation of Containers	52
15.1	Labeling	52
15.2	Handling and Transportation of Containers	53
15.3	Sample Handling in the Laboratory	54
15.4	Sample Receipt and Storage	54
15.5	Sample Handling Prior to Analysis	54
15.6	Sample Disposal and Container Cleaning	54
16	Autoignition of Natural Gas	54
	Annex A (informative) The Phase Diagram	55
	Annex B (informative) Fluid Mechanical Considerations in Gas Sampling	60
	Annex C (informative) Lessons Learned during Sampling in Hydrocarbon-saturated and Two-phase Natural Gas Streams	63
	Annex D (informative) Hydrogen Sulfide Warning	65
	Annex E (informative) Air Laboratory Inspection Checklist	66
	Annex F (informative) New Spot or Composite Sample Method Performance Verification Procedure	70
	Annex G (informative) Method for Measuring Hydrocarbon Dew Point Temperatures Using a Bureau of Mines Manual Chilled Mirror Dew Point Apparatus	74
	Annex H (informative) Gas Sampling Checklists	83
	Annex I (informative) Cleaning	87
	Annex J (informative) Gas Sampling Separators	89
	Annex K (informative) Portable Gas Chromatograph Considerations	92
	Annex L (informative) Sampling Systems for Online Analyzers	93
	Bibliography	98

Figures

1	Typical Spot Sampling System and Typical Composite Sampling System within a Heated Enclosure.....	7
2	Typical Continuous (Online) Sampling System/Mobile Sampling System.....	8
3	Examples of Thermodynamic Processes Associated with Sampling System Design and Sampling Methods.....	10
4	Straight Tube Sample Probe.....	16
5	Typical Regulated Sample Probe.....	17
6	Probe Dimensions Used to Determine Maximum Recommended Probe Length.....	20
7A	Typical Double-valve Sample Container.....	22
7B	Single-valve Sample Container.....	26
7C	Typical Floating Piston Container.....	28
8	Evacuated Container Method, Reduced Pressure Method, Helium Pop Method.....	32
9	Floating Piston Method.....	36
10	Displacement Method.....	38
11	Direct Mounting for Purging-fill and Empty, Purging-controlled Rate Methods.....	41
12	Close Coupling for Purging-fill and Empty, Purging-controlled Rate Methods.....	41
13	Vacuum-gathering System Method.....	46
14	Alternative Method for Sampling from a Vacuum-gathering System.....	47
15	Flow Plug $\frac{1}{8}$ Port.....	50
16	Typical Sample Label Information.....	53
A.1	Pressure-Volume and Pressure-Temperature Diagrams for a Pure Component.....	57
A.2	Pressure-Volume and Pressure-Temperature Diagrams for a Mixture.....	58
A.3	Retrograde Condensation.....	59
A.4	Examples of Thermodynamic Processes of Natural Gases.....	59
B.1	Laminar Flow in the Entrance Region of the Pipe.....	62
B.2	Comparison of Laminar and Turbulent Velocity Profiles for Flow in a Pipe.....	62
G.1	Diagram of a Typical Bureau of Mines Chilled Mirror or Dew Point Apparatus.....	75
J.1	GPA Gas Separator.....	90
L.1	Typical Online Chromatograph Configuration.....	93
L.2	Typical Sample Probe with Regulator Installation.....	94
L.3	Cutaway Diagram of Heat Traced Tubing.....	95
L.4	Typical Sample Bypass Loop.....	96

Tables

1	Maximum Recommended Probe Lengths.....	18
2	Fill and Empty Cycles.....	40
G.1	Examples of Hydrocarbon Dew Formations on a Chilled Mirror Surface.....	79
G.2	Examples of Other Condensations on a Chilled Mirror Surface.....	80
L.1	Sample Transport Time.....	96

Introduction

This standard focuses on natural gas sampling systems and procedures, recognizing the critical impact of hydrocarbon dew point consideration to the overall accuracy and success of these practices and procedures.

Not all methods are appropriate for all sampling conditions, so it is important to have a thorough knowledge of the phase behavior of the product to be sampled and of the Joule-Thomson effect.

Analyses of gas samples are used for many purposes and are applied to various calculations, some of which have an impact on the accuracy of quantity and quality calculations.

This standard address collection and handling of representative natural gas samples from streams at or above the hydrocarbon dew point, streams that may contain water vapor up to the point of saturation, and streams that may be sour or sweet.

It is not the intent of this standard to recommend particular equipment suppliers or manufacturers.

Collecting and Handling of Natural Gas Samples for Analysis by Gas Chromatography

1 Scope

The purpose of the standard is to provide comprehensive guidelines and procedures for properly extracting, collecting, conditioning, and handling a sample from a flowing natural gas stream at or above its dew point temperature and that represents the composition of the vapor-phase portion of the source fluid. This standard considers spot, composite, continuous, online, and mobile sampling systems and does not include sampling of liquid or multiphase streams.

2 Normative References

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

GPA 2198-16¹, *Selection, Preparation, Validation, Care and Storage of Natural Gas and Natural Gas Liquids Reference Standard Blends*

GPA 2261-20, *Analysis for Natural Gas and Similar Gaseous Mixtures by Gas Chromatography*

3 Terms, Definitions, Acronyms, and Abbreviations

3.1 Terms and Definitions

For the purposes of this document, the following terms and definitions apply.

3.1.1

absorption

Occurs when natural gas constituents are dissolved into a liquid or solid that is not considered to be the mixture's liquid phase.

3.1.2

adsorption

Occurs when a thin film of molecules adheres to a liquid or solid surface.

3.1.3

chilled mirror test

Used to determine dew points of water and/or hydrocarbon by passing the natural gas over a mirror while gradually reducing the temperature of the mirror until condensation forms. A Bureau of Mines-type of dew point apparatus is commonly used for chilled mirror tests.

3.1.4

continuous sampling systems

Provides for an uninterrupted flow of sample.

3.1.5

critical denbar

The point of maximum pressure on a hydrocarbon dew point curve. This is the highest pressure at which a hydrocarbon mixture can exist separately as gas and liquid.

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