

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

First edition — 1982-06-15

UDC 661.185 : 532.613.4

Ref. No. ISO 6889-1982 (E)

Descriptors : surfactants, tests, determination, interfacial tension.

Price based on 6 pages

Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards institutes (ISO member bodies). The work of developing International Standards is carried out through ISO technical committees. Every member body interested in a subject for which a technical committee has been set up 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.

International Standard ISO 6889 was developed by Technical Committee ISO/TC 91, *Surface active agents*, and was circulated to the member bodies in October 1980.

It has been approved by the member bodies of the following countries :

Austria	India	Romania
Belgium	Ireland	South Africa, Rep. of
China	Italy	Spain
Egypt, Arab Rep. of	Japan	Switzerland
France	Korea, Rep. of	USSR
Germany, F. R.	Netherlands	
Hungary	New Zealand	

No member body expressed disapproval of the document.

This International Standard cancels and replaces part of ISO Recommendation R 304-1963, of which it constitutes a technical revision.

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 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.

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.

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

2 The method described 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/R 862, *Surface active agents — Glossary*.

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

3 Definitions

3.1 **free interfacial energy** : See ISO/R 862.

3.2 **interfacial tension** : See ISO/R 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.

3.3 **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 has to pass through a maximum, otherwise the measurement is not valid.

* 1 mN/m = 1 dyn/cm

** At present at the stage of draft.