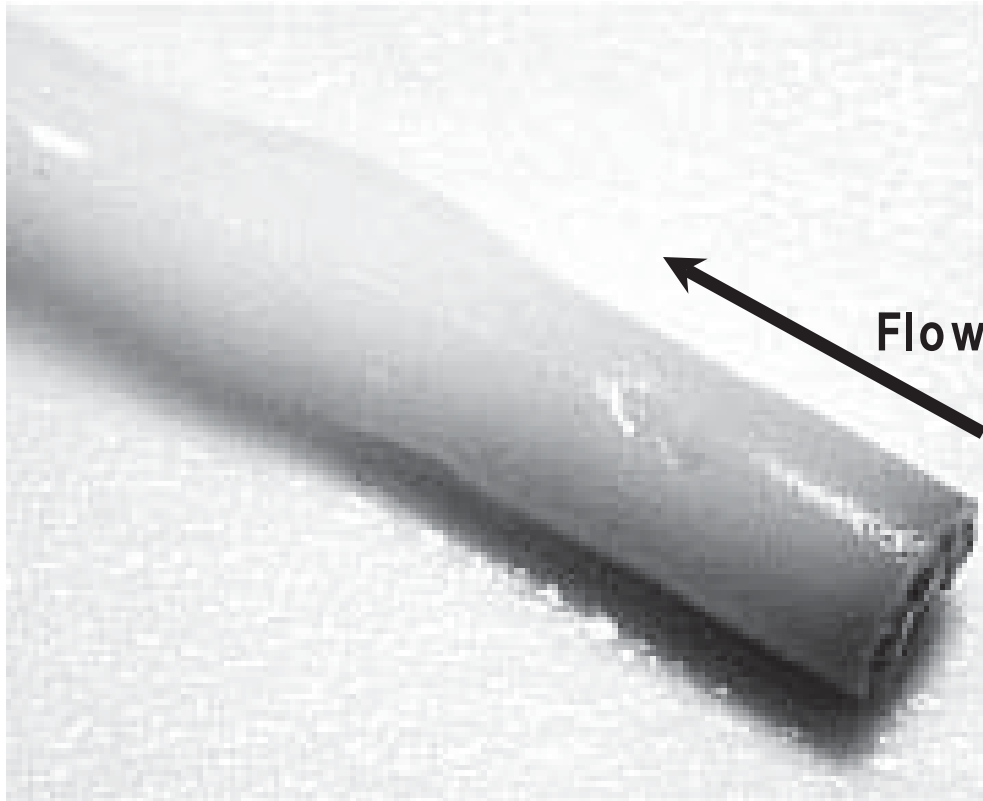


Retained impurities on the column



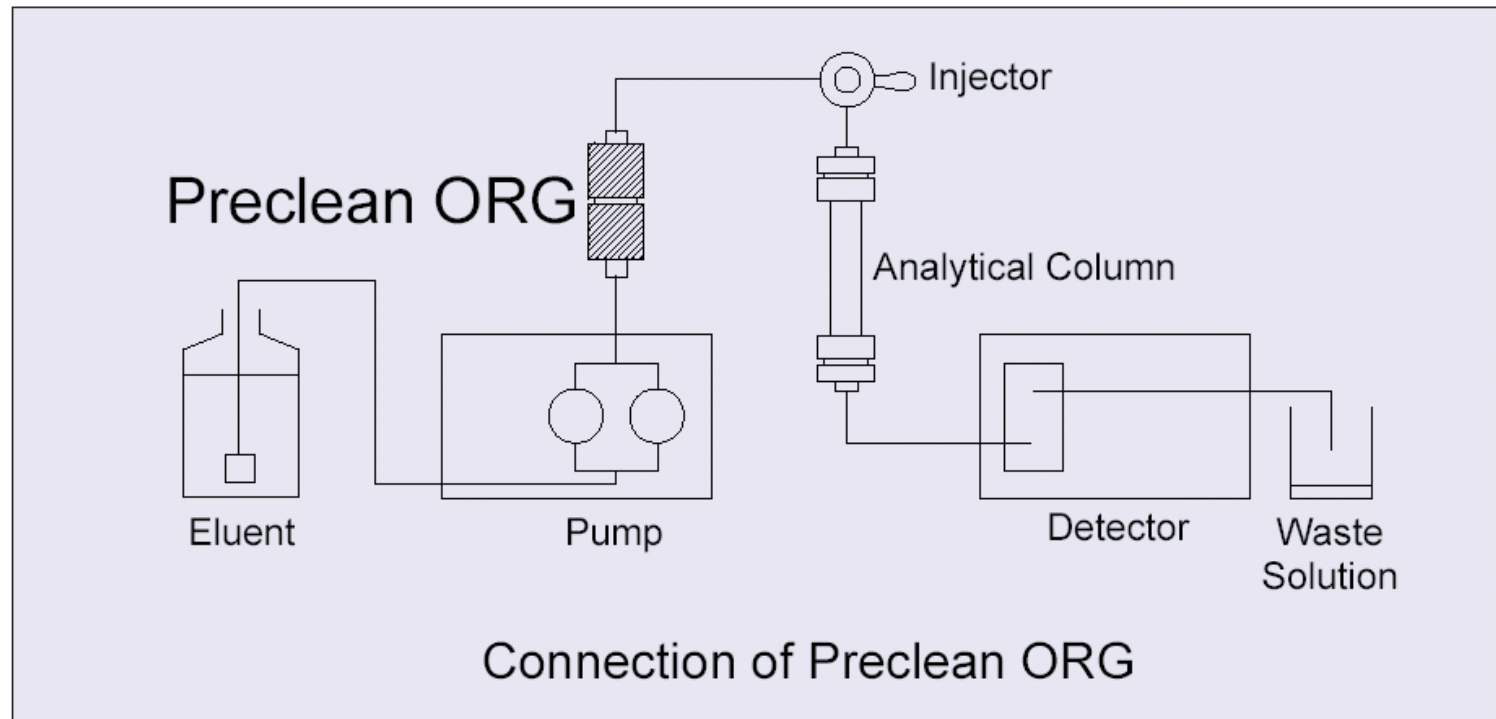
Accumulation of stains
(impurities in water)
Silica-gels became hard

Resulting in increase in back pressure, deterioration of separation, poor peak shape and unknown peaks.

Column for removing Impurities

Pre-clean ORG removes organic impurities from water. This is placed in the line between pump and injector.

Seal scum of pumping system also can be retained on Pre-clean ORG before flowing into analysis column.



Another way of cleaning eluent

By using the Solid Phase Extraction procedure, the phenomena of base line drifts or ghost peaks can be prevented by filtering the mobile phase.

Reference

Title: Mobile-Phase Cleanup Using Solid-Phase Extraction Disks
Journal Title: LCGC NORTH AMERICA (<http://www.chromatographyonline.com/lgc/>)
Volume, Number, Year: Volume 21 , Number 2 , 2003
Page: P168 ~178
Author: M .C.Ringo , J.R. Allen , D.M . M attocks , (GlaxoSmithKline)

Recommendation of Guard Column

The purpose of using a Guard Column

- Removing high lipophilic impurities from the sample (for reversed phase mode)
- Removing high polarity impurities from the sample (for normal phase mode)
- Removing impurities from the sample



The head of the column view when using a guard column



The head of the column view without a guard column

Recommendation of Guard Column

Concerns when using a Guard Column
The separation efficiency was poor
The retention time was late



Possibility that a different packing material is used for the guard column

All of our Guard Columns are using the absolutely same packing materials that are packed in the analytical columns.
Therefore, please feel safe on using our guard columns.

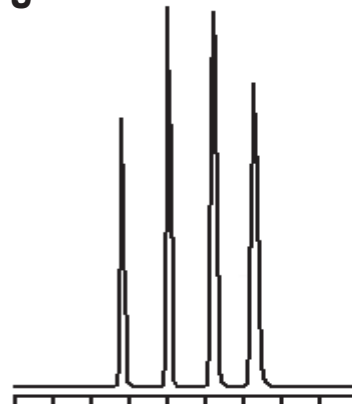


Cartridge Guard Column E



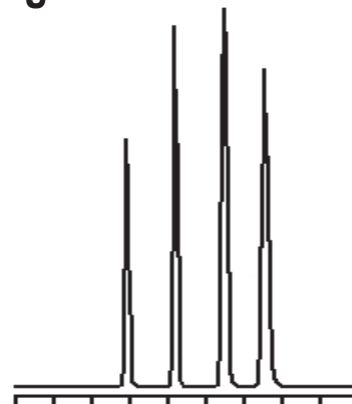
GL-Cart

Without guard column



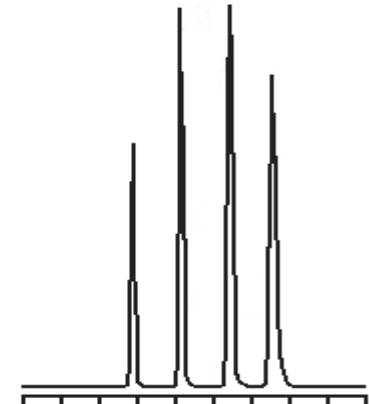
Rt. = 6.15 min
T.P. = 13,693
As. = 1.03

With Cartridge guard column E



Rt. = 6.48 min
T.P. = 13,464
As. = 1.05

With GL cart



Rt. = 6.49 min
T.P. = 12,751
As. = 1.07

Before using a New column

Inertsil series are shipped with the solvents as below for the final test of the column. Before using the column, please confirm miscibility to the below solvents that you will be using as a mobile phase.

When using a mobile phase that is non-miscible to the below solvents, please purge the column with Isopropanol by 5 to 10 volumes of the column volume. After purging the column with Isopropanol, substitute with the mobile phase.

Column	Shipping solvents	Solvents that cannot be mixed with the shipping solvent
ODS, C8, C4, Ph, HILIC	Acetonitrile / Water	Hexane, Heptane, Isooctane, Chloroform, Dichloromethane etc
CN, NH₂, Diol, SIL	Hexane / Ethanol	Water, Methanol, Acetonitrile etc
AX, CX	Methanol	Hexane, Heptane, Cyclohexane, Isooctane, etc

Daily maintenance of the column

Eluent with acids, buffer, ion-pair

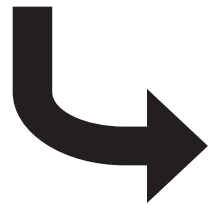
At first you must wash the column using same organic solvent and ratio(%) that was used as an eluent without any additives.

Eluent without additives

Example:

Eluent = 0.1% H₃PO₄ in 35% Methanol

Wash solvent = 35% Methanol



Wash column using 100% organic.

= same as an eluent

Store column with eluent .

(without additives)

When using a gradient elution,

use 30 ~ 50% of organic to store column.

How to wash column

When is the best timing to wash the column?

When you observe fluctuation in retention time, increase in pressure, deterioration of separation, and poor peak shape.

	To remove polar compounds	To remove non-polar compounds
In case of using reverse phase mode including HILIC mode	<ol style="list-style-type: none"> 1) Water 2) Methanol 3) THF*2 4) Methanol 5) Water 6) Eluent 	<ol style="list-style-type: none"> 1) Isopropanol 2) THF*2 3) Dichloromethane 4) Hexane 5) Isopropanol 6) Eluent
In case of using normal phase mode	<ol style="list-style-type: none"> 1) Isopropanol 2) Methanol 3) Water*1 4) Isopropanol 5) Eluent 	<ol style="list-style-type: none"> 1) Isopropanol 2) Methanol 3) Dichloromethane 4) Hexane 5) Isopropanol 6) Eluent

*1 Skip this process when you use none chemical bonded silica-gel.

*2 Do not introduce it to fittings that are made out of PEEK!

How to wash column

When there are no problem in separation, peak shape and retention time , but still observe an increase in pressure, the cause may be from ...
buffer decomposition or filter clogging on the column inlet.



Reverse the column and connect it by introducing the following solvents

**In case of using reverse phase mode (including HILIC mode)
Water → Isopropanol → Water**

**In case of using normal phase mode
Isopropanol**

Caution!!

- Do not connect the column outlet to the detector !
- Reduce the flow rate when the pressure is above 20MPa !
- Contact each manufacturer before contacting a reversed column washing method.
- It is difficult to fully regenerate the column once it experiences a column clogging.
The above procedure will temporary regenerate the column only.

How to Store column

Long term storage differs from overnight or short term storage

Column	1~10 days	Few weeks ~
ODS,C8,C4,Ph	Eluent without additives	100% Methanol
CN,NH ₂ ,Diol,SIL	Eluent without additives	100% Hexane
AX,CX	Eluent without additives	100% Methanol

* When the column was not used for a long period of time, please wash the column before use.