Classifying and Loading of Crude Oil into Rail Tank Cars

ANSI/API RECOMMENDED PRACTICE 3000
SECOND EDITION, AUGUST 2025

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1 Scope

This document provides guidance on the material characterization, transport classification, and quantity measurement of petroleum crude oil (crude oil) for the loading of rail tank cars. Guidance on the documentation of measurement results is also provided. The criteria for determining the frequency of sampling and testing of petroleum crude oil are identified for transport classification. This document applies only to petroleum crude oil classified as Hazard Class 3—Flammable Liquid under the U.S. *Code of Federal Regulations* (*CFR*) at the time of publication.

2 Normative References

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any addenda) applies.

MPMS Chapter 3.1A, *Manual Gauging of Petroleum and Petroleum Products*

MPMS Chapter 3.1B, *Level Measurement of Liquid Hydrocarbons in Stationary Tanks by Automatic Tank Gauging*

MPMS Chapter 3.2, *Standard Practice for Gauging Petroleum and Petroleum Products in Tank Cars*

MPMS Chapter 8.1/ASTM D4057-22, *Standard Practice for Manual Sampling of Petroleum and Petroleum Products*

MPMS Chapter 8.2, *Standard Practice for Automatic Sampling of Liquid Petroleum and Petroleum Products*

MPMS Chapter 8.5, *Standard Practice for Manual Piston Cylinder Sampling for Volatile Crude Oils, Condensates, and Liquid Petroleum Products*

MPMS Chapter 9.1, *Standard Test Method for Density, Relative Density, or API Gravity of Crude Petroleum and Liquid Petroleum Products by Hydrometer Method*

MPMS Chapter 9.3, *Standard Test Method for Density, Relative Density, and API Gravity of Crude Petroleum and Liquid Petroleum Products by Thermohydrometer Method*

MPMS Chapter 11.1, *Temperature and Pressure Volume Correction Factors for Generalized Crude Oils, Refined Products, and Lubricating Oils*

MPMS Chapter 12.1.1, *Calculation of Static Petroleum Quantities—Upright Cylindrical Tanks and Marine Vessels*

AAR *Scale Handbook*

ASTM D6377, *Standard Test Method for Determination of Vapor Pressure of Crude Oil: VPCRx (Expansion Method)*

ASTM D7900, *Standard Test Method for Determination of Light Hydrocarbons in Stabilized Crude Oils by Gas Chromatography*

GPA 2103,[1] *Method for the Analysis of Natural Gas Condensate Mixtures Containing Nitrogen and Carbon Dioxide by Gas Chromatography*

[1] GPA Midstream Association, 6526 E. 60th Street, Tulsa, OK 74145, www.gasprocessors.com.