

# KOT – TUBULAR COILS

KNITTED OPEN TUBULAR REACTION DELAY AND MIXING COILS



**Innovations United**

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# KOT – TUBULAR COILS



## KNITTED OPEN TUBULAR REACTION DELAY AND MIXING COILS

- Tortuous flow path of optimal flow dynamic design made from totally inert PTFE
- Minimised axial dispersion combined with efficient radial mixing
- Available individually in different lengths and inner diameters

## Preserved Chromatographic Peak Shape

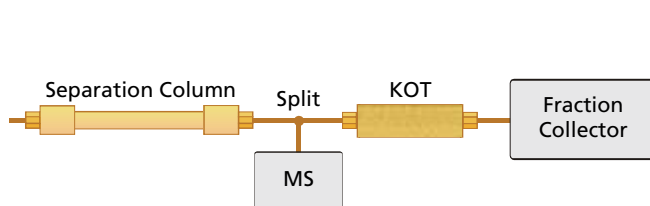
The Biotech knitted open tubular (KOT) reactors are made from tubing which has been knitted into a tortuous path to force the fast moving centre of the liquid stream to mix radially with the slower moving boundary liquid layer, thereby minimizing the axial dispersion. The shape of a chromatographic peak entering the reactor is thus preserved very efficiently. To ensure a stable radial mixing within the KOT, a linear flow rate of 10 cm/s or more is recommended. The KOT reactor is usually the most optimal delay element for use in analytical flow systems, and is typically inserted in the flow path to create a delay line, so that a reaction or

other event that requires a certain time can take place. Different delay or reaction times are accomplished by changing the inner diameter and length of the KOT, taking the flow rate through the KOT into consideration.

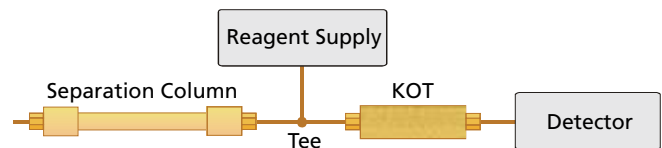
## Recommended Minimum Flow Rate

ID	Linear Flow	Volumetric Flow
<i>mm</i>	<i>cm/s</i>	<i>mL/min</i>
0.25	10	0.29
0.50	10	1.2
0.75	10	2.7

## The KOT Reactor is the Most Optimal Delay Element for Use in Analytical Flow Systems



A KOT applied as a delay coil allowing the result from the MS to control the fraction collector



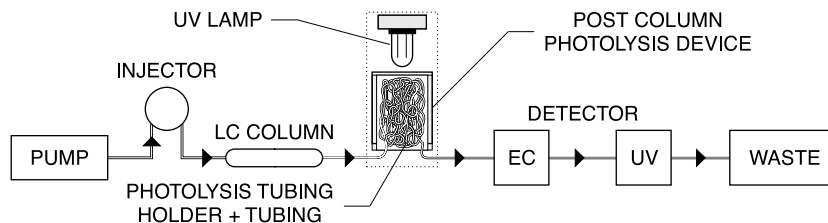
Typical use of a KOT as a mixer and reactor in HPLC post-column reaction reaction detection

## Example Application Areas

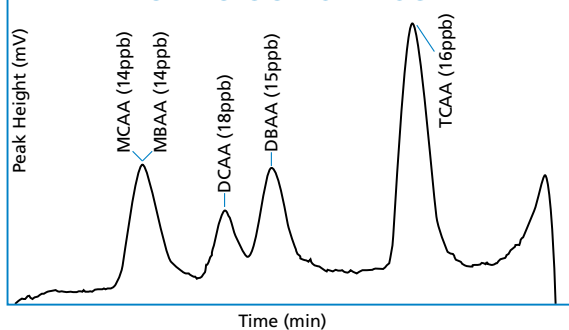
Biotech KOT reactors can be applied as a delay line in chromatographic separations. One example being the parallel coupling of a MS detector and a fraction collector in preparative separations (see left figure above). The delay time induced by the KOT allows the detector to analyse the eluate and make intelligent decisions of when a new fraction is going to be initiated, without loss of chromatographic efficiency.

The Biotech KOT reactors can also be used in post-column reaction detection in HPLC (see right figure above), using both room temperature and heated chemistries. In this set-up the KOT also ensure thorough mixing between the column effluent and the added reagents. Typical reactions are the production of fluorescent products from reactions between eluted compounds and reagents without native fluorescence.

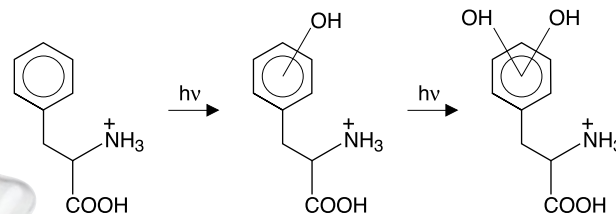
## NORMAL INSTRUMENTATION OF A UV PHOTOREACTOR IN AN LC INSTRUMENT.



## TYPICAL PC-IC CHROMATOGRAM



## PHOTOOXIDATION OF PHENYLALANINE



<b>P/N</b>	<b>KOT - Tubular coils</b>
3000-123	Knitted Open Tubular (KOT) Reactor, PTFE, 1 m, 0.25 mm ID
3000-125	Knitted Open Tubular (KOT) Reactor, PTFE, 1 m, 0.5 mm ID
3000-128	Knitted Open Tubular (KOT) Reactor, PTFE, 1 m, 0.75 mm ID
3000-223	Knitted Open Tubular (KOT) Reactor, PTFE, 2 m, 0.25 mm ID
3000-225	Knitted Open Tubular (KOT) Reactor, PTFE, 2 m, 0.5 mm ID
3000-228	Knitted Open Tubular (KOT) Reactor, PTFE, 2 m, 0.75 mm ID
3000-423	Knitted Open Tubular (KOT) Reactor, PTFE, 4 m, 0.25 mm ID
3000-425	Knitted Open Tubular (KOT) Reactor, PTFE, 4 m, 0.5 mm ID
3000-428	Knitted Open Tubular (KOT) Reactor, PTFE, 4 m, 0.75 mm ID
3000-133	Knitted Open Tubular (KOT) Reactor, PTFE, 10 m, 0.25 mm ID
3000-135	Knitted Open Tubular (KOT) Reactor, PTFE, 10 m, 0.5 mm ID
3000-138	Knitted Open Tubular (KOT) Reactor, PTFE, 10 m, 0.75 mm ID
3000-525	Knitted Open Tubular (KOT) Reactor, PTFE, 5 m, 0.5 mm ID

Most dimensions also available in black PTFE - intended for light sensitive compounds  
Other KOTs might be custom manufactured, please contact Biotech AB for further details

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