KENYA STANDARD

DKS 91:2021

ICS 75.160.30

Second Edition

Petroleum and petroleum products— Liquefied Petroleum Gas (LPG) — Specification

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Foreword

This Kenya Standard was prepared by the Petroleum and Petroleum Products Technical Committee under the guidance of the Standards Projects Committee, and it is in accordance with the procedures of the Kenya Bureau of Standards.

This second edition cancels and replaces the first edition KS 91:1985 which has been technically revised.

During the preparation of this standard, reference was made to the following documents:

xxxxx

Acknowledgement is hereby made for the assistance derived from these sources.

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Petroleum and petroleum products—Liquefied Petroleum Gas (LPG) — Specification

1 Scope

This Draft Kenya Standard specifies the requirements, sampling and test methods for liquefied petroleum gas, LPG, (commercial Butane) used as domestic, industrial and engine fuels.

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 amendments) applies.

ASTM D1657, *Standard Test Method for Density or Relative Density of Light Hydrocarbons by Pressure Hydrometer*

ASTM D 2598, *Standard Practice for Calculation of Certain Physical Properties of Liquefied Petroleum (LP) Gases from Compositional Analysis*

IP 235, *Determination of density of light hydrocarbons – Pressure hydrometer method*

ISO 8973, *Liquefied petroleum gases — Calculation method for density and vapour pressure*

ASTM D1267, *Standard Test Method for Gauge Vapor Pressure of Liquefied Petroleum (LP) Gases (LP-Gas Method)*

ASTM D2598, *Standard Practice for Calculation of Certain Physical Properties of Liquefied Petroleum (LP) Gases from Compositional Analysis*

ASTM D1837, *Standard Test Method for Volatility of Liquefied Petroleum (LP) Gases (Withdrawn 2017)*

ASTM D1838, *Standard Test Method for Copper Strip Corrosion by Liquefied Petroleum (LP) Gases*

ISO 7941, *Commercial propane and butane — Analysis by gas chromatography*

ASTM D2163, *Standard Test Method for Determination of Hydrocarbons in Liquefied Petroleum (LP) Gases and Propane/Propene Mixtures by Gas Chromatography*

ASTM D1945, *Standard Test Method for Analysis of Natural Gas by Gas Chromatography*

ASTM D1946, *Standard Practice for Analysis of Reformed Gas by Gas Chromatography*

ASTM D 2504, *Standard Test Method for Non-condensable Gases in C2 and* Lighter Hydrocarbon Products by Gas Chromatography

ASTM D2158, *Standard Test Method for Residues in Liquefied Petroleum (LP) Gases*

IP 317, *Determination of residues in liquefied petroleum gases — Low temperature evaporation method*

ISO 6326-3, *Natural gas — Determination of sulfur compounds — Part 3: Determination of hydrogen sulfide, mercaptan sulfur and carbonyl sulfide sulfur by potentiometry*

ISO 4257, *Liquefied petroleum gases — Method of sampling*

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ASTM D 6667, *Standard Test Method for Determination of Total Volatile Sulphur in Gaseous Hydrocarbons and Liquefied Petroleum Gases by Ultraviolet Fluorescence*

3 Terms and definitions

3.1
LPG (Liquified Petroleum Gas)
petroleum gases that can be stored and/or handled in the liquid phase under moderate conditions of pressure and at ambient temperature. Which can be Pure butane or a mixture of propane and butane.

3.2
Commercial Butane
hydrocarbon product consisting mainly of butane gas for use where low volatility is required and complies with appropriate requirement as given in table 1.

4 Requirements

Liquefied petroleum gases shall comply with the requirements given in Table 1 when tested in accordance with the test methods prescribed therein.

Table 1 — Requirements for Liquefied Petroleum Gas (LPG)

Characteristic		Commercial Butane	Test method
Density @20°C Kg/m^3		Minimum 520 Maximum 600	ASTM D1657 ASTM D 2598 IP 235 ISO 8973
Vapour pressure at 37.8° C kPa, max.		528	ASTM D1267 ASTM D2598
Volatile residue 95 % evaporated, at 760 mm Hg max		2.2	ASTM D1837
Or butane and heavier %, v/v, max.		-	ASTM D2163 IP 405 ISO 7941
Or pentane and heavier per cent v/v, max		2.0	ASTM D2163 IP 405 ISO 7941
LPG Composition	Propane	20 %, max.	ASTM D2163 IP 405 ISO 7941
	Butane	80, %, min.	ASTM D2163 IP 405 ISO 7941
Nitrogen		Nil	ASTM D1945 ASTM D1946 ASTM D 2504
Oxygen		Nil	

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Residue on evaporation of 100 ml, max.	0.05	ASTM D2158 IP 317
Oil stain observation	Pass	ASTM D2158 IP 317
Corrosion, copper strip (1hr @37.8° C) max	No.1	ASTM D1838
Total sulphur mg/kg, max.	140	ASTM D 6667 ASTM D 5453 ASTM D 7813 EN 20846
Moisture content	To be reported	ASTM 7995
Free water content	None	Visual inspection
Odour stenching mercaptan sulphur content as ethyl mercaptan, mg/kg,	15-50	ASTM D 5305 NOTE: The oduor should be detectable.
Hydrogen sulphide (H_2S) mg/kg, max.	5	ISO 8819 ASTM D4810 ASTM D4084
Hydrogen Sulphide	Negative	ISO 6326/3 ASTMD 2420

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5 Sampling

A representative sample of non-refrigerated commercial butane shall be taken in accordance with the procedure given in ISO 4257.

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