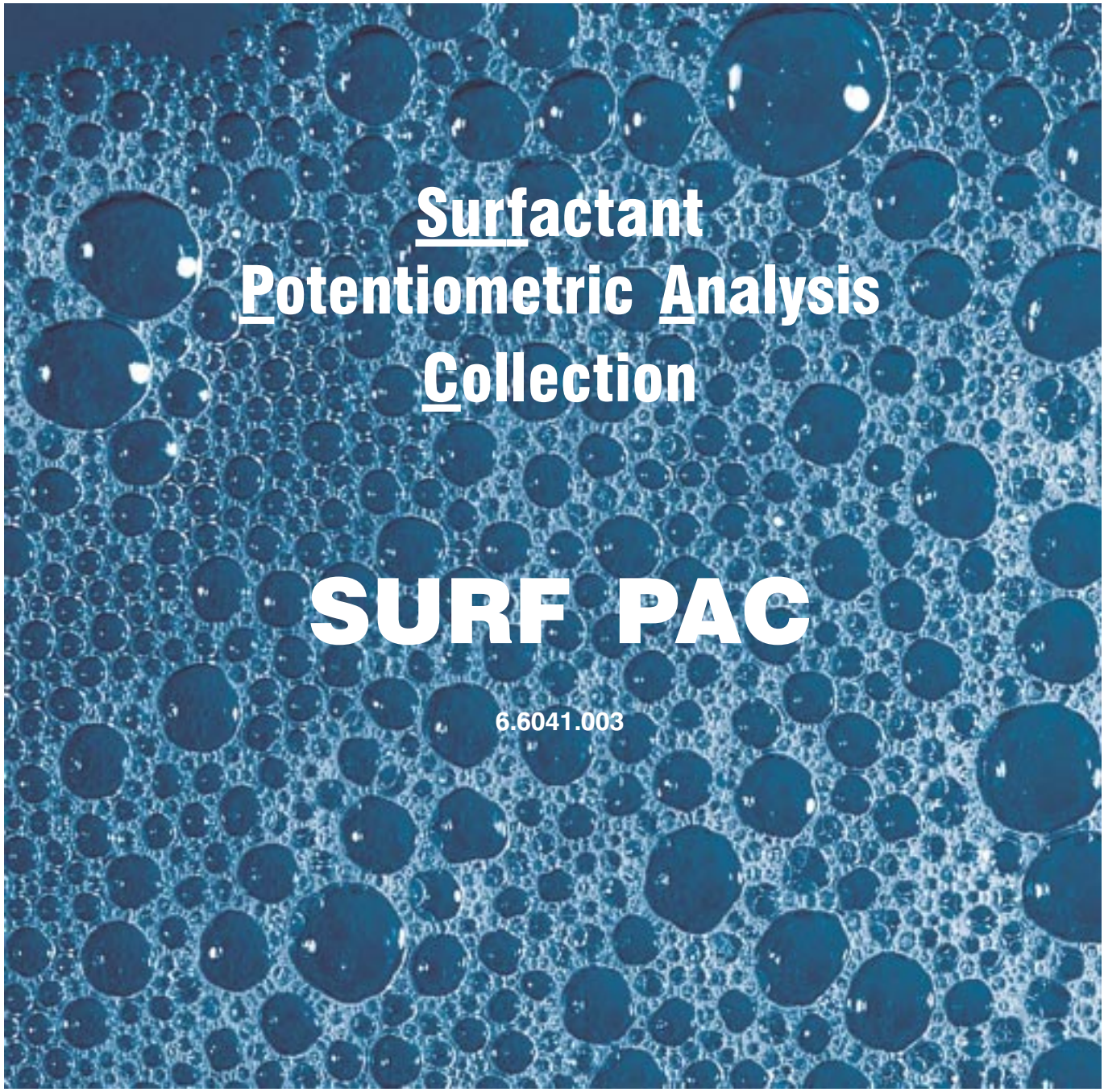


Surfactant Potentiometric Analysis Collection

SURF PAC

6.6041.003

Know-how package for the determination of surfactants with Metrohm Titrinos in

- raw materials
- cooling lubricants
- washing agents
- cleaners
- cosmetics

Surf PAC contains the titration methods most used in surfactant analysis in an attractive and practical form. The methods are up to date, as they

- take into account the latest standards,
- apply the most appropriate methods,
- use the Metrosensors especially developed for surfactant analysis.

By using these methods directly as **SOP**s (Standard Operating Procedures) in your laboratory, you will save both time and money.

Depending on the Metrohm Titrinos available or to be purchased, you have two different possibilities:

- *799 GPT Titrino, 798 MPT Titrino, 785 DMP Titrino or 751 GPD Titrino (instrument program version 5.751.0020 or higher)*

  Using the **methods memory card** that is included in the package, you load all the methods (complete parameter sets including calculations and reports) into the Titrino. You then equip the Titrino with the corresponding Exchange Unit and electrodes, load the method into the working memory, prepare the first sample and start the determination by pressing a key. As soon as the titration is concluded and the sample weight entered, the Titrino outputs the titration curve and a complete result report on the connected printer.

- *716 DMS Titrino, 736 GP Titrino, 794 Basic Titrino or 751 GPD Titrino (instrument program version <5.751.0020)*

  Using a **PC** and the demo version of Metrodata **VESUV 3.0** contained in the package, you load the methods into your Titrino. You then continue using the extremely simple procedure described above.

Metrosensor surfactant electrodes, from left to right:

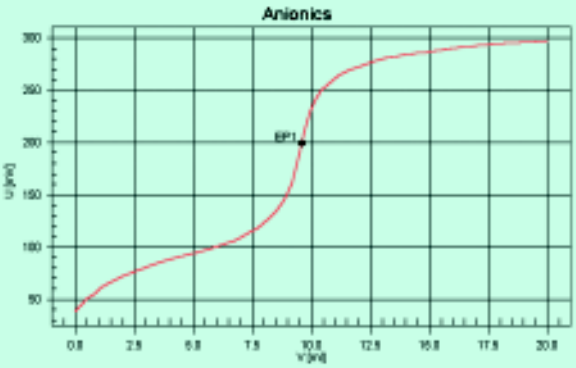
6.0507.010 NIO Electrode for non-ionic surfactants; 6.0504.150«High Sense» surfactant electrode for anionic and especially cationic surfactants; 6.0507.120 «Ionic Surfactant» electrode for cationic and especially anionic surfactants. The two electrodes 6.0507.130 «Surfactrode Resistant» and 6.0507.140 «Surfactrode Refill» are used for the two-phase titration of anionic and cationic surfactants.

Surf PAC comprises a ring binder with the method collection, two CD-ROMs and the method memory card.

Dishwashing is fun...

The determination shown here is one of the many applications of potentiometric surfactant titration and concerns the anionic surfactants in a dishwashing agent. Surf PAC places at your disposal the methods listed below for your applications. Please consult your Metrohm supplier; you can find the contact details under

«www.metrohm.com» – «Agencies».




```
'fr
785 DMP Titrino      0P1/101       785.0011
date   2000-09-26    time   12:45         20
U(init)             14  mV   DET U   ********
smpl  size      0.1420  g
EP1              9.613  ml     199  mV
Anion           29.481  mmol/100  g
stop  V  reached
           ============
```

Titration curve and result report obtained during a determination of the anionic surfactants in a dishwashing agent using potentiometric two-phase titration with c(Hyamine 1622) = 0.005 mol/L. A 6.0507.140 Surfactrode Refill was used as the indicator electrode together with a 6.0726.107 Ag/AgCl reference electrode. Starting solution: 20 mL buffer pH = 3.0 + 0.2 mL TEGOadd + 20 mL ethanol/MIBK 1:1 + 50 mL dist. H_2O.

List of methods

Methods no. 1 to 21, arranged into groups A to E, can be found on the memory card:

A – Anionic surfactants

1 Titer determination of cationic titrants for the potentiometric two-phase titration of anionic surfactants and soaps

2 Titer determination of the cationic titrant for the potentiometric aqueous titration of anionic surfactants

3 Anionic surfactants and soaps in washing powders by potentiometric two-phase titration

4 Anionic surfactants in oil-containing shower gels or bath additives by potentiometric two-phase titration

5 Anionic surfactants in dishwashing concentrates by potentiometric aqueous titration

B – Cationic surfactants

6 Titer determination of the anionic titrant for the potentiometric two-phase titration of cationic surfactants

7 Titer determination of the anionic titrant for the potentiometric aqueous titration of cationic surfactants

8 Cationic surfactants in hair conditioners by potentiometric two-phase titration

9 Cationic surfactants in cooling lubricant concentrates by potentiometric two-phase titration

10 Cationic surfactants in mouth rinses by potentiometric aqueous titration

C – Nonionic surfactants (all the determinations performed with the NIO electrode)

11 Nonionic surfactants: calibration factor with Triton X-100 and polyethylene glycol 1000

12 Nonionic surfactants in household cleaners

13 Nonionic surfactants in wool shampoo

D – Betains and polyacrylates

14 Betains by aqueous titration with STPB and by nonaqueous titration with $HClO_4$

15 Polyacrylates by titration with TEGOtrant A100

E – Further ingredients in formulations

16 Sulfate in washing powders

17 Total phosphate in washing powders

18 Peroxo acids (perborate, percarbonate, persulfate) in washing powders

19 NTA and/or EDTA in washing powders

20 Chloride (NaCl) in detergents and soaps

21 Carbonate in washing powders

Scope of delivery

6.6041.003 Surf PAC, English version
6.6041.001 Surf PAC, German version

each consisting of:

- The printed collection with texts concerning the 21 titration methods most often used in surfactant analysis. Each method is extensively described and comprises parameter sets and curve examples; method-related icons facilitate orientation. The collection comes in an attractive, practical binder.
- Memory card containing the parameter sets of the 21 methods for loading into the 799 GPT Titrino, 798 MPT Titrino, 785 DMP Titrino or the 751 GPD Titrino (instrument program version 5.751.0020 or higher).
- Two Metrodata CD-ROMs containing:
  - The contents of the above-mentioned binder, i.e. texts, parameter sets and curve examples (PDF files).
  - The following Metrohm Application Bulletins:
    No. 101 Complexometric titrations with the Cu ISE
    No. 129 Potentiometric determination of orthophosphates, metaphosphates and polyphosphates
    No. 130 Chloride titrations with potentiometric indication
    No. 140 Titrimetric determination of sulfate
    No. 143 Potentiometric determination of nitrilotriacetic acid (NTA) and/or ethylenediaminetetraacetic acid (EDTA) in washing agents
    No. 230 Titrimetric/potentiometric determination of non-ionic surfactants based on polyoxyethylene adducts using the NIO electrode
    No. 233 Titrimetric/potentiometric determination of anionic and cationic surfactants
    No. 264 Titrimetric methods for the determination of betains
    No. 268 Potentiometric titration of surfactants and pharmaceutical compounds
    No. 269 Titrimetric/potentiometric determination of ionic surfactants by two-phase titration using the Metrosensor Surfactrodes
    No. 275 Potentiometric two-phase titration of anionic surfactants in washing powders and liquid washing agents
  - The following Metrohm Application Notes:
    No. T-10 Anionic surfactants in shower lotions and shampoos
    No. T-11 Anionic surfactants in nickel plating bath
    No. T-12 Cationic surfactants in hair conditioner
    No. T-13 Cationic surfactant (cetrimid) in antiseptic disinfectant
    No. T-15 Non-ionic surfactants in liquid household cleaners
    No. T-16 Non-ionic surfactants in compact washing powders
    No. T-26 Perborate, percarbonate or persulfate in washing powder
    No. T-46 Soap content of soap noodles
    No. T-47 Soaps and anionic surfactants in washing powder by potentiometric two-phase titration
    No. T-48 Anionic surfactants in shower oil by potentiometric two-phase titration
    No. T-49 Cationic surfactants in household cleaner by potentiometric two-phase titration
    No. T-50 Non-ionic surfactant nonylphenol ethoxylate (8 EO)
    No. T-67 Non-ionic surfactant tallow ethoxylate
    No. T-68 Non-ionic surfactant coconut oil ethoxylate
  - Demo versions of the Metrodata programs VESUV, TiNet, VA Database, IC-Net etc. Adobe® Acrobat® Reader for reading and printing the PDF files. Using the VESUV PC software you can load the parameter sets from the CD-ROM into the following Titrinos: 716 DMS Titrino, 736 GP Titrino, 794 Basic Titrino or 751 GPD Titrino (instrument software version <5.751.0020).

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