
International Standard



6889

INTERNATIONAL ORGANIZATION FOR STANDARDIZATION • МЕЖДУНАРОДНАЯ ОРГАНИЗАЦИЯ ПО СТАНДАРТИЗАЦИИ • ORGANISATION INTERNATIONALE DE NORMALISATION

Surface active agents — Determination of interfacial tension by drawing up liquid films

Agents de surface — Détermination de la tension interfaciale par étirement de films liquides

Second edition — 1986-03-15

UDC 661.185 : 532.613.4

Ref. No. ISO 6889-1986 (E)

Descriptors : surfactants, tests, determination, interfacial tension.

Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work.

Draft International Standards adopted by the technical committees are circulated to the member bodies for approval before their acceptance as International Standards by the ISO Council. They are approved in accordance with ISO procedures requiring at least 75 % approval by the member bodies voting.

International Standard ISO 6889 was prepared by Technical Committee ISO/TC 91, *Surface active agents*.

This second edition cancels and replaces the first edition (ISO 6889-1982), of which it constitutes a minor revision.

Users should note that all International Standards undergo revision from time to time and that any reference made herein to any other International Standard implies its latest edition, unless otherwise stated.

Surface active agents — Determination of interfacial tension by drawing up liquid films

0 Introduction

Interfacial tension is a fundamental property of systems comprising two phases. This International Standard applies more particularly to two immiscible liquid phases containing one or more surface active agents.

The measurement of this characteristic, however, does not allow, in the case of solutions of surface active agents, any suppositions as to their detergency, emulsifying activities, etc. Indeed, no connection can be established between the performance properties of surface active agents and the interfacial tension of systems of two immiscible liquid phases.

1 Scope and field of application

This International Standard specifies a method by drawing up liquid films for the determination of the interfacial tension between two immiscible liquid phases, one aqueous and one organic, forming an interface. The two phases may contain one or more anionic or non-ionic surface active agents.

The method is also applicable to the measurement of interfacial tension of systems of two immiscible liquid phases other than those mentioned above.

The method is not applicable to the measurement of interfacial tension of systems of two immiscible liquid phases containing cationic surface active agents; the interfacial tension of such systems can only be determined by the drop volume method (which will form the subject of ISO 9101).

NOTES

1 Various methods have been established to determine interfacial tension, such as :

- a) methods by drawing up liquid films by a plate, stirrup or ring;
- b) drop volume method;
- c) drop sessile method;
- d) suspended drop method;
- e) rotated drop method.

• 1 mN/m = 1 dyn/cm

** At present at the stage of draft.

Methods by drawing up liquid films have notable advantages, owing to the simplicity of the procedure.

2 The method specified in this International Standard does not provide accurate values. It is acceptable for control in industrial laboratories in which the reproducibility of 2 mN/m* is sufficient for the range of interfacial tensions between 4 and 50 mN/m.

2 References

ISO 862, *Surface active agents — Vocabulary.*

ISO 2456, *Surface active agents — Water used as a solvent for tests.***

3 Definitions

3.1 **Interfacial tension** : See ISO 862.

NOTE — The SI unit of interfacial tension is the newton per metre (N/m). In practice, the sub-multiple millinewton per metre (mN/m) is used.

3.2 **Age of the liquid — liquid interface** : The time which has elapsed between the formation of the interface in the measuring cup and drawing up of the interfacial liquid film.

4 Principle

Measurement of the maximum force which can be exerted before the film breaks, the force being exerted vertically on a stirrup or ring, in contact with the interfacial liquid film between two immiscible liquid phases placed in a measuring cup, in order to draw up the interfacial film.

The force must pass through a maximum, otherwise the measurement is not valid.