

FLOW CHEMISTRY STARTER SET



Introduction

The Flow Chemistry Starter Set is intended to introduce trainees in flow chemistry and to provide further education for those who already work in the field. The Starter Set was developed for laboratory syntheses. It permits the simple translation from batch process into a continuous one by using standard laboratory equipment. Thanks to its wide range of combination possibilities it is ideally suited for education purposes because a relatively broad spectrum of applications can be represented.

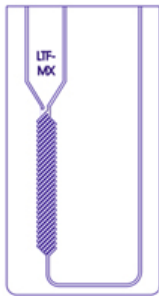
Content

4 x MR Lab reactors incl. connection bar	2 x single syringe pumps
1 x Frame work	10 m PTFE tube 1/8"
10 x fittings 1/8"	10 x ferrules 1/8"
2 x 20 ml plastic syringe	1 x Manual for 13 reactions



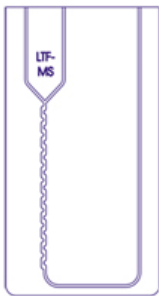
MICROREACTORS

The Flow Chemistry Starter Set contains the following four LTF MR Lab reactors incl. connection bar:



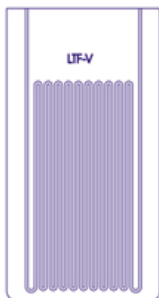
LTF MX

For mixture-intensive substances
Material: Borofloat33
Dimension: 115 x 60 x 6 \pm 0.5 mm
Volume: 0.2 ml
Channel size: 1 mm
0.1 - 10 ml / min / channel
Inclusive connection bar 1/4" unf 28



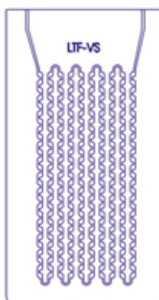
LTF MS

Not sensitive to blockage
Material: Borofloat33
Dimension: 115 x 60 x 6 \pm 0.5 mm
Volume 0.2 ml
Channel size: 1 mm
0.5 - 20 ml / min / channel
Inclusive connection bar 1/4" unf 28



LTF V

Residence time
Material: Borofloat33
Dimension: 115 x 60 x 6 \pm 0.5 mm
Volume 1.7 ml
Channel size: 1 mm
Inclusive connection bar 1/4" unf 28



LTF VS

Residence time for mixture-intensive substances
Material: Borofloat33
Dimension: 115 x 60 x 6 \pm 0.5 mm
Volume 1.1 ml
Channel size: 1 mm
Inclusive connection bar 1/4" unf 28



SYRINGE PUMPS

The Flow Chemistry Starter Set contains of two syringe pumps with the following specifications:

Mechanical & Electrical

Syringe sizes:	Up to 60 cc
Number of syringes:	1
Motor type:	Step motor
Motor steps per revolution:	400
Microstepping:	1/8 to 1/2 depending on motor speed
Advance per step:	0.2126 μ M to 0.8504 μ M depending on motor speed
Motor to drive screw ratio:	18/28
Drive screw pitch:	20 revolutions/"
DC connector:	2.1 mm, center positive
Voltage at DC connector:	12V DC at full load
Amperage:	750 mA at full load
Power supply type:	Unregulated linear external wall adapter, country and power source specific
Power supply output rating:	12V DC @ 800 mA
Dimensions:	8 3/4" x 5 3/4" x 4 1/2" High (22.86 cm x 14.605 cm x 11.43 cm)
Weight:	3.6 lbs. (1.63 kg)
Allen Wrench	3/32 Hex

Operational

Maximum speed:	3.7742 cm/min
Minimum speed:	0.004205 cm/hr
Maximum pumping rate:	1257 ml/hr with a B-D 60 cc syringe
Minimum pumping rate:	0.73 μ l/hr with a B-D 1 cc syringe
Maximum force:	35 lbs. at minimum speed, 18 lbs. at maximum speed
Syringe inside diameter range:	0.100 to 50.00 mm



REACTION MANUAL

The Flow Chemistry Starter Set includes a manual for the following 13 reactions:

- 001 Iodine clock reaction (Landolts reaction)
- 002 Hydrolysis of acetic acid chloride (acetyl chloride)
- 003 Alkaline hydrolysis of 4-nitrophenyl acetate
- 004 Esterification of 4-nitrophenol to 4-nitrophenyl acetate
- 005 Hippuric acid from glycine and benzoyl
- 006 Aldol condensation of acetone and benzaldehyde to dibenzalacetone (1,5- diphenyl-1,4-pentadiene-3-one)
- 007 Condensation of 1,3-diphenyl-2-propanone with benzyl to tetraphenylcyclopentadienone
- 008 Addition of phenylmagnesium bromide to fluorenone
- 009 Bromine addition to styrene to 1,2-dibromo-1-phenylethane
- 010 Oxidation of 2,2-dimethyl-1,3-propanediol to 2,2-dimethylmalonic acid
- 011 Bromination of anisole to 4-bromoanisole
- 012 Nitration of phenol to 2-nitrophenol and 4-nitrophenol
- 013 Photooxidation of p- methoxybenzyl alcohol to p-methoxybenzaldehyde in a microreactor with riboflavintetraacetat as a catalyst