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DRAFT EAST AFRICAN STANDARD

Cosmetics — Analytical methods — Part 12: Determination of flash point by Pensky-Martens closed cap tester

EAST AFRICAN COMMUNITY

Second Edition 2025

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 071, *Cosmetics and related 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.

This second edition cancels and replaces the first edition (EAS 847-12:2017), which has been technically revised.

EAS 847 consists of the following parts, under the general title *Cosmetics — Analytical methods*:

— *Part 1: Glossary of terms*

— *Part 2: Determination of moisture content and volatile matter content*

— *Part 3: Determination of insoluble impurities*

— *Part 4: Determination of acid value and free fatty acids*

— *Part 5: Determination of unsaponifiable matter*

— *Part 6: Determination of melting point*

— *Part 7: Determination of specific gravity*

— *Part 8: Titre test*

— *Part 9: Determination of colour*

— *Part 10: Determination of acetyl value and hydroxyl value*

— *Part 11: Determination of allyl isothiocyanate*

— *Part 12: Determination of flash point by Pensky – Martens Closed Cap Tester*

— *Part 13: Determination of rancidity*

- *Part 14: Determination of Polenske value*
- *Part 15: Determination of ash content*
- *Part 16: Determination of lead, mercury and arsenic content*
- *Part 17: Determination of pH*
- *Part 18: Determination of thermal stability*
- *Part 19: Determination of non-ionic, anionic and cationic surfactant content*
- *Part 20: Determination of lather volume (foaming power)*
- *Part 21: Determination of free acid in oils*
- *Part 22: Determination of sulphur and sulphides in oils*
- *Part 23: Test for absence of grit in powders*
- *Part 24: Determination of matter insoluble in boiling water*
- *Part 25: Determination of fineness*
- *Part 26: Determination of boric acid*
- *Part 27: Determination of total fatty substance by gravimetric method*
- *Part 28: Determination of free caustic alkali*

Cosmetics — Analytical methods — Part 12: Determination of flash point by Pensky-Martens closed cap tester

1 Scope

This Draft East African prescribes the test methods for the determination of flash point by Pensky-Martens closed cap tester in oils and fats for cosmetic industry.

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

EAS 847-1, *Cosmetics — Analytical methods — Part 1: Glossary of terms*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in EAS 847-1 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 http://www.electropedia.org/

4 Test method

4.1 Principle

The sample is heated at a slow, constant rate with continual stirring. A small flame is directed into the cup at regular intervals with simultaneous interruption of stirring. The flash point is the lowest temperature at which application of the test flame causes the vapour above the sample to ignite.

4.2 Apparatus and equipment

4.2.1 Pensky-Martens closed cap tester

4.2.2 Thermometers, calibrated and suitable as per the expected flash point value indicated in the oil specifications. They shall have 1 ºC graduations.

4.3 Preparation of the apparatus

Support the tester on a level, steady table. Unless tests are made in a draft-free room or compartment, it is good practice, but not required, to surround the tester on three sides with a shield, each section of which is about 450 mm wide and 600 mm high.

4.4 Preparation of the sample

4.4.1 Samples of very viscous materials may be warmed until they are reasonably fluid before they are tested. However, no sample should be heated more than is absolutely necessary. It shall never be heated above a temperature of 17 °C below its expected flash point.

4.4.2 Samples containing dissolved or free water may be dehydrated with anhydrous sodium sulphate or by filtering through a qualitative filter paper or a loose plug of dry absorbent cotton. Warming the sample is permitted, but it shall not be heated for prolonged periods or above a temperature of 17 °C below its expected flash point.

NOTE 1 Samples should not be stored in plastic (polyethylene, polypropylene, etc.) bottles, since volatile material may diffuse though the walls of the bottle.

NOTE 2 If the sample is suspected of containing volatile contaminants, the treatment described in 5.1 and 5.2 should be omitted.

4.5 Procedure

4.5.1 Thoroughly clean and dry all parts of the cup and its accessories before starting the test, being sure to remove any solvent which had been used to clean the apparatus. Fill the cup with the sample to be tested to the level indicated by the filling mark. Place the lid on the cup and set the latter in the stove. Be sure to have the locating or locking device properly engaged. Insert the thermometer, light the test flame.

4.5.2 Supply the heat at such a rate that the temperature as indicated by the thermometer increases 5 ºC/min - 6 ºC/min. Turn the stirrer 90 rpm - 120 rpm, stirring in a downward direction.

4.5.3 If the sample is known to have a flash point of 110 ºC or below, apply the test flame when the temperature of the sample is from 17 ºC – 28 ºC below the expected flash point and thereafter at a temperature reading that is a multiple of 1 ºC. Apply the test flame by operating the mechanism on the cover which controls the shutter and test flame burner so that the flame is lowered into the vapour space of the cup in 0.5 s, left in its lowered position for 1 s, and quickly raised to its high position. Do not stir the sample while applying the test flame.

4.5.4 If the sample is known to have a flash point above 110 ºC apply the test flame in the manner just described at each temperature that is a multiple of 2 ºC, beginning at a temperature of 17 ºC – 28 ºC below the expected flash point.

NOTE 3 When testing materials to determine if volatile contaminants are present, it is not necessary to adhere to the temperature limits for initial flame application as stated in 4.5.2 and 4.5.3.

4.5.5 Record as the observed flash point the temperature read on the thermometer at the time the test flame application causes a distinct flash in the interior of the cup. Do not confuse the true flash point with the bluish halo that sometimes surrounds the test flame at applications preceding the one that causes the actual flash.

4.5 Calculation and report

4.5.1 Observe and record the ambient barometric pressure. The barometric pressure used in this calculation shall be the ambient pressure for the laboratory at the time of test. Many aneroid barometers, such as those used at weather stations and airports, are pre-corrected to give sea level readings. These shall not be used. When the pressure differs from 760 mm Hg (101.3kPa), correct the flash point as follows:

(A) Corrected flash point = $C + 0.25\,(101.3 - p)$

(B) Corrected flash point = $C + 0.33\,(760 - P)$

where

C is the observed flash point, in degrees Celsius (ºC);

P is the ambient barometric pressure, in mm Hg; and

p is the ambient barometric pressure, in kiloPascal (kPa).

Bibliography

EAS 847-12: 2017, *Cosmetics — Analytical methods — Part 12: Determination of flash point by Pensky-Martens closed cap tester*