



# Welch Ghost-Buster Column Care and Use Manual

## 1. Description

During the chromatographic separation process, especially in gradient elution or when the instrument system has been in use for a long time, intermittent chromatographic peaks, commonly known as "Ghost peaks," are more likely to occur. The occurrence of Ghost peaks can have various reasons, but in many cases, it is caused by impurities in the mobile phase and the impurity of the instrument system.

Ghost-Buster Column, developed by Welch Materials, can effectively adsorb and remove impurities from the system, thereby preventing interference from impurity peaks on the target peaks.

## 2. Impurity Removal Effect

### Example 1:

Chromatographic Conditions

Column: Welch Ultisil® XB-C18, 4.6×250mm, 5µm

Flow Rate: 1.0mL/min

Injection Volume: 20µL

Detection Wavelength: 280nm

Column Temperature: 40 C

Sample Preparation: Ultra-pure water

Mobile Phase A: 1.54g/L solution of ammonium acetate, adjusted to pH 4.0 with glacial acetic acid

Mobile Phase B: Acetonitrile

### Gradient Program:

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

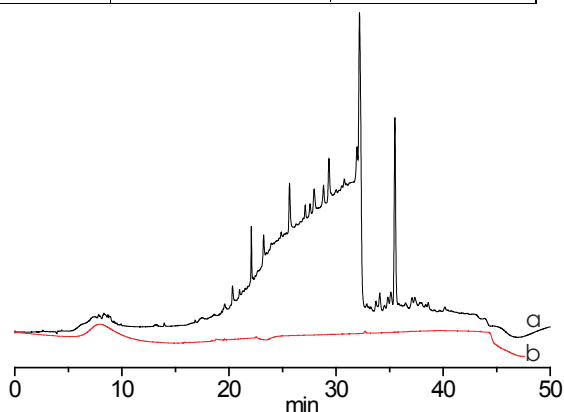


Figure 1: Chromatograms comparison of (a) without the Ghost-Buster Column and (b) with the Ghost-Buster Column (4.6×50mm).

### Example 2:

#### Chromatographic Conditions

Column: Welch Ultisil® AQ-C18, 4.6×100mm, 3µm

Flow Rate: 1.0mL/min

Injection Volume: 5µL

Detection Wavelength: 210nm

Column Temperature: 25 C

Mobile Phase A: 0.05% Phosphoric Acid in Water

Mobile Phase B: Acetonitrile

#### Gradient program :

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

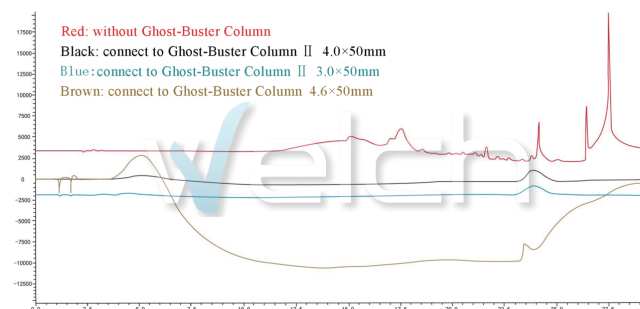


Fig 2. Red: without Ghost-Buster Column

Black: connect to Ghost-Buster Column II 4.6×50mm

Blue: connect to Ghost-Buster Column II 3.0×50mm

Brown: connect to Ghost-Buster Column 4.6×50mm

## 3. Ordering Information

Product	P/N	Specification	Max. Pressure	HPLC System
Ghost-Buster Column	06100-31000	4.6×50mm	40MPa	HPLC
Ghost-Buster Column	06100-31001	7.8×50mm	40MPa	HPLC
Ghost-Buster Column	06100-31018	3.0×33mm	40MPa	HPLC
Ghost-Buster HP Column	06100-31021	2.1×33mm	40MPa	HPLC
Ghost-Buster Column	06100-31025	2.1×50mm	40MPa	HPLC
Ghost-Buster Column II	06100-31008	4.0×50mm	40MPa	HPLC
Ghost-Buster Column II	06100-31016	3.0×50mm	40MPa	HPLC
Ghost-Buster Column II	06100-31026	4.6×30mm	40MPa	HPLC
Ghost-Buster Column II	06100-31027	4.0×30mm	40MPa	HPLC
Ghost-Buster UP Column	06100-31030	2.1×30mm	90MPa	UHPLC
Ghost-Buster UP Column	06100-31031	2.1×50mm	90MPa	UHPLC

#### 4. Product Precautions

1. When using, install the Ghost-Buster Column between the gradient mixer and the injector. Ensure that the column is installed before the injector. If installed after the injector, it may strongly adsorb the sample.

2. For a new column, flush the Ghost-Buster Column with 80% methanol at a flow rate of 1 mL/min for 15 minutes before connecting it to the equipment. If there is significant baseline drift, flush at a low flow rate of 0.2 mL/min with the initial ratio of the mobile phase used for sample detection for 12 hours (requires connection to the chromatographic column for activation).

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

4. If ion-pair reagents are used in the mobile phase, they may adsorb onto the Ghost-Buster Column, affecting the retention time or peak shape of the target substance. Whether to use such mobile phase conditions depends on the chromatographic results.

5. The lifespan of the Ghost-Buster Column is related to the chromatographic analysis conditions, the mobile phase brand, and purity of the mobile phase. If the trapping efficiency deteriorates, it is recommended to replace it promptly.

6. The Ghost-Buster Column serves as a purification component of the instrument, acting like an online filter on the instrument. Unlike online filters that filter solid particles, it not only filters solid particles but also purifies organic contaminants in the system, providing better protection for the instrument and chromatographic column.

7. When using a buffer salt mobile phase, be cautious about transitioning with a high proportion of water before and after to avoid salt precipitation, which could lead to column clogging.

8. If the GB column's performance is unsatisfactory, try flushing it with 100% acetonitrile, and do not connect the outlet end of the column to the instrument during this process.

**Welch Materials, Inc.**

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