CARE AND USE MANUAL

Welchrom PWAX Care and Use Manual

Welch

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Welch Materials

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1. Product Overview

Solid-phase extraction (SPE) is a separation technique that combines selective retention and selective elution processes. SPE is essentially a type of column chromatography, with similar principles of separation, stationary phase selection, and solvent choices to high-performance liquid chromatography (HPLC). SPE is an adsorption-based extraction process in which a sample passes through an adsorbent-filled column, retaining target compounds and impurities on the column. Selective solvents are then used to remove impurities and elute the target compounds, achieving separation. The separation mode of SPE mainly depends on the type of adsorbent filling and solvent properties.

Welch Materials has launched the second generation of SPE products based on highly cross-linked polymer matrices. This generation incorporates the latest proprietary technologies to control filler pore size distribution and surface group modifications, significantly enhancing the filler' s sample loading capacity, recovery rate, solvent consumption, and pH resistance.

2. Product Characteristics

2.1 Technical Specifications

Name	Welchrom PWAX
Matrix	PS/DVB
Particle size distribution (40~150 μm)	>90%
Specific surface area (m^2/g)	>600
Nitrogen content	0.4~0.8%
Recovery rate in test applications	80~110%

2.2 Test Application

Determination of 11 Synthetic Food Colorants (GB5009.35-2023)
Chromatographic conditions:

Column	Ultisil C18 (4.6×250 mm, 5 μm)
Mobile phase	A: Ammonium acetate solution B: Methanol
Column temperature	30 °C
Flow rate	1.0 mL/min
Injection volume	10 μL

Gradient Program:

Time (min)	Rate (mL/min)	Phase A	Phase B
0	1.0	90	10
12	1.0	60	40
19	1.0	50	50
22.5	1.0	45	55
24	1.0	5	95
33	1.0	5	95
34	1.0	90	10
42	1.0	90	10

Purification Procedure:

SPE Column: PWAX; **Specification:** 150 mg/6 mL

Activation: Rinse with 6 mL methanol, followed by 6mL water, discard the effluent.

Sample Loading: Add the sample to the column for purification.

Washing: Wash with 6 mL of 2% formic acid in water, followed by 6 mL methanol, and discard the effluent; dry.

Elution: Elute with 6 mL of 2% ammoniated methanol, then collect in a 15 mL centrifuge tube.

Concentration: Evaporate the purified solution to dryness under nitrogen, reconstitute with accurately pipetted 1 mL of pH=9.0 ammonium acetate buffer solution, and analyze by HPLC.

Chromatogram and Data:

Fig 1: Chromatogram of spiked red wine sample:

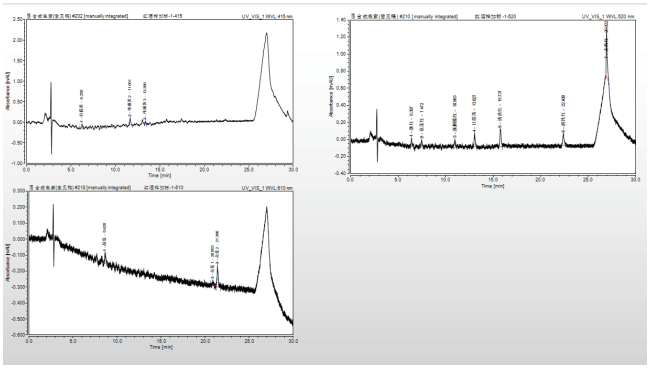


Fig 2: Chromatogram of spiked strawberry jam sample:

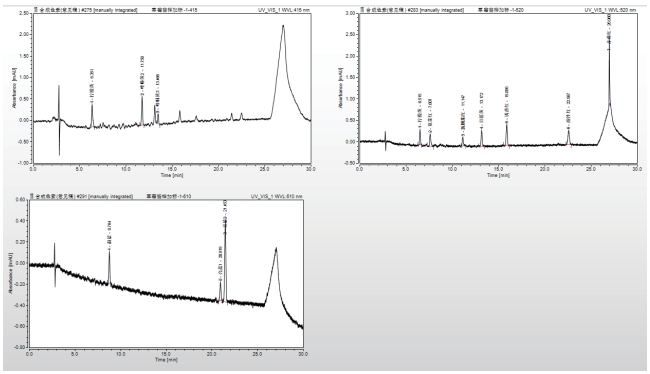


Fig 3: Chromatogram of spiked hard candy sample:

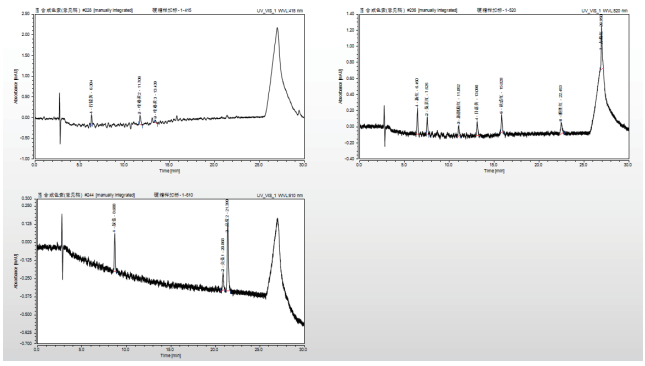


Fig 4: Chromatogram of spiked raisin sample:

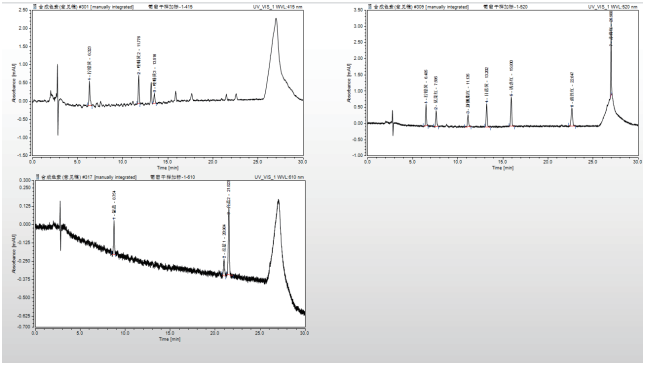
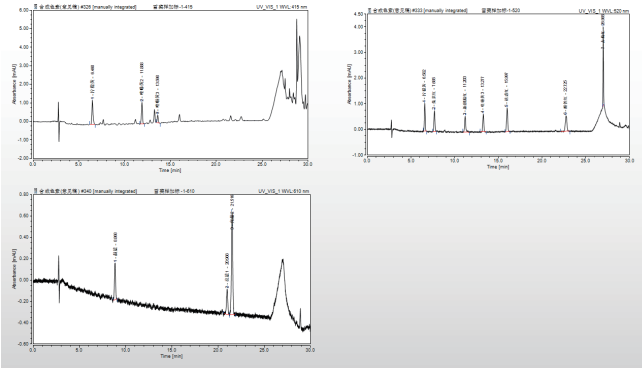


Fig 5: Chromatogram of spiked green-in-snow mustard sample:



Spiked recovery rate:

Content	Spiking Level	Green-in-snow Mustard	Raisin	Hard Candy	Red Wine	Strawberry Jam
Tartrazine	1.5 mg/kg	87%	92%	103%	75%	66%
Quinoline Yellow 2		84%	106%	99%	103%	90%
Quinoline Yellow 3		87%	106%	83%	87%	77%
New Red		101%	94%	89%	75%	47%
Amaranth		99%	98%	120%	74%	80%
New Coccine		114%	89%	118%	103%	76%
Sunset Yellow		108%	81%	98%	82%	85%
Allura Red AC		107%	97%	104%	97%	79%
Azorubine		102%	100%	109%	90%	79%
Erythrosine		98%	102%	105%	102%	85%
Indigo Carmine		98%	104%	82%	94%	86%
Blue 1		106%	109%	100%	87%	86%
Blue 2		90%	93%	115%	107%	107%

3. Ordering Information

Part No.	Description	Specifications
00577-20043	PWAX	150 mg/6 mL, 30 pk
00577-20015	PWAX	30 mg/1 mL, 100 pk
00577-20079	PWAX	60 mg/1 mL, 100 pk
00577-20001	PWAX	100 mg/1 mL, 100 pk
00577-20045	PWAX	30 mg/3 mL, 50 pk
00577-20016	PWAX	60 mg/3 mL, 50 pk
00577-20002	PWAX	100 mg/3 mL, 50 pk
00577-20003	PWAX	150 mg/3 mL, 50 pk
00577-20005	PWAX	500 mg/3 mL, 50 pk
00577-20014	PWAX	200 mg/6 mL, 30 pk
00577-20017	PWAX	10 g
00577-20018	PWAX	100 g

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