



Resprep®

# Protein and Particulate Removal That's Fast, Painless, and Effective

## Resprep® PPT<sup>3</sup> 96-Well Plates

Restek's line of Resprep® sample preparation products has expanded to include new 96-well protein precipitation (PPT) plates. Prepare serum, plasma, and other biological samples using the name you trust for quality, cleanliness, and performance.



**RESTEK®**

Pure Chromatography

[www.restek.com/PPT3](http://www.restek.com/PPT3)



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# Resprep® PPT<sup>3</sup> 96-Well Plates

- Polypropylene protein precipitation (PPT) 96-well plates offer highly efficient >99% protein removal.
- Minimum 24-hour drip-free feature for easy in-well protein precipitation—no fear of backflushing or contamination.
- Built-in, dual-layer membrane with different porosities in each layer prohibits clogging and speeds filtration.
- Solvent-first method streamlines sample preparation.
- 2.0 mL deep well—suitable for mixing by vortex or pipette.
- 3-way versatility for filtration—compatible with all common devices:
  - Vacuum manifold
  - Positive pressure manifold
  - Centrifugation
- Can also be used to increase throughput in general filtration applications.

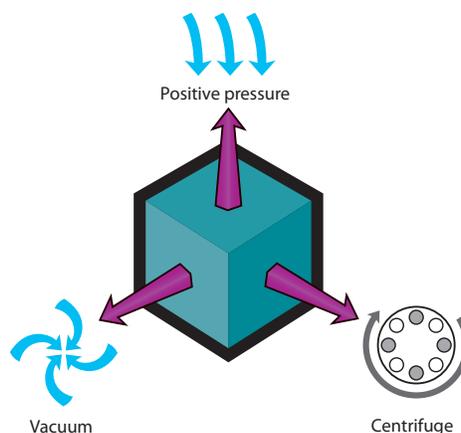


Order today at [www.restek.com/PPT3](http://www.restek.com/PPT3)

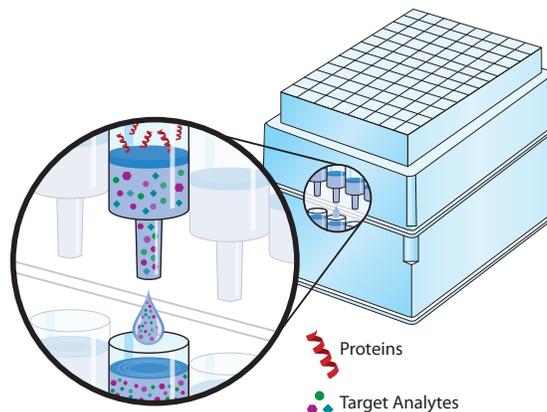
## Reliably Drip-Free, Even with Aggressive Solvents

While some competitors start to drip almost immediately, Resprep® PPT<sup>3</sup> 96-well plates will not drip until vacuum, positive pressure, or centrifuge is applied—whether you are using acetonitrile or more aggressive solvents like methylene chloride (Table I). In fact, our testing has shown drip-free performance for over 24 hours!

Pick your filtration method, then pick up a Resprep® PPT<sup>3</sup> 96-well plate and get to work.



Recover your target analytes and leave the protein behind.



**Table I:** Drip test comparing commonly available protein precipitation (PPT) plates using methylene chloride solvent.

	# of wells dripped			
	Resprep® PPT <sup>3</sup>	Competitor A	Competitor B	Competitor C
5 minutes	0	5	0	2
10 minutes	0	9	1	6
15 minutes	0	9	4	7
30 minutes	0	9	8	9

## Highly Efficient Protein Removal, Consistently Greater than 99%

Drips or no drips, it is paramount that your protein precipitation plate also performs its primary job—protein removal—exceptionally well. Resprep® PPT<sup>3</sup> 96-well plates remove over 99% of protein from biological samples whether your method calls for the solvent or the matrix to be added first (Table II).

## Excellent Recovery of Target Analytes

In addition to highly efficient protein removal, Resprep® PPT<sup>3</sup> 96-well plates offer superior precision and accuracy, with mean recovery and relative standard deviation (RSD) values all falling well within acceptable limits (Table III).

When paired with Restek's Raptor™ SPP LC columns, Resprep® PPT<sup>3</sup> 96-well plates offer outstanding chromatographic results (Figure 1).

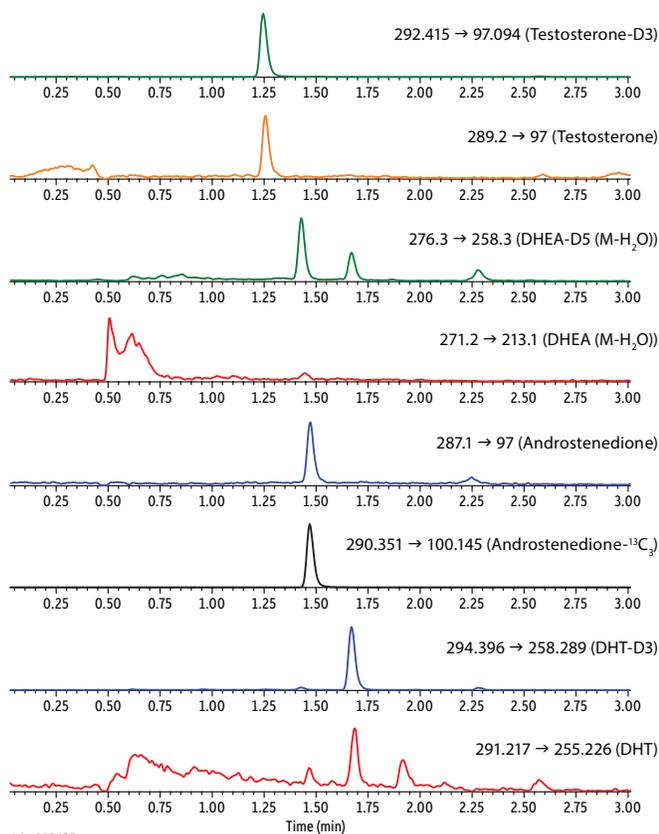
**Table II:** Protein removal efficiency for Resprep® PPT<sup>3</sup> plates as measured by the Bradford assay using acetonitrile solvent and plasma sample matrix.

	% Protein Removal	
	Solvent-First	Matrix-First
Analysis 1	99.1	99.2
Analysis 2	99.4	99.2
Analysis 3	99.5	99.2
Analysis 4	99.6	99.2
Analysis 5	99.5	99.5
Analysis 6	99.5	99.5
Average	99.4	99.3

**Table III:** Mean recovery and RSD values for steroids in serum.

	Conc. (ng/mL)		Intraday (n=6)	Interday (n=3, three days)
	DHT	low	3	88.7 ± 2.1
	mid	60	97.9 ± 0.7	96.2 ± 8.1
	high	120	107.2 ± 0.8	102.1 ± 8.5
Androstenedione	low	3	94.8 ± 1.0	98.8 ± 4.4
	mid	60	94.8 ± 0.8	94.4 ± 3.2
	high	120	94.4 ± 1.0	97.8 ± 4.2
DHEA	low	3	100.5 ± 10.5	97.2 ± 10.4
	mid	60	101.2 ± 1.6	97.9 ± 8.0
	high	120	103.4 ± 0.7	101.1 ± 7.2
Testosterone	low	3	95.1 ± 1.5	99.3 ± 5.1
	mid	60	92.8 ± 1.3	95.0 ± 2.6
	high	120	97.6 ± 2.2	98.9 ± 2.3

**Figure 1:** Androgen Hormones in Beagle Serum (LOQ) on Raptor™ C18 by LC-MS/MS.



Peaks	tR (min)	Precursor Ion	Product Ion 1	Product Ion 2
1. Testosterone-D3*	1.25	292.4	97.0	-
2. Testosterone	1.25	289.2	97.0	109.0
3. DHEA-D5*	1.42	276.3	258.3	-
4. DHEA	1.44	271.2	213.1	253.2
5. Androstenedione	1.47	287.1	97.0	109.0
6. Androstenedione- <sup>13</sup> C <sub>3</sub> *	1.47	290.4	100.1	-
7. DHT-D3*	1.67	294.4	258.3	-
8. DHT	1.68	291.2	159.2	255.2

\*Internal standard

<b>Column</b>	Raptor™ C18 (cat.# 9304A12)
<b>Dimensions:</b>	100 mm x 2.1 mm ID
<b>Particle Size:</b>	2.7 μm
<b>Guard Column:</b>	Raptor™ C18 EXP® guard column cartridge 2.7 μm (cat.# 9304A0252)
<b>Temp.:</b>	40 °C
<b>Sample</b>	See extraction procedure
<b>Diluent:</b>	
<b>Conc.:</b>	1 ng/mL
<b>Inj. Vol.:</b>	25 μL
<b>Mobile Phase</b>	
<b>A:</b>	Water + 0.1% formic acid
<b>B:</b>	Acetonitrile + 0.1% formic acid

Time (min)	Flow (mL/min)	%A	%B
0.00	0.4	50	50
2.00	0.4	35	65
2.01	0.4	50	50
4.00	0.4	50	50

**Detector** MS/MS  
**Ion Mode:** ESI+  
**Mode:** MRM  
**Instrument** UHPLC

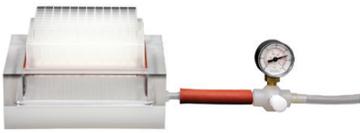
**Notes** Extraction Procedure:

1. A 300 μL aliquot of a 5 ng/mL internal standard mix prepared in acetonitrile + 0.1% formic acid was transferred to a Resprep® PPT<sup>3</sup> 96-well plate (cat.# 26489.2).
2. A 100 μL aliquot of double charcoal stripped beagle serum fortified at 1 ng/mL was added.
3. The Resprep® PPT<sup>3</sup> 96-well plate was placed on top of a 2.0 mL 96-well plate reservoir (cat.# 26493) and capped with a sealing mat.
4. The sample was vortexed for 30 seconds at ~2,000 rpm, then allowed to precipitate for 3 minutes.
5. The sealing mat was removed and the sample was filtered using a vacuum manifold set at 0.02 mPa for 5 minutes, followed by 0.04 mPa vacuum for an additional 5 minutes.
6. The sample extract was diluted 1:1 in water prior to injection.

# Streamlined Sample Preparation with Solvent-First Method

By following our recommended sample preparation steps (Figure 2), you can speed up and simplify your workflow. For full instructions, visit [www.restek.com/PPT3](http://www.restek.com/PPT3) and click on the instruction sheet.

**Figure 2:** Overview of recommended sample preparation steps for Resprep® PPT<sup>3</sup> plates.

<p>1) Add solvent to Resprep® PPT<sup>3</sup> plate.</p> <p>2) Introduce sample to Resprep® PPT<sup>3</sup> plate.</p> 	<p>3) Vortex.</p> 	<p>4) Place collection plate on vacuum manifold.</p>  <p>5) Place Resprep® PPT<sup>3</sup> plate and spacer (if needed) on collection plate. Apply vacuum.</p> 	<p>6) Dilute sample to match initial mobile phase (if needed); transport collection plate to LC-MS/MS autosampler.</p> 
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## Resprep® PPT<sup>3</sup> 96-Well Plates

Description	Well Shape	qty.	cat.#
Resprep PPT <sup>3</sup> 96-Well Plate	2 mL square	2-pk.	26489.2
Resprep PPT <sup>3</sup> 96-Well Plate	2 mL square	5-pk.	26489.5



## Well Plates

Ideal for use as collection plates when paired with Resprep® PPT<sup>3</sup> 96-well plates.

Description	Well Shape	Well Bottom	qty.	cat.#
0.45 mL 96-Well Plates	round	conical	20-pk.	26497
0.45 mL 96-Well Plates	round	conical	case of 120	26496
1.3 mL 96-Well Plates	round	round	5-pk.	26495
1.3 mL 96-Well Plates	round	round	case of 50	26494
2.0 mL 96-Well Plates	round	round	5-pk.	26493
2.0 mL 96-Well Plates	round	round	case of 60	26492



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