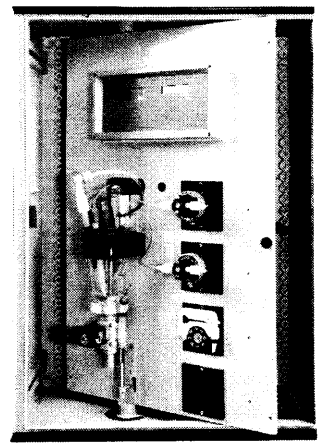
polymetron

Free hydrosulfite/indigo analyzer Model 8810

data sheet



Applications

- Dyeing process for blue jeans
- Pad stream process for the dyeing of mixed synthetics

Methodology

- **Measurement principle:** ORP (redox) titration with potassium ferricyanide after sample conditioning with sodium hydroxide and EDTA. The first end-point is representative of FREE HYDROSULFITE concentration and the second end-point of INDIGO concentration.
- **Measurement range:** FREE HYDROSULFITE: 0–5 g/l – INDIGO: 0–10 g/l
- **Analysis frequency:** Programmable - 1 analysis every 5 min. max.

Advantages

Advantages of automatic control

The quality of dye fixation greatly depends on the quality and quantity of the reducing agent (hydrosulfite). Assuming all other factors are constant, low concentrations of hydrosulfite cause:

1) Insufficient dye penetration resulting in unsatisfactory colors
2) Loss of dye because of washout during the wash and rinse stages.

Conversely, high hydrosulfite concentrations cause:

1) Waste of costly chemicals
2) Increased operating costs because of excessive energy and water usages
3) Fiber damage because of "over reduction"

Since low hydrosulfite concentrations directly affect the quality of the goods, most vat–dyeing processes operate with excess hydrosulfite for "safety". Thus, the need for a continuous on-line analysis is clearly indicated.

Advantages of 8810 ANALYZER

- No sample filtration needed
- Easy to setup
- Automatic reactor cleaning after each cycle
- Two 0/4–20mA analog outputs for FREE HYDROSULFITE and INDIGO concentrations
- Monthly maintenance only

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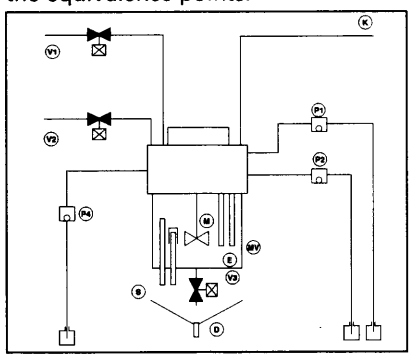
Operating principle

The drain valve and the rinse valve open, allowing rinse water to clean the reactor for a programmed time (see figure).

After the rinse valve closes, the sample valve opens while the drain valve stays open a few seconds in order to flush any remaining rinse water droplets with fresh sample solution.

The drain valve closes and the sample volume is accurately adjusted with the siphon. The conditioning pump is now activated and operates for a programmed time. The titration pump is used for the titration. The action time of the titration pump is directly proportional to the concentration of indigo and free hydrosulfite at the equivalence points.



V1	: Rinse valve	P4	: Volumetric pump for automatic calibration	S	: Siphon/overflow
V2	: Sample valve	D	: Drain	P1	: Titration pump
V3	: Drain valve	M	: Stirrer	P2	: Sample conditioning pump
MV	: Reactor			K	: Electrode cable

Specifications

SAMPLE
Number of sample streams:
1, up to 3 with sequencer model 8811
Sampling mode: cyclic, programmable
Sample temperature: 0–50°C (32–122°F)
Sample pressure: 0.5–6 bar (7.2–87 psi)
Sample flowrate: 50–300 l/h
Flush water pressure: 1–6 bar (14.5–87 psi)
Air instrument: 5–7 bar (72.5–101.5 psi)

INSTALLATION
Mounting: 19" panel– or wall–mount unit or free–standing cabinet
Sample tubing: 12/14 mm
Flush water: tubing 6/8 mm
Air instrument: tubing 4/6 mm

ANALYSIS
Analysis cycle: ≈ 5 min.
Cycle time: programmable 999 min. max.

Units: ppm, ppb, mg/l–programmable
Accuracy: ± 2%
Reproductibility: < 3%
Calibration: manual, process or automatically programmable

OUTPUTS
Analog outputs:
Two 0–4/20 mA signal galvanically isolated
Alarms:
3 relays: system alarm, low limit/high limit
Control:
1 sample level detector
1 reagent level detector
1 calibration solution level detector
RS232 output
Remote start/stop

E.M.C.: This instrument conforms to European Directive 89/336/CEE concerning electromagnetic compatibility.

System configuration

ANALYZER BASIC INSTRUMENT

P/N 368810,xxxxx:
8810 FREE HYDRO / INDIGO, 19" panel–mount unit, includes:
- Titration vessel /sprinkler
- Measuring platinum electrode/reference
- One reagent pump for titration

P/N 368810,7xxxx: Additional reagent pump for sample conditioning

OPTIONS
- P/N 368810,60000: Automatic calibration
- P/N 368810,56000: Chemical cleaning
- P/N 368810,65000: Manual sample entry system
- P/N 368810,65000: Fiberglass enclosure, wall–mount
- P/N 368810,40000: Fiberglass enclosure, wall–mount
- P/N 368810,45000: Steel cabinet, floor–mount

* Reagent pump are either peristaltic or micropiston (24V/50HZ or 24V/60HZ)
* The product can be configured with different frequency/voltage:
- 220V/50HZ - 240V/50HZ - 110V/50HZ - 110V/60HZ

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