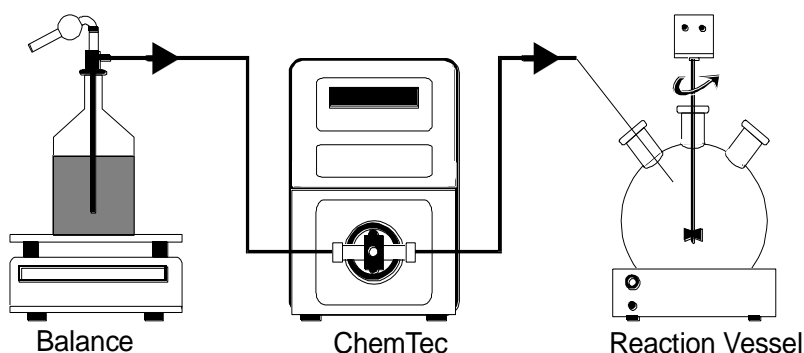


Polymer / Organic Synthesis: Automated Mass-Flow Control of Reactants

SUMMARY:

The **ChemTec™** interfaces directly with your electronic balance to **provide precise, automated mass-flow control** of reactants, catalysts, and additives. **Programmable feed rates** allow **precise control of reaction stoichiometry** thereby **improving yield** and **molecular weight distribution** of your product. The ChemTec is ideally suited for R&D, and scale-up applications.



FEATURES:

The SciLog **ChemTec** smart pump provides programmable reaction feed either by **volume** or by **weight**. By simply connecting to an electronic, top-loading balance, the ChemTec offers **precise mass-flow metering as low as 0.01 gm/min (8 RPM motor)**. Inert, high precision piston pumps (wetted parts of ceramic or 316 SS) can readily accommodate even corrosive reagents. For higher mass-flow ranges, peristaltic pumps as well as pulse-free magnetic gear pumps (wetted parts of 316SS & Teflon® or Ryton®) are available pump options.

Easy to use software allows the ChemTec pump to be scheduled for unattended operation during weekends and off-hours. User programmable alarms can be used to monitor mass-flow rate, cumulative reactant weight, as well as end of program status. During an alarm, the ChemTec stops the pump action and/or provides an auditory alarm. **All pump data and alarms can be printed out or sent to a personal computer for data archiving, and with SciLog's SciDoc Documentation Package, collected automatically into a custom Excel® Spreadsheet.**

In addition, the ChemTec provides **time-programmable mass-flow rates**. The pump rate can be changed on a **user-defined schedule** to automatically **increase, decrease, or to remain constant with time**. This feature of the ChemTec allows you to generate the **optimal reactant vs. time concentration profile** that will meet the specific requirements of your synthesis.

ADVANTAGES:

- Optimal control of reaction stoichiometry / conditions.
- Improved molecular weight distribution and product yield.
- Optimal reactant versus time concentration profile.
- Scheduling of reactant addition during off-hours.
- Automated mass-flow control at a modest price.
- Depending upon model, flows from 0.01 to 3700 gr/min

OVER

SAMPLE PROGRAM:

A typical ChemTec user-program for controlling pump functions is shown below. All program statements are easily entered from the ChemTec front panel. Alternatively, lengthy and more complex user-programs can be prepared and stored in Note Pad on your PC and uploaded to the ChemTec from the Hyperterminal (Start: Accessories: Communication: Hyperterminal) of your PC. The following exponential feed program is entered into EDIT of the Mass Flow mode:

000	START	Start of Program
001	CW	Pump direction: Clockwise
002	RUN	Pump motor is turned On.
003	RATE=0.37g/m	Starting pump rate = 0.37g/m
004	INTP=0.50g/m	Pump ramps from 0.37 to 0.50g/m,
005	TIME=12:00	over a 12 hr time interval
006	INTP=0.69g/m	Pump ramps from 0.50 to 0.69 g/m
007	TIME=12:00	over the second 12 hr time interval
008	INTP=0.94g/m	Pump ramps from 0.69 to 0.94 g/m
009	TIME=12:00	over the third 12 hr time interval
010	STOP	Pump motor stops
011	COUNT=1	Pump program cycles
012	END	End of Program

Note: Use the * (Star) key of the ChemTec to access the **INTP** (Interpolation) function

When executing the above program, the ChemTec will have a starting pump rate of 0.37 g/min and ramps up to 0.50 g/min during the first 12-hour interval. During the second 12-hour interval, the pump rate is ramped from 0.50 to 0.69 g/min. In the third, 12-hour interval, the pump rate is ramped from 0.69 to 0.94 g/min.

For demonstration purposes change **TIME = 12:00** (twelve hours) to **TIME = 00:01** (one minute)

ORDERING INFORMATION: SciLog Customer Service: 1-800-955-1993

CATALOG # DESCRIPTION:

100-431MASS-8	ChemTec FM-8 with Piston Pump Head; 8RPM motor; 100 psi max.; pump rate from 0.01 gm/min to 0.4gm/min
100-431MASS	ChemTec FM-420 with Piston Pump Head; 450RPM motor; 100 psi max.; 0.1 gm/min to 20 gm/min.
100-532MASS	ChemTec FM-520 with Piston Pump Head: 100 psi max., 10 gm/min to 340 gm/min.
080-095A	Printer , interfaces with ChemTec – documents your process.
080-099CHEM	SciDoc for ChemTec , Documentation Software for ChemTec Data with customized Excel [®] Spreadsheet.
080-405	Small Bore Tubing Kit with 25 feet of 1/8" OD x 1/16" ID Teflon tubing including two pairs of ferrules and nuts (1/4"-28).

Other Pump Head / Balance combinations are available, Contact SciLog with your needs.