



**ZS 380: 2018**  
**ICS: 75.160.20**  
**SECOND EDITION**

*Draft For  
Public Comment*

---

**Draft Zambian Standard**

**ILLUMINATING Kerosine - Specification**

---

This Draft Standard is for Public Comment  
**ONLY** and should **NOT** therefore be referred to  
as a Zambian Standard

**ZAMBIA BUREAU OF STANDARDS**



## DATE OF PUBLICATION

This Zambian Standard has been published under the authority of the Zambia Bureau of Standards on XXXXX

## ZAMBIA BUREAU OF STANDARDS

The Zambia Bureau of Standards is a statutory organization administrated by the Standards Act No 4 of 2017 of the Laws of Zambia for the preparation and promulgation of Zambian Standards

## REVISION OF ZAMBIAN STANDARD

Zambian Standards are revised, when necessary, by the issue of either amendments or revised editions. It is important that users of Zambian Standards ascertain that they are in possession of the latest amendments or editions.

## CONTRACT REQUIREMENTS

A Zambian Standard does not purport to include all the necessary provisions of a contract. Users of Zambian Standards are responsible for their correct application.

## TECHNICAL COMMITTEE RESPONSIBLE

The preparation of this Zambian Standard was undertaken by the Petroleum Products Technical Committee (TC 4/14) upon which the following organizations were represented:

Afrox Zambia Limited  
Alfred H. Knight (Z) Limited  
Bio Fuels Association of Zambia  
Energy Regulation Board  
INDENI Petroleum Refinery Company Limited  
Konkola Copper Mines Plc  
Lublend Limited  
Ministry of Energy and Water Development – Department of Petroleum  
Mopani Copper Mines Plc  
Puma Energy Zambia Plc  
Tazama Pipelines  
Zambia Bureau of Standards  
Zambia Compulsory Standards Agency  
Zambia Environmental Management Agency

---

**Zambia Bureau of Standards**  
**Lechwe House**  
**Freedom Way South-end**  
**P.O. Box 50259**  
**Lusaka**

**Email:** [zabs@zamnet.zm](mailto:zabs@zamnet.zm) or [infozabs@zamnet.zm](mailto:infozabs@zamnet.zm)  
**Website:** [www.zabs.org.zm](http://www.zabs.org.zm)

## Contents

Foreword	iii
<b>Specification</b>	
1 Scope	1
2 Normative references	1
3 Definitions	2
4 Requirements	2
5 Packing and marking	3
6 Methods of test	3
7 Sampling	3
<b>Tables</b>	
1 Requirements for illuminating kerosene	4

## **FOREWORD**

This National Standard has been prepared by the Petroleum Products technical Committee (TC4/14), in accordance with the procedures of ZABS. All users should ensure that they have the latest edition of this publication as standards are revised from time to time.

No liability shall attach to ZABS or its Director, employees, servants or agents including individual experts and members of its Technical Committees for any personal injury, property damage or other damages of any nature whatsoever, whether direct or indirect, or for costs (including legal fees) and expenses arising out of the publication, use of, or reliance upon this ZABS publication or any other ZABS publication.

Over the past years, technological changes in the Petroleum Products sector have occurred. In endeavouring to match up with the regional and international advancements, it was necessary to revise ZS 380.

## **ACKNOWLEDGEMENT**

The Zambia Bureau of Standards would like to acknowledge the invaluable material and financial support of the Energy Regulation Board and all the institutions and stakeholders that contributed in the promulgation of this standard.

**COMPLIANCE WITH A ZAMBIAN STANDARD DOES NOT OF ITSELF CONFER IMMUNITY FROM LEGAL OBLIGATIONS**

# ZAMBIA BUREAU OF STANDARDS

---

## Draft Zambian Standard

---

### ILLUMINATING Kerosine – Specification

---

#### 1 SCOPE

This Zambian Standard specifies requirements for Illuminating Kerosene for both domestic and industrial application.

#### 2 NORMATIVE REFERENCES

The following Publications contain provisions which, through reference in this text, constitute provisions of this standard. All standards are subject to revision and, since any reference to a publication is deemed to be a reference to the latest edition of that publication, parties to agreements based on this standard are encouraged to take steps to ensure the use of the most recent editions of the standards indicated below.

ASTM D 86	Test Method for Distillation of Petroleum Products
ASTM D 130	Test Method for Detection of Copper Corrosion from Petroleum Products by the Copper Strip Tarnish
ASTM D 156	Test Method for Saybolt Colour of Petroleum Products (Saybolt Chronometer Method).
ASTM D 1266	Test Method for Sulphur in Petroleum Products (Lamp Method).
ASTM D 1298	Test Method for Density, Relative Density (Specific Gravity) or API Gravity of Crude Petroleum and Liquid Petroleum Products by Hydrometer Method
ASTM D 2709	Test Method for Water and Sediment Determination in Distillate Fuels by Centrifuge
IP 10	Test Method for Determination of Kerosene Burning Characteristics – 24 Hour method
D 1322 IP 57	Test Method for Smoke Point
IP 170	Test Method for Flash Point – Abel Apparatus (Kerosene)
ZS 372	Transportation of Petroleum Products: Operational Requirements for Road Tank Vehicles - Code of Practice
ZS 396	Method of Sampling Petroleum and Petroleum Products – Part 1: Manual Sampling of Liquid Hydrocarbons

Petroleum Act, Chapter 435 of the Laws of Zambia

:

### 3 DEFINITIONS

For the purpose of this Standard, the following definitions apply:

- 3.1 **Additive:** A compound added to illuminating kerosene for identification or to improve performance or storage stability.
- 3.2 **Marketable:** Acceptable smell for comfortable handling.

### 4 REQUIREMENTS

#### 4.1 General

- 4.1.1 The illuminating kerosene shall be a hydrocarbon oil derived from petroleum. This does not preclude the incorporation of small amounts of additives intended to improve some aspects of performance. The kerosene shall be free from inorganic acid and from quantities of grit, fibrous material and other foreign matter likely to interfere with the operation of normal equipment.
- 4.1.2 When tested in accordance with the methods of test given in Table 1, illuminating kerosene shall be in accordance with the limiting requirements given in the table.
- 4.1.3 On Visual Inspection at ambient temperature, the illuminating kerosene shall be clear, bright and free from solid matter.

#### 4.2 Storage stability

- 4.2.1 After conventional storage under normal conditions for a period of 6 months after the date of receipt, the illuminating kerosene shall still comply with all the requirements of this standard.

Table 1. Requirements for illuminating kerosene.

CHARACTERISTIC	REQUIREMENT	TEST METHOD
Density@ 15°C, Kg/m <sup>3</sup> , max.	820	ZS ASTM D 1298 ZS ASTM D 4052
Appearance	Bright and clear	Visual
Odour	Marketable	see 3.2
Saybolt colour, min.	+20	ZS ASTM D 156
Total Sulphur, % mass, max.	0.20	ZS ASTM D 1266 ASTM D 5453 2622, 4294
Copper Corrosion, 3 h at 100°C, max.	1	ZS ASTM D 130
Flash Point, Closed Cup, Abel Pensky, °C, min.	38	ASTD D 56
Smoke Point, mm, min.	25	ASTM D 1322
Char Value, mg/kg, max	15	IP 10
Water and Sediments, % vol, max.	0.05	ASTM D 2709
End boiling point, °C, max.	300	ZS ASTM D 86
<b>NOTE</b>		
Domestic kerosene shall be dyed green while industrial kerosene shall be colourless.		

## 5 PACKAGING AND MARKING

### 5.1 Packaging

The condition of the containers, rail tankers and road tank vehicles into which the illuminating kerosene is filled shall be such as not to be detrimental to the quality of the fuel during normal transportation and storage. The containers shall be acceptably sealed and in addition shall conform to the Petroleum Act, Chapter 435 of the Laws of Zambia.

### 5.2 Marking

5.2.1 The following information shall appear in legible and indelible marking on each container or in the case of illuminating kerosene filled into bulk storage tanks, with the storage and consignment documents of each road tanker or rail wagon as stipulated in ZS 372:



- (a) the manufacturer's name and address
- (b) the type of fuel as stipulated under UN Code,
- (c) the hazards involved in handling and transportation,
- (d) the Transport Emergency Card (Tremcard)
- (e) the batch/lot number

5.2.2 The containers may also be marked with the Zambian Standard Certification mark.

#### **NOTE ON THE USE OF THE CERTIFICATION MARK**

The Zambia Bureau of Standards is the owner of the registered certification mark shown below, the independent assurance that the product complies with the requirements of this Zambian Standard.

This certification mark may be used by manufacturers only under license from the Bureau. Particulars of the conditions under which licenses are granted may be obtained from the Director, Zambia Bureau of Standards, P.O. Box 50259, LUSAKA, 15101, Zambia.

## **6 TEST METHODS**

For all characteristics, the test methods listed in column 3 of Table 1 shall apply.

## **7 SAMPLING**

### **7.1 Sampling from storage tanks**

For the purposes of this Zambian Standard all sampling shall be carried out in accordance with the relevant procedures of ZS 396 and, additionally, as detailed in 7.2.

### **7.2 Sampling from fuel lines**

7.2.1 Sampling cans of 5 Litres and 1 Litre capacity. The construction of the cans shall comply with the appropriate safety requirements for cans that are to hold highly flammable material. They shall be provided with screw caps incorporating a petroleum resistant washer in good condition. A stock of cans shall be kept solely for the purpose of taking illuminating kerosene samples.

7.2.2 Preparation of cans. New cans shall be rinsed with illuminating kerosene before being used, to remove any residual traces of oil left during manufacturing operations, and then allowed to dry. Before use, all cans shall be checked to ensure that they are sound and free from leaks.

7.2.3 Sampling procedure.

From the pump nozzle, 5 Litres of illuminating kerosene shall be drawn carefully into a cool 5 Litres Can using a clean dry funnel. Immediately afterwards, this sample shall be decanted carefully into the requisite number of 1 Litre cans, using a funnel, filling the cans within 15 mm of the brim.

If more than 5 Litres are needed, the operation shall be repeated immediately and before the pump has been used for any other purpose. The screw caps shall be tightened fully and the cans checked to ensure that there are no leaks.

The sampling procedure shall not be carried out in direct sunlight.

**NOTE:**

If carried out in direct sunlight, changes in fuel quality may occur.

7.2.4 Storage, labeling and transport.

Samples shall be kept in a cool place and well ventilated although it is not necessary to keep them refrigerated.

Full and legible information relating to the source of the sample shall be attached to the can in such a manner that it will not easily become detached subsequently.

**NOTE 1:**

If required, the sample may be sealed and labeled to maintain its integrity,

**NOTE 2:**

If the sample has to be sent to a laboratory by public transport, it will be necessary to comply with the general regulations covering transportation of flammable materials and with the requirements of the transport authority concerned. Information on the appropriate procedures and the type of packaging required should be obtained from the transport authority involved.