

Details of our inspection test on the reproducibility of retention time between individual batches of Inertsil ODS-4 & ODS-3

At GLS, we mainly check the following 3 factors:

- 1) Carbon Loading: Using a dedicated instrument to measure the carbon loading.
- 2) Selectivity Test: To confirm the performance of the packing material. In the test, Butylbenzene & Amylbenzene are used. Confirming the reproducibility of the separation factor (α) of Butylbenzene & Amylbenzene. For more details, please refer to slide 1.
- 3) Column Inspection Test: Confirming the reproducibility from Lot-to-Lot in the final inspection test. For more details, please refer to slide 2.

Selectivity Test

Analytical Conditions

Column Size:	250×4.6mmI.D.
Mobile Phase:	CH ₃ OH/H ₂ O=80/20
Flow Rate:	1.0mL/min
Column Temperature:	40C
Detector:	UV254nm
Sample Size:	5uL

Sample

- 1) Uracil
- 2) Caffeine
- 3) Phenol
- 4) Butylbenzene
- 5) o-Terphenyl
- 6) Amylbenzene
- 7) Triphenylene

Specification

Separation Factor (a) = $k'(Amyl) / k'(Butyl) = (t(Amyl) - t(Uracil)) / (t(Butyl) - t(Uracil))$

The value of Separation Factor (a) needs to be less than 10% against the value of standard we had set.

Column Inspection Test

Analytical Conditions

Column Size: 250×4.6mm I.D.
Mobile Phase: CH₃CN/H₂O=65/35
Flow Rate: 1.0mL/min
Column Temperature: 40C
Detector: UV254nm
Sample Size: 5uL

Sample

- 1) Acetophenone
- 2) Benzene
- 3) Toluene
- 4) Naphtalene

Specification

The retention time of Naphtalene needs to be within 10% against the value of standard we had set..

Conclusion

All columns that didn't pass the test in slide 1 and 2 will not & cannot be shipped out from our factory. The value of standard are set in each test. However, those values cannot be disclosed as it is a company confidential information.

As you are aware, we also conduct basic, acidic and chelating compound tests as well in our inspection test.

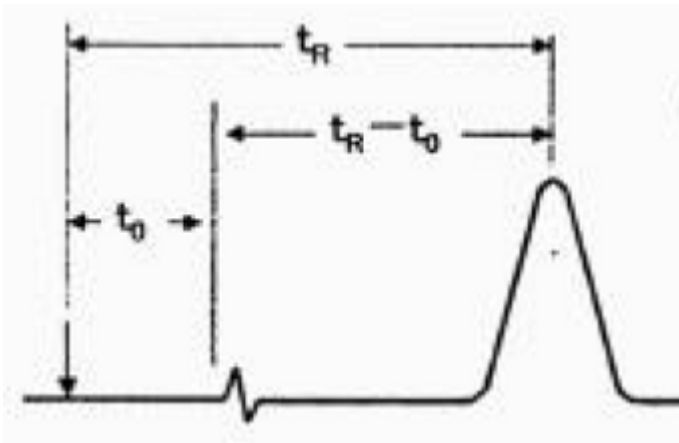
Reference 1

Parameter of retentivity

t_R : Retention Time (The time where the top of the peak elutes after injection)

V_R : Retention Capacity = (t_R x Flow Rat)

k' : Capacity Factor



$$k' = \frac{t_R - t_0}{t_0}$$

t_0 : The time of how long it took for the top of the peak eluted for those compounds that didn't retain.

Reference 2

Parameter of degree of separation

