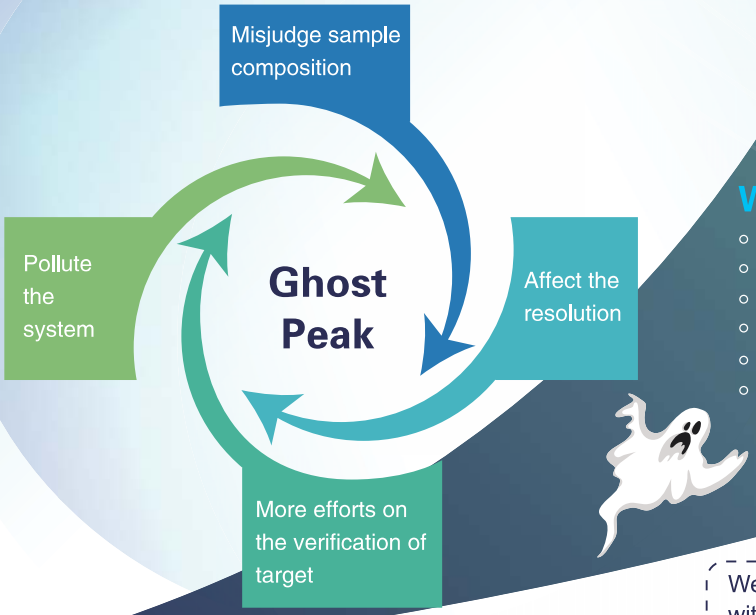
# Ghost-Buster Column




## What is Ghost Peak?

The peak appears erratically like ghost in chromatographic separation, especially during gradient elution or long-period operation.

## Where is Ghost Peak from?

- Water, with impurities
- Purification System, polluted or poorly functioning
- Storage Containers, polluted or breeding bacteria
- Mobile Phase Additives, like salts, acids and alkalis
- Instrument, polluted after long-period use
- Other organic pollutants

Welch Ghost-Buster Column can effectively remove impurities with low polarity and thus prevents the interference from all kinds of ghost peaks. It is installed between gradient mixer and injector, which helps remove not only the impurities in mobile phase, but impurities in mixer and pipelines as well.

## Operation Principles

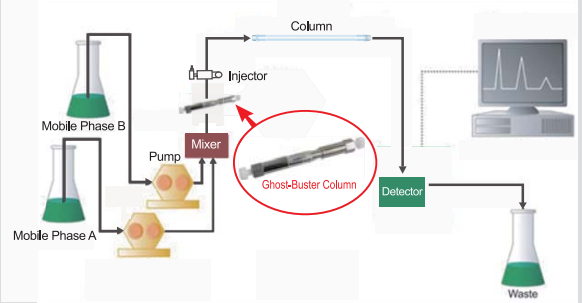
Unlike in-line filters which removes only solid particles but not organic pollutants, Welch Ghost-Buster column provides strong adsorption to weak-polar and non-polar organic impurities, without changing the composition of mobile phase, thus to purify both mobile phase and system, remove most ghost peaks and extend lifetime of column and system.

## Precautions

1. Install the column between Mixer and Injector. Being installed after injector would cause strong adsorption to samples and affect analysis.
2. For new analytical columns, flush Ghost-Buster column with 80% methanol solution at 1ml/min for 20min before new column switching to the system.
3. Not all impurities can be adsorbed by Ghost-Buster column.
4. Ion-pair solvents in mobile phase, would be adsorbed by Ghost-Buster column and affect retention and peak shape. Please use with caution under such mobile phases.
5. Column lifetime depends on analytical conditions, mobile phase and solvent purity. Routine change of Ghost-Buster column is suggested to ensure performance.
6. Ghost-Buster column is rather a purification part to the system, to filtrate impurities and protect column and system.
7. Before and after using buffer salt mobile phase, flush column with high-ratio water to transit, thus to avoid buffer salting out and blocking the column.
8. When Ghost-Buster column shows unsatisfying performance, try disconnect the outlet of the column and flush with 100% acetonitrile.



**Ghost-Buster column must be installed before the injector and sample solution must not flow through the column.**



## Application and Results

Column: Ultisil XB-C18, 4.6×250 mm, 5 μm
Flow Rate: 1.0 mL/min
Injection Volume: 10 μL
Detection: 210 nm
Temperature: 40℃
Sample Preparation: Ultra–pure water
Mobile Phase A: Ultra–pure water
Mobile Phase B: Acetonitrile

| Time ( min ) | Mobile Phase A A ( % ) | Mobile Phase B ( % ) |
|---|---|---|
| 0 | 90 | 10 |
| 20 | 10 | 90 |
| 30 | 10 | 90 |
| 30.1 | 90 | 10 |
| 38 | 90 | 10 |

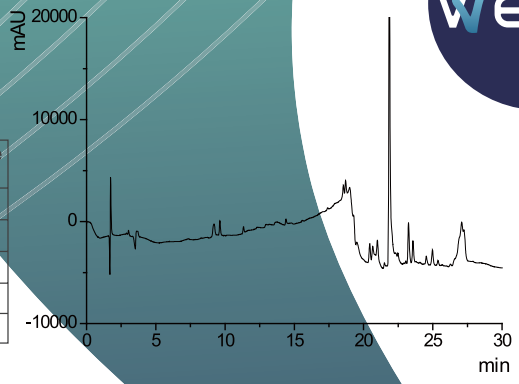



Figure 1: without Ghost–Buster column

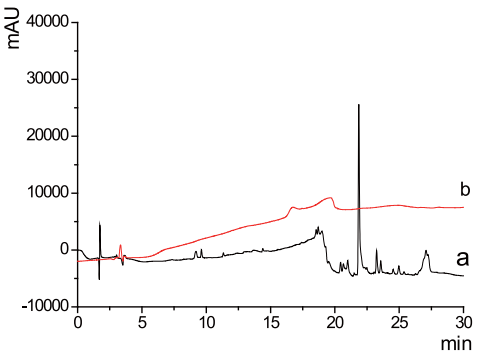



Figure 3: without Ghost–Buster column(a) and with Ghost–Buster column(b)

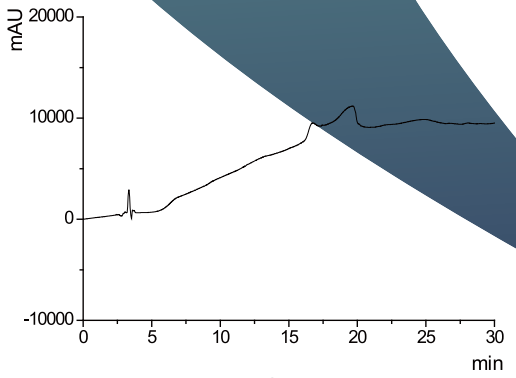



Figure 2: with Ghost–Buster column

## Order Information

| Name | P/N | Dimension | Pressure | System |
|---|---|---|---|---|
| Ghost-Buster Column | 06100-31000 | 4.6×50 mm | 40MPa | HPLC |
| Ghost-Buster Column | 06100-31001 | 7.8×50 mm | 40MPa | HPLC |
| Ghost-Buster HP Column | 06100-31021 | 2.1×33 mm | 100MPa | UHPLC |
| Ghost-Buster HP Column | 06100-31025 | 2.1×50 mm | 100MPa | UHPLC |
| Ghost-Buster Column Kit | GBKIT-01 | 4.6×50 mm，With 4 connectors and 2 pipelines | 40MPa | HPLC |
| Ghost-Buster Column Kit | GBKIT-02 | 7.8×50 mm，With 4 connectors and 2 pipelines | 40MPa | HPLC |

## Q&A

1. For different samples and gradient conditions, should the Ghost-Buster column be removed or changed?
Not necessary. But it needs to be removed only for special circumstances like changing of peak position or ion-pair solvents mobile phase.

2. When gradient elution changed to isocratic, should the Ghost-Buster column be removed?
No need to take the Ghost-Buster column if it did not affect the separation, as the elution of mobile phase stays same under isocratic condition. But impurities in mobile phase shall be taken into consideration.

3. In gradient system, Ghost-Buster column increases the mixed dwell volume. Will this affect the separation?
The packing volume of a 4.6×50mm column is ~400μl and the column is installed before the injector, which would cause little influence on the analysis. If it does, connect Ghost-Buster column to the water phase path before the mixer or switching valve.

4.Any requirements for the connecting of Ghost-Buster column?
No special requirements for the connection. Common PEEK tube and connectors for HPLC system is recommended, as metal connectors may have the possibility of being stuck at column ends.

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