

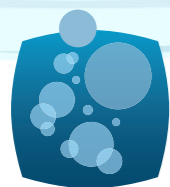


REACTION DELAY COILS

Constant mixing coils for
minimum band broadening
of plug flows in HPLC



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KNITTED REACTION DELAY AND CONSTANT MIXING COILS FOR PLUG FLOWS

The Reaction Delay Coils are reactors made from PTFE tubing knitted into a tortuous path to force the fast moving center of the liquid stream to mix radially with the slower moving boundary liquid layer. This technique minimizes the axial dispersion. The shape of the chromatographic peak entering the reactor is in this way preserved efficiently. The Reaction Delay Coil is the most optimal delay element for use in any plug flow systems. It is typically inserted in the flow path to create a delay so that a reaction that requires a certain time can take place.



WHY REACTION DELAY COILS?

Plug flows in tubing become more and more disperse by wall effects seen as band broadening. The constant mixing in the tortuous Reaction Delay Coil effectively minimises band broadening.

POST COLUMN DERIVATISATION

Maintenance of peak shape is essential in any system using post column derivatisations to produce useful results.

Reaction Delay Coils are perfectly designed for maintaining peak shape.

PHOTOCHEMICAL DERIVATISATIONS IN FLOW

Constant mixing is essential to post column photo derivatisation and photolysis to reduce effects of the limited penetration depth and to retain the peak shape.

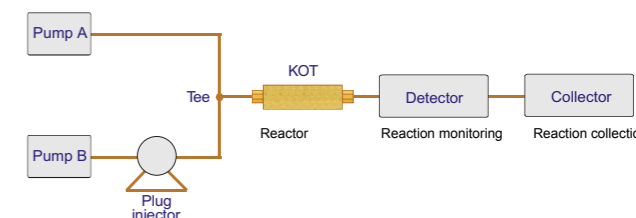
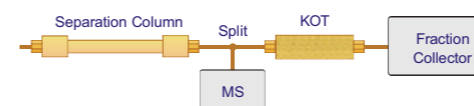
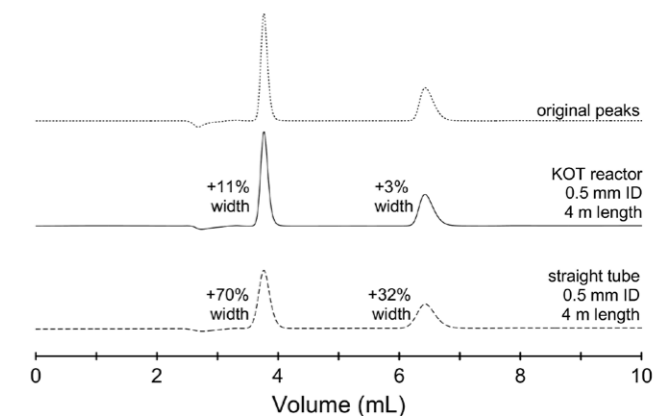
FLOW CHEMISTRY REACTION OPTIMISATION

Plug flow trial experiments using Reaction Delay Coils in development of continuous flow processes reduces the need of test substrate and improves experiment readout.

THE CONCEPT OF CONSTANT MIXING

The Reaction Delay Coils are made from tubing knitted into a tortuous path to force the fast moving center of the liquid stream to mix radially with the slower moving boundary liquid layer. The constant mixing minimizes the axial dispersion and maintains the shape of the chromatographic peak entering the reactor efficiently. The reactor is typically inserted in the flow path to create a delay providing time for the expected reaction. Different reaction times are accomplished by changing the inner diameter and length of the KOT. To ensure a stable radial mixing a linear flow rate of 10 cm/s or more is recommended.

Plug flow preserved by KOT reactor
Compared to regular straight tube of identical dimension
Tested in suppressed ion chromatography separation



POST PREP COLUMN DELAY

The Reaction Delay Coil can be applied as a delay in the parallel coupling of a MS detector and a fraction collector in preparative separations. The delay time induced by the KOT allows the detector to analyse the eluate and make intelligent decisions of when a new fraction is going to be initiated, without loss of chromatographic efficiency.

SCOUTING CONTINUOUS PROCESSES

The Reaction Delay Coil is the perfect tool for optimising flow chemistry applications based on plug injections. Precious substrate can be saved without compromising the number of conditions to be investigated. In this way the Reaction Delay Coil offers the user to do more experiments establishing better reaction conditions on less raw material.

Reaction time
10-100 seconds

Knitted in PTFE
for full chemical
resistance

Customisations
available on
demand

Peak shapes
maintained

TECHNICAL DATA

The Reaction Delay Coils are manufactured from high-quality virgin PFTE. Other tubing materials or secondary shapes can be available upon request. To maintain a proper mixing a linear flow rate of on less than 10 cm/s is recommended. Max recommended pressure relates to the tubing in the coil and not to connecting fittings. Biotech Fluidics can provide you with any needed fitting. Each Reaction Delay coil comes with a serial number providing full traceability.

P/N	Biotech REACTION DELAY COIL (KOT)	internal volume	Minimum* recommended flow rate	Residence time	Max recommended operational pressure**
		mL	mL/min	sec.	bar
3000-123	Knitted coil PFTE, L 1m, ID 0.25 mm	0,05	0,29	10	100
3000-125	Knitted coil PFTE, L 1m, ID 0.50 mm	0,20	1,2	10	70
3000-128	Knitted coil PFTE, L 1m, ID 0.75 mm	0,44	2,7	10	30
3000-223	Knitted coil PFTE, L 2m, ID 0.25 mm	0,10	0,29	20	100
3000-225	Knitted coil PFTE, L 2m, ID 0.50 mm	0,39	1,2	20	70
3000-228	Knitted coil PFTE, L 2m, ID 0.75 mm	0,88	2,7	20	30
3000-423	Knitted coil PFTE, L 4m, ID 0.25 mm	0,20	0,29	40	100
3000-425	Knitted coil PFTE, L 4m, ID 0.50 mm	0,79	1,2	40	70
3000-428	Knitted coil PFTE, L 4m, ID 0.75 mm	1,77	2,7	40	30
3000-523	Knitted coil PFTE, L 5m, ID 0.25 mm	0,25	0,29	50	100
3000-525	Knitted coil PFTE, L 5m, ID 0.50 mm	0,98	1,2	50	70
3000-528	Knitted coil PFTE, L 5m, ID 0.75 mm	2,21	2,7	50	30
3000-133	Knitted coil PFTE, L 10m, ID 0.25 mm	0,49	0,29	100	100
3000-135	Knitted coil PFTE, L 10m, ID 0.50 mm	1,96	1,2	100	70
3000-138	Knitted coil PFTE, L 10m, ID 0.75 mm	4,42	2,7	100	30

* Recommendation relates to achieve proper mixing by maintaining a linear flow rate >10cm/s

** Selected fittings may affect max pressure rating



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