

Application Note

Evaluating the Cleanliness of Verex™ Polypropylene Vials

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Overview

Verex polypropylene vials are made of ultra-pure, medical grade polypropylene, and meet the requirements of 21 CFR 177.1520. Effectively free of residual polymerization catalysts, inhibitors, lubricants, or antioxidants, these vials exceed the performance requirements of high sensitivity detectors and LC-MS analysis, where impurities can cause interference and quantitative/qualitative errors. Polypropylene is very chemically resistant and the material of choice for pH sensitive samples, biochromatography, and metal analyses. These vials are also especially useful for Ion Chromatography, Atomic Absorption, and Capillary Electrophoresis (CE + CEMS) applications. Since polypropylene is nonionic and nonreactive and does not contain any heavy metals, polar biogenic components, such as proteins and amino acids, can better be analyzed. Compared to glass, plastic polypropylene vials also offer reduced adsorption of charged or pH-sensitive components. To determine the cleanliness of Verex vials compared to competitors, we tested for contamination of solvent after sitting in polypropylene vials which is shown in **Figure 1**. **Figure 2** displays the compatibility of Verex polypropylene with diverse solvent types and the holding capacity limit. **Figure 3** exhibits the general properties of Verex polypropylene vials.

Materials and Methods

Each vial was filled with methanol and allowed to sit for 2 hours. After 2 hours, the methanol was injected into a MS. The blank was injected without any vial incubation.

Results

Figure 1.
MS Results.

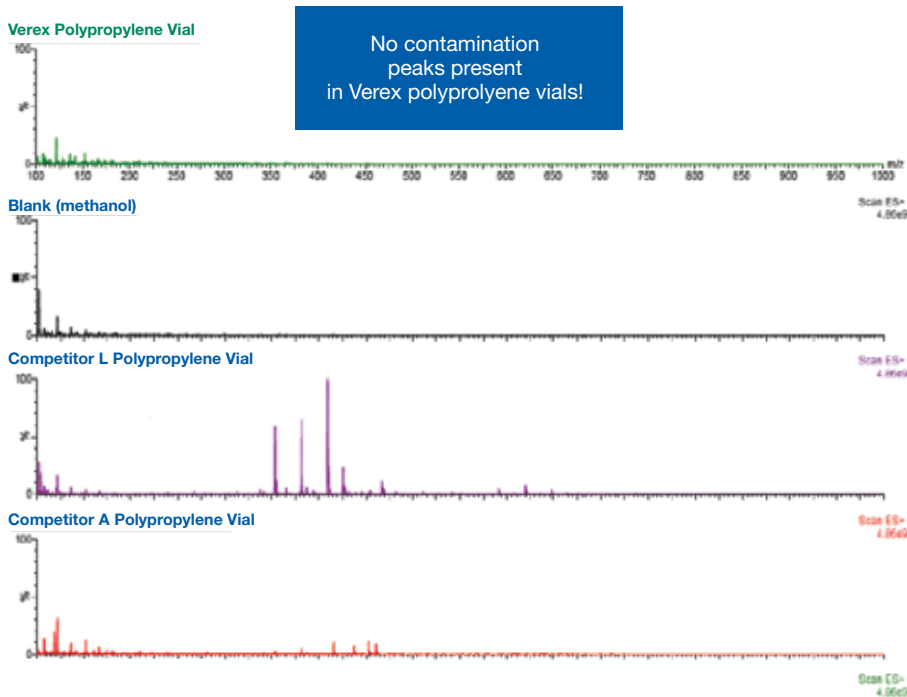


Figure 2.
Verex Polypropylene Vial Solvent Compatibility

Solvent	Extraction (<5 min)	Contact Time			
		<1 hr	1-4 hr	4-8 hr	24 hr
Hexane	Good	Fair	Not recommended	Not recommended	Not recommended
THF	Good	Fair	Not recommended	Not recommended	Not recommended
MeCl ₂	Good	Fair	Not recommended	Not recommended	Not recommended
Toluene	Good	Fair	Not recommended	Not recommended	Not recommended
Isooctane	Good	Good	Fair	Fair	Not recommended
Acetone	Good	Good	Good	Fair	Not recommended
Ethyl acetate	Good	Good	Good	Fair	Fair
IPA	Good	Good	Good	Good	Good
Ethanol	Good	Good	Good	Good	Good
Methanol	Good	Good	Good	Good	Good
DMSO	Good	Good	Good	Good	Good
Acetonitrile	Good	Good	Good	Good	Good

Figure 3.
General Properties of Polypropylene



Condition	Polypropylene (PP)
Max Use Temperature	135 °C
Heat Deflection Temp.	107 °C
Brittleness Temperature	0 °C
Transparency	Translucent
Microwavability	Yes
Autoclaving	Yes
Gas	Yes
Dry Heat	Yes
Radiation	No
Disinfectants	Yes
Specific Gravity	0.9
Flexibility	Rigid
Permeability N ₂	744 mL mm/m ² 24 hr bar
Permeability O ₂	3720 mL mm/m ² 24 hr bar
Permeability CO ₂	12400 mL mm/m ² 24 hr bar
Water Adsorption	<0.02
Non-cytotoxicity	Yes
Food & Beverage Use	Yes
CFR 21	177.1520




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Ordering Information Verex™ Biocompatible Polypropylene Vials

Screw Top Vials

Type	Material	Finish	Total Volume	Residual Volume	Caps (Included)*	Part Number 100/pk	Part Number 1000/pk
 Plastic Vial	Polypropylene	9 mm Screw Thread	700 µL	<5 µL	PTFE/Silicone	ARO-9993-12-C	ARO-9993-13-C
Plastic Vial	Polypropylene	9 mm Screw Thread	700 µL	<5 µL	PTFE/Silicone, preSlit	ARO-9994-12-C	ARO-9994-13-C
 Plastic Vial	Polypropylene	9 mm Screw Thread	300 µL	<2 µL	PTFE/Silicone	ARO-9991-12	ARO-9991-13
Plastic Vial	Polypropylene	9 mm Screw Thread	300 µL	<2 µL	PTFE/Silicone, preSlit	ARO-9992-12	ARO-9992-13

Snap Top Vials

Type	Material	Finish	Total Volume	Residual Volume	Caps (Included)	Part Number 100/pk	Part Number 1000/pk
 Plastic Vial	Polypropylene	11 mm Snap Top	300 µL	<2 µL	PTFE/Silicone	ARO-9691-12-C	ARO-9691-13-C
Plastic Vial	Polypropylene	11 mm Snap Top	300 µL	<2 µL	PTFE/Silicone, preSlit	ARO-9692-12-C	ARO-9692-13-C

*Bonded-In Septa

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If Verex vials and caps do not perform as well or better than your current vial and cap products of similar type, dimensions, and material, return the product with comparative data within 45 days for a FULL REFUND.

Terms and Conditions

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