

838 Advanced VA Sample Processor



**Fully automatic determination
of organic additives in
electroplating baths with CVS**

The 838 Advanced VA Sample Processor in a nutshell

The new 838 Advanced VA Sample Processor allows the fully automatic and extremely flexible processing of large sample series in the routine monitoring of electroplating baths.

This means that the 838 Advanced VA Sample Processor is the ideal partner for the 797 VA Computrace for the fully automated determination of organic additives in electroplating baths by means of the CVS technique (Cyclic Voltammetric Stripping). Both Dilution Titration (DT) for the determination of suppressors (levelers, carriers) and LAT (Linear Approximation Technique) or MLAT (Modified Linear Approximation Technique) for the determination of brighteners can be automated.

The large sample rack of the 838 Advanced VA Sample Processor with 112 positions for different vessel sizes guarantees the rapid and efficient determination of additives – even with large sample numbers.

The CVS technique is used, for example, for monitoring the following types of electroplating baths:

- Acidic copper baths
- Tin baths
- Tin-lead baths
- Alkaline zinc baths

Existing, manually operated 797 VA Computrace systems can, of course, be easily extended with the 838 Advanced VA Sample Processor.

Suppressor determination

Suppressors and similar compounds are determined by Dilution Titration in combination with the CVS technique. Using an 800 Dosino, the calibration standard solutions or bath samples are taken from the sample vessels on the rack of the Advanced VA Sample Processor and added in small steps to the Virgin Makeup Solution (VMS) in the measuring vessel. The VMS is added by a second 800 Dosino.

Placing both samples and calibration standards on the sample processor makes it possible to automatically calibrate methods before and even during a sample series. A maximum of 56 samples or calibration standard solutions can be analyzed in a single run.

Between the determinations the measuring vessel is automatically emptied and thoroughly rinsed with water using two 823 Membrane Pump Units. Carryover is thus reliably prevented.



Completely automated analysis system for the determination of suppressors, consisting of 797 VA Computrace, 838 Advanced VA Sample Processor, two 800 Dosinos and rinsing equipment.

Brightener determination

Brighteners in electroplating baths are determined by the two related calibration techniques LAT (Linear Approximation Technique) or MLAT (Modified Linear Approximation Technique) in combination with the measuring techniques CVS (Cyclic Voltammetric Stripping) or CPVS (Cyclic Pulse Voltammetric Stripping). All these techniques are supported by the 797 VA Computrace and can be automated with the 838 Advanced VA Sample Processor.

In brightener determination by the MLAT calibration technique, the so-called intercept solution and the standard brightener solution are dosed into the measuring vessel using 800 Dosinos. After the determination of the intercept value the bath sample is transferred to the measuring vessel by means of the peristaltic pump built into the 838 Advanced VA Sample Processor and added to the intercept solution. In the LAT calibration technique both the intercept solution and the bath samples are transferred into the measuring vessel by means of the peristaltic pump built into the 838 Advanced VA Sample Processor.

The solution transfer permits a real, fully automatic MLAT determination without having to remove the electrodes from the solution during the measurement. This guarantees the highest possible reproducibility and accuracy of the results. The brightener content of up to 28 samples can be analyzed automatically in a single run.

As in the suppressor determination, the measuring vessel is automatically emptied and rinsed after each determination. All the waste is collected centrally in a waste container, which allows the analysis system to be operated easily and cleanly.

Advantageous flexibility

For convenient instrument configuration the 838 Advanced VA Sample Processor has a separate keypad with LCD display. With the method editor, the preprogrammed methods can be very easily adapted to your individual requirements.

The sample rack accommodates a maximum of 56 sample vessels with a capacity of 5 to 11 mL as well as a further 56 sample vessels with a capacity of 20 to 50 mL. This means that sample volumes in the range between 5 and 50 mL can be processed without any problems.

The automated analytical procedure is completely controlled by the software of the 797 VA Computrace. This includes both the control of the 838 Advanced VA Sample Processor and the 800 Dosinos connected to the 797 VA Computrace.



Completely automated analysis system for the determination of brighteners, consisting of 797 VA Computrace, 838 Advanced VA Sample Processor, three 800 Dosinos and rinsing equipment.

Specifications

Capacity	56 positions for sample vessels with max. 11 mL solution 56 positions for sample vessels with max. 50 mL solution
Sample volume	5...50 mL
Operation	Via external keypad
Peristaltic pump	Dual-channel pump
Rotation rate	$\pm 6.7 \dots \pm 100 \text{ min}^{-1}$ (adjustable in 15 steps)
Flow rate	Typically 3.8 mL/min (with 6.1826.020 tubing and 20 min^{-1}) Typically 25 mL/min (with 6.1826.150 tubing and 67 min^{-1}) The flow rate depends on the mechanical tension applied to the tubing and has been measured with water and in the absence of any counter-pressure
Pressure	Max. 0.4 MPa (4 bar)
Dimensions	Width 280 mm Height 730 mm Depth 500 mm

Ordering information

2.838.0310 838 Advanced VA Sample Processor

Sample Changer for the fully automatic determination of organic additives in electroplating baths by means of CVS in combination with the 797 VA Computrace. Capacity: max. 56 solutions of 5 to 11 mL volume and 56 solutions of 20 to 50 mL. With built-in peristaltic pump for sample transfer. Flexible method setup and parameter settings via the included keypad. Includes comprehensive accessories for setting up the measuring station: sample rack, keypad, tubings, sample vessels and splash protection. Without connecting cable and without rinsing equipment.

Consumables

6.2743.057	Sample vessel 11 mL made of polypropylene (200 pieces)
6.2747.010	Sample vessel 50 mL made of polypropylene (25 pieces)
6.1826.020	Pump tubing for a typical flow rate of approx. 3.8 mL/min
6.1826.150	Pump tubing for a typical flow rate of approx. 25 mL/min

Equipment for rinsing and emptying the measuring vessel on the 797 VA Computrace

2.731.0010	731 Relay Box
2 x 2.823.0010	823 Membrane Pump Unit
2 x 6.2160.010	Adapter cable
6.5323.010	Rinsing equipment for VA instrument with connected Membrane Pump Units
6.2141.180	Connecting cable 797 VA Computrace – 838 Advanced VA Sample Processor



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