CARE AND USE MANUAL

Welch Ghost-Buster Column Care and Use Manual

Welch

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Ghost-Buster Column
Care and Use Manual

Dear User:

Thank you for choosing our liquid chromatography column products! This manual is designed to help you use our products under optimal conditions and maximize column lifespan. Please read the usage instructions carefully before operation.

During HPLC separation, especially in gradient elution or when the system has been used for a long period, sporadic and unpredictable peaks (commonly referred to as “ghost peaks”) are likely to appear. The causes of ghost peaks vary, and the primary ones are impurities in the mobile phase and contamination within the instrument system.
At Welch Materials, we launch the Ghost-Buster Column which effectively absorbs and removes impurities from the system, thereby preventing interference from impurity on the target peaks.

Preparation Before Use

Column Identification

To ensure the quality of every column, each column sold by Welch Materials is assigned a unique identification code. This code allows us to trace quality-related issues. Upon receiving your column, please follow these steps:

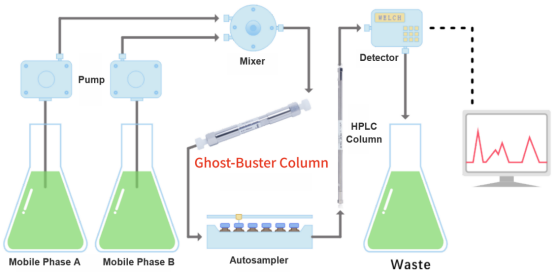
1. Verify that the packaging is intact and matches the ordered column model.
2. Ensure the package contains a COA report with the inspector's signature.
3. Check the column surface for any damage and confirm that the protective plugs on both ends are intact.
4. Verify that the column body bears a Welch Materials identification label. Confirm that the model and serial number on the box match those on the column label.

Note:

The packing material inside the column is composed of fine particles. Do not attempt to open the column arbitrarily, as the material may become airborne and pose a health risk. If opening is necessary, use appropriate protective measures.

Installation

1. When using Ghost-Buster Columns, install them between the gradient mixer and the autosampler, ensuring they are placed before the autosampler. If installed after the autosampler, the column may strongly adsorb the sample, leading to interference.



2. For new columns, flush with 80% methanol-in-water at a flow rate of 1.0 mL/min for 15 minutes before connecting to the system. If excessive baseline drift occurs, flush with the initial composition of the mobile phases used for sample analysis at a flow rate of 0.2 mL/min for 12 hours (this step requires simultaneous activation while the column remains connected to the system).

3. Not all impurities can be adsorbed by the Ghost-Buster Column.

4. If the mobile phase contains ion-pairing reagents, the column may adsorb them, potentially affecting the retention time or peak shape of the target analyte. The suitability of such mobile phase conditions should be evaluated based on chromatographic performance.
5. The lifespan of a Ghost-Buster Column depends on factors such as chromatographic conditions as well as the brand and purity of the mobile phase. If the trapping efficiency declines, it is recommended to replace the column in a timely manner. This column is not designed for unlimited use after installation.
6. The Ghost-Buster Column functions as a purification component in the system, similar to an in-line filter. However, while an in-line filter only removes particulate matter, the Ghost-Buster Column can trap both solid contaminants and organic impurities in the system, offering enhanced protection for both the instrument and the analytical column.
7. When using a buffered mobile phase, always perform a thorough flushing with a high proportion of water before and after use to prevent salt precipitation, which could lead to blockages.
8. If a Ghost-Buster Column shows reduced trapping efficiency, try flushing it with 100% acetonitrile. Ensure that the column outlet is not connected to the instrument during this cleaning process.

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Applications

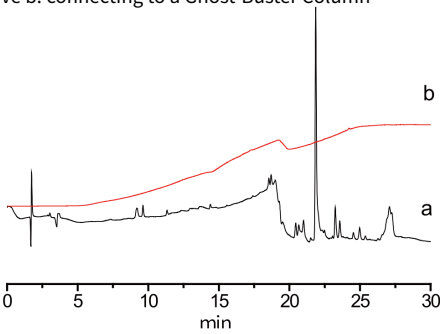
Application 1:

Conditions	
Analytical Column	Ultisil® XB-C18, 4.6×250 mm, 5 µm
Flow Rate	1.0 mL/min
Volume	20 µL
Wavelength	280 nm
Temperature	40 °C
Sample Preparation	Ultrapure water
Mobile Phase A	1.54 g/L ammonium acetate solution, pH adjusted to 4.0 with glacial acetic acid
Mobile Phase B	Acetonitrile

Gradient Program

Time (min)	Phase A	Phase B
0	98%	2%
10	80%	20%
20	40%	60%
35	20%	80%
40	20%	80%
41	98%	2%
50	98%	2%

- Curve a: not connecting to a Ghost-Buster Column.
- Curve b: connecting to a Ghost-Buster Column

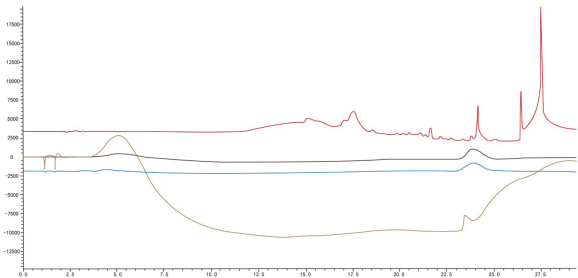


Application 2:

Conditions	
Analytical Column	Ultisil® AQ-C18, 4.6×100 mm, 3 µm
Flow Rate	1.0 mL/min
Volume	5 µL
Wavelength	210 nm
Temperature	25 °C
Mobile Phase A	0.05% phosphoric acid in water
Mobile Phase B	Acetonitrile

Gradient Program

Time (min)	Phase A	Phase B
0	95%	5%
3	95%	5%
15	15%	85%
20	15%	85%
20.1	95%	5%
30	95%	5%



- Red curve: not connecting to a Ghost-Buster Column
- Black curve: connecting to a Ghost-Buster II 4.0×50 mm
- Blue curve: connecting to a Ghost-Buster II 3.0×50 mm
- Brown curve: connecting to a Ghost-Buster 4.6×50 mm

Ordering Information

Name	Part No.	Specification	Max. Pressure	System
Ghost-Buster Column	06100-31000	4.6×50 mm	40 MPa	HPLC
Ghost-Buster Column	06100-31001	7.8×50 mm	40 MPa	HPLC
Ghost-Buster Column	06100-31018	3.0×33 mm	40 MPa	HPLC
Ghost-Buster HP Column	06100-31021	2.1×33 mm	40 MPa	HPLC
Ghost-Buster Column	06100-31025	2.1×50 mm	40 MPa	HPLC
Ghost-Buster Column II	06100-31008	4.0×50 mm	40 MPa	HPLC
Ghost-Buster Column II	06100-31016	3.0×50 mm	40 MPa	HPLC
Ghost-Buster Column II	06100-31026	4.6×30 mm	40 MPa	HPLC
Ghost-Buster Column II	06100-31027	4.0×30 mm	40 MPa	HPLC
Ghost-Buster UP Column	06100-31030	2.1×30 mm	90 MPa	UHPLC
Ghost-Buster UP Column	06100-31031	2.1×50 mm	90 MPa	UHPLC