STARTER SET XXL

Introduction

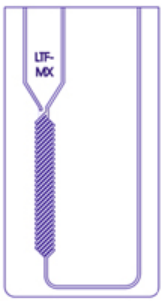
The Flow Starter Set XXL is intended to introduce trainees in flow chemistry and to intensify the education for those who already work in the field. The Starter Set XXL was developed for laboratory syntheses. It permits the simple translation from batch process into a continuous one by using standard 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 syringe pumps MR. QD
- 1 x Frame work
- 10 m PTFE tube 1/8"
- 10 x fittings 1/8"
- 10 x ferrules 1/8"
- 4 x 10 ml glass syringe
- 1 x Manual for 13 reactions
- 1 x XXL-S-02 reactor

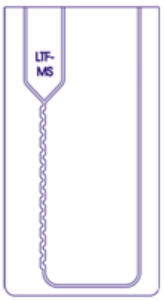
MICROREACTORS

The Starter Set XXL contains the following four LTF MR Lab reactors plus one XXL-S-02 reactor incl. connection bar:



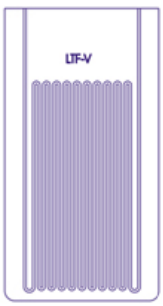
LTF MX

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



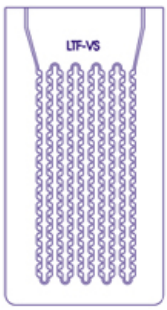
LTF MS

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



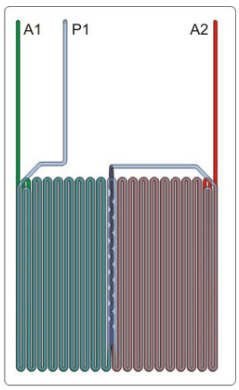
LTF V

Residence time
Material: Boroloat33
Dimension: 115 x 60 x 6 ±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 ±0.5 mm
Volume 1.1 ml
Channel size: 1 mm
Inclusive connection bar 1/4" unf 28



XXL-S-02

Mixer and residence time
Material: Borofloat33
Dimension: 180 x 130 x 6.4 mm
Volume: 15 ml
Mixer base: Type "chicane"
Reagents: 2
Pressure area: 14 bar
Connection via 1/4” unf 28 glass thread

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Syringe Pump – MR. QD

Continuous flow from 750 µl/h up to 15 l/h
(depending on syringe volume)

- Max. pressure: 145 psi
- Fluids in contact with PTFE and Perlast®
- Syringes from 0,25 ml up to 25 ml
- Control unit, pressure and temperature sensor included
- Control unit can manage up to 4 pumps
- Self-priming
- Self-optimization pulsation mode
- Safety stop on pressure and temperature
- Various operation modes
- Suitable for Flow Chemistry Starter Set

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General technical data:

- Dimensions: W x H x D 198mm x 408mm x 150mm
- Weight: approx. 10kg
- Robust constructional design
- Ball screw drive
- 1 flow rate
- The continuous sound pressure at the operating personnel's workplace is
- under 80 dB(A)
- Permissible operating temperature range: 0 °C to + 30°C
- Permissible storage temperature: -25°C to +45°C.
- Permissible humidity: 20% to 80%.
- Protection class IP 43

Technical data of the pump module:

- Continuously adjustable volume flow
- Single flow
- Self-priming
- Permissible medium temperature: 0 - 50°C **
- Continuous volume flow
- Maximum permissible pressure 10 bar
- Continuous flow rate due to double stroke piston principle
- Higher pumping pressures possible upon request
- Pump components in contact with the medium: Teflon® and Perlast®
- Connection threads (inner threads): UNF1/4"x 28

Electrical Data of the Control and Drive Module

- Power supply provided by included mains adapter **
- Mains side connection 230 VAC (50/60 Hz)
- Mains side fuse protection max. 16 A
- Rated power max. approx. 200 W
- Control port for the control unit

**** Different configurations available upon consultation with the manufacturer.**

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

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