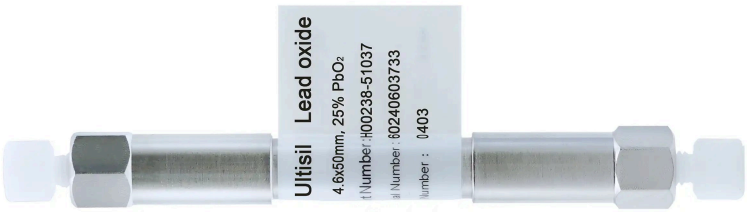
CARE AND USE MANUAL

Ultisil Lead Oxide HPLC Column Care and Use Manual

Welch

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Ultisil Lead Oxide HPLC 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.

Ultisil Lead Oxide is designed for the determination of malachite green and leuco malachite green residues in aquatic products, in accordance with SC/T 3021-2004 (Determination of Malachite Green Residues in Fishery Products) and NY/T 1756-2012 (Determination of Malachite Green in Feeds).
Since leuco malachite green does not absorb in the visible light range, a post-column oxidation column is typically used to convert it into malachite green, allowing for detection. This post-column derivatization effectively addresses the challenge of detecting leuco malachite green via UV detection.

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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

To achieve optimal column efficiency, use narrow-diameter tubing for connections. The connections to the column inlet and outlet must be tightly sealed, with the tubing ends polished and free of burrs or bevels. Use professional tools to cut and trim tubing.

1. Remove the column from its packaging. Check the direction of the eluent flow indicated by the arrow on the column body. Unscrew the protective plugs at both ends of the column. Position the column so that the eluent flow aligns with the direction indicated, as shown in Figure 1.

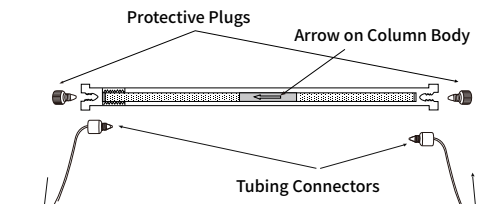


Figure 1. Column Installation

2. Carefully screw stainless steel or other compatible material fittings into both ends of the column. Ensure tight, zero-dead-volume connections to prevent leakage during operation.

Product Specifications

Column	Ultisil Lead Oxide
Lead Dioxide Content	25% or 50%

Usage and Maintenance:

This column should be installed after the analytical column (e.g., C18) and before the detector.

• Before first use, flush the column with pure acetonitrile or the mobile phase used analysis for at least 10 column volumes.
• After use, flush with mobile phase free of buffer salts, and once no salts remain, flush with 100% acetonitrile for storage.
• If, after multiple uses, the detected concentration of leuco malachite green under the same conditions significantly decreases, it is recommended to replace the oxidation column.

Ordering Information

We offer two variants of the oxidation column based on lead dioxide content: 25% and 50%.
Available column dimensions include:

- 4.6 × 50 mm, 4.0 × 50 mm, 3.0 × 50 mm
- 4.6 × 35 mm, 4.0 × 35 mm, 3.0 × 35 mm

We also recommend the following Welch Materials, Inc. products related to the SC/T 3021-2004 standard:

HPLC Column

1.1 Ultisil XB-C18

One of the most widely used C18 analytical columns on the market.

Dimension	4.6×250 mm, 5 μm	
Particle Size	3 μm	5 μm
Part No.	H00201-21043	H00201-31043

SPE Cartridges

2.1 Welchrom PRS

Strong cation exchange SPE cartridge based on silica, bonded with propyl sulfonic acid groups. Being slightly less acidic than benzenesulfonic acid, it is commonly used for sample pretreatment of malachite green.

Specification	Packing (pcs/pk)	Part No.
500 mg/6 mL	30	00511-11006
1000 mg/6 mL	30	00511-11007

2.2 Welchrom Alumina-A

Acidic alumina adsorbent (pH=4.5) with particle size: 50–200 μm. It functions as a strong polar adsorbent and moderate cation exchanger.

Specification	Packing (pcs/pk)	Part No.
500 mg/6 mL	30	00519-11006
1000 mg/6 mL	30	00519-11007

2.3 Welchrom Alumina-N

Neutral alumina adsorbent with strong polarity, surface-treated for neutrality. It retains compounds through interaction with aluminum centers, hydrogen bonding with silanol groups, or ionic exchange with charged surfaces. Especially effective for compounds containing nitrogen, phosphorus, sulfur heterocycles, aromatic hydrocarbons, and organic amines. It is widely used in the sample preparation of Sudan dyes and malachite green.

Particle size: 50–200 µm.

Specification	Packing (pcs/pk)	Part No.
500 mg/6 mL	30	00518-11006
1000 mg/6 mL	30	00518-11007