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## **DRAFT EAST AFRICAN STANDARD**

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**Flushing oil — Specification**

**EAST AFRICAN COMMUNITY**

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East African Community  
P.O.Box 1096,  
Arusha  
Tanzania  
Tel: + 255 27 2162100  
Fax: + 255 27 2162190  
E-mail: [eac@eachq.org](mailto:eac@eachq.org)  
Web: [www.eac-quality.net](http://www.eac-quality.net)

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## Foreword

Development of the East African Standards has been necessitated by the need for harmonizing requirements governing quality of products and services in the East African Community. It is envisaged that through harmonized standardization, trade barriers that are encountered when goods and services are exchanged within the Community will be removed.

The Community has established an East African Standards Committee (EASC) mandated to develop and issue East African Standards (EAS). The Committee is composed of representatives of the National Standards Bodies in Partner States, together with the representatives from the public and private sector organizations in the community.

East African Standards are developed through Technical Committees that are representative of key stakeholders including government, academia, consumer groups, private sector and other interested parties. Draft East African Standards are circulated to stakeholders through the National Standards Bodies in the Partner States. The comments received are discussed and incorporated before finalization of standards, in accordance with the Principles and procedures for development of East African Standards.

East African Standards are subject to review, to keep pace with technological advances. Users of the East African Standards are therefore expected to ensure that they always have the latest versions of the standards they are implementing.

The committee responsible for this document is Technical Committee EASC/TC 068, *Petroleum and petroleum products*.

Attention is drawn to the possibility that some of the elements of this document may be subject of patent rights. EAC shall not be held responsible for identifying any or all such patent rights.

## Flushing oil — Specification

### 1 Scope

This Draft East African Standard specifies requirements, sampling and test methods for flushing oil used for cleaning internal lubricating systems such as engines, compressors, gearboxes, turbine, and hydraulic systems during oil changes or maintenance operations.

### 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:

ASTM D4176, *Standard Test Method for Free Water and Particulate Contamination in Distillate Fuels (Visual Inspection Procedures)*

ASTM D1500, *Standard Test Method for ASTM Color of Petroleum Products (ASTM Color Scale)*

ASTM D445, *Standard Test Method for Kinematic Viscosity of Transparent and Opaque Liquids (and Calculation of Dynamic Viscosity)*

ISO 3104, *Petroleum products — Transparent and opaque liquids — Determination of kinematic viscosity and calculation of dynamic viscosity*

ASTM D92, *Standard Test Method for Flash and Fire Points by Cleveland Open Cup Tester*

ISO 2592, *Petroleum and related products — Determination of flash and fire points — Cleveland open cup method*

ASTM D97, *Standard Test Method for Pour Point of Petroleum Products*

ASTM D4052, *Standard Test Method for Density, Relative Density, and API Gravity of Liquids by Digital Density Meter*

ASTM D664, *Standard Test Method for Acid Number (Neutralization Number) of Petroleum Products by Potentiometric Titration*

ASTM D482, *Standard Test Method for Ash from Petroleum Products*

ASTM D95, *Standard Test Method for Water in Petroleum Products and Bituminous Materials by Distillation*

ISO 2160, *Petroleum products — Determination of Total Contamination by the Laboratory Turbidimetric Method*

IP 154, *Determination of Floc Point of Petroleum Products*

ASTM D130, *Standard Test Method for Corrosiveness to Copper from Petroleum Products by Copper Strip Test*

ASTM D1744, *Standard Test Method for Determination of Water in Liquid Petroleum Products by Karl Fischer Reagent.*

ASTM D6304, *Standard Test Method for Determination of Water in Petroleum Products, Lubricating Oils, and Additives by Coulometric Karl Fischer Titration*

### 3 Terms and definitions

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

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- ISO Online browsing platform: available at <http://www.iso.org/obp>
- IEC Electropedia: available at <https://www.electropedia.org/>

#### flushing oil

formulated fluid used to clean and remove contaminants from lubrication systems such as engines, gearboxes, turbine or hydraulic systems before introducing new operating oil.

### 4 Requirement.

#### 4.1 General requirements.

**4.1.1** The flushing oil shall be formulated from base oils that comply with the requirements of EAS 1103 mixed with functional additives.

**4.1.2** The flushing oil shall be compatible with the new lubricating oil to be introduced after flushing.

#### 4.2 Specific requirements

The flushing oil shall comply with the requirements specified in Table 1 when tested in accordance with the methods specified therein.

**Table 1 — Requirements for flushing oil**

SL/ No.	Characteristic	Requirement	Test method
i)	Appearance	Clear and bright.	visual Inspection
ii)	Colour,	To be reported	ASTM D1500
iii)	Kinematic Viscosity@40°C, cSt	To be reported	ASTM D445 ISO 3104
iv	Viscosity index, min.	90	ASTM D2270
v	Flash Point (COC), °C min.	170	ASTM D92 ISO 2592
vi)	Pour Point, °C, max.	-6	ASTM D97
vii)	Densit at 15°C Kg/m <sup>3</sup>	To be reported	ASTM D4052
viii)	Total Acid Number, mg KOH/g, max.	0.05	ASTM D664
ix)	Ash Content, % m/m, max.	0.01	ASTM D482
x)	Water Content mg/kg, max.	150	ASTM D1744 ASTM D6304

xi)	Copper strip corrosion, 3 h at 100 °C	Class 1a	ISO 2160 IP 154 ASTM D130
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## 5 Packaging and labelling

### 5.1 Packaging

The condition of the containers shall not be detrimental to the quality of the flushing oil during transportation and storage. The containers shall be acceptably sealed or leakproof, corrosion resistant, heat resistant, clean, and free from materials soluble in the product.

### 5.2 Labelling

Each container and bulk package shall bear (in prominent legible and indelible marking) the following information:

- a) manufacturer's name and physical address
- b) trademark (if any)
- c) name of the product as "flushing oil";
- d) instructions for storage, use, and disposal;
- e) batch identification;
- f) dates of manufacture and expiry;
- g) net contents in metric units; and
- h) safety precautions as applicable.

## 6 Sampling

Sampling shall be done in accordance with ISO 3170.

## Bibliography

PUBLIC REVIEW DRAFT

PUBLIC REVIEW DRAFT