

# Parallel Particle Impactor (PPI) Samplers – Thoracic

## Precise Match to ISO 7708/CEN Criteria

- Collection efficiency precisely matches ISO 7708/CEN size-selection criteria
- Operate at 2 L/min for optimal thoracic sampling of hard metals containing cobalt (Co) and tungsten carbide as Co
  - Reusable model ideal for sampling metalworking fluids (NIOSH Method 5524 and TLV)
- Available in reusable conductive aluminum or single-use plastic
  - Disposable PPIs are lightweight and fit easily under helmets and other PPE
- Disposable PPI Sampler Options
  - Preloaded with MCE or quartz filter and pre-oiled impaction substrates by SKC
  - Empty except for pre-oiled impaction substrates ready for lab or user to load filter
- Respirable PPI models are available (see [skcinc.com/categories/respirable-dust-samplers](http://skcinc.com/categories/respirable-dust-samplers))

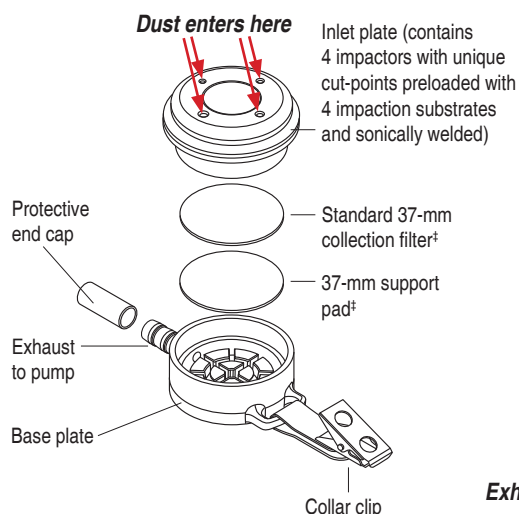
SKC Thoracic Parallel Particle Impactor (PPI®) Samplers are similar to traditional 37-mm filter cassettes in that they collect dust on standard 37-mm filters. That's where the similarity ends! The impaction-based PPI Samplers are designed to provide a precise match to the ISO 7708/CEN criteria in a unique way. *See How PPI Works.*

## How PPI Works

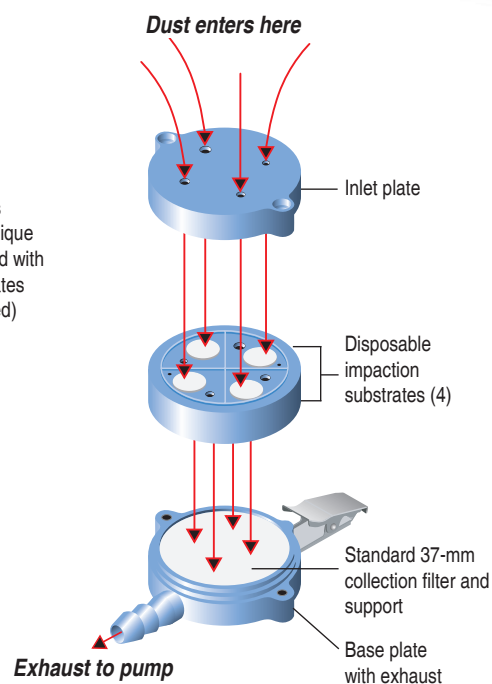
Only the patented\* SKC PPI Sampler contains four small impactors in the inlet section of the device. Each impactor features a unique 50% cut-point to target a specific one-quarter segment of the ISO 7708 curve resulting in a precise fit along the entire curve. A sample pump pulls air through the inlet nozzle of each impactor in the inlet plate. Particles larger than each impactor's 50% cut-point are scrubbed and retained on the porous oiled impaction substrate, while smaller particles continue to the standard 37-mm collection filter for analysis.

\* U.S. Patent No. 7,073,402

‡ User-installed on non-preloaded PPIs; available already installed with preloaded PPIs. See Ordering Information.



**Disposable PPI**



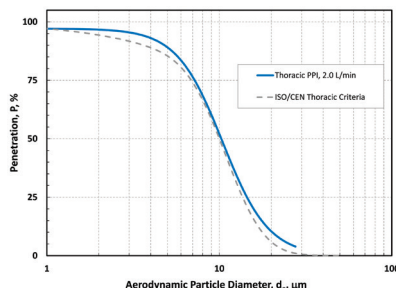
**Reusable PPI**

# Parallel Particle Impactor (PPI) Samplers - Thoracic

Precise Match to ISO 7708/CEN Criteria

## SKC PPI Performance

SKC thoracic PPI Samplers were evaluated side by side with other size-selective samplers. Potassium sodium tartrate (PST), dioctyl phthalate (DP), glass spheres (GS), and coal mine dust were used as test aerosol. A load of approximately 6.8 mg of coal mine dust on the PPI substrates did not adversely affect PPI performance.



Comparison of thoracic PPI Sampler with thoracic convention

## Performance Profile

**Sampling Rate:** 2 L/min

**Sample Pump:** Universal XR or AirChek® Series

**Sample Time:** Dependent on method used

**Sample Media:** 37-mm, 2.0-μm PTFE filter† in Reusable PPI (NIOSH 5524), 37-mm, 0.8-μm MCE filter, or 37-mm Quartz filter

**Tubing:** 1/4-in ID

**Impaction Substrate:** Four 3/8-in diameter pre-oiled porous plastic discs (preloaded in all Disposable PPIs)

**Analysis:** Gravimetric or chemical

**Dimensions:** Height (clip to exhaust): 4.25 in (10.8 cm)

**Diameter:** 1.8 in (4.6 cm)

**Depth:** 1.2 in (3.0 cm)

**Weight:**

*Disposable Plastic:* 1.1 oz (31.2 gm)

*Reusable Aluminum:* 3.3 oz (93.6 gm)

**Shelf-life (Disposable PPI):** 18 mos from date of manufacture

## References

Trakumas, S., Salter, E., "Parallel Particle Impactor - Novel Size-selective Particle Sampler for Accurate Fractioning of Inhalable Particles," *Journal of Physics: Conference Series*, Vol. 151, No.1, 2009, 012060, [www.skcinco.com/instructions/Parallel Particle Impactor Paper.pdf](http://www.skcinco.com/instructions/Parallel%20Particle%20Impactor%20Paper.pdf). (Reference is an author-created, un-copyrighted version of an article accepted for publication in the *Journal of Physics: Conference Series* 151. IOP Publishing Ltd. is not responsible for any errors or omissions in this version of the manuscript or any version derived from it. The definitive publisher authenticated version is available online. Go to <http://dx.doi.org>, enter doi: 10.1088/1742-6596/151/1/012060.)

Görner, P., Simon, X., Boivin, A., Bau, S., "Sampling Efficiency and Performance of Selected Thoracic Aerosol Samplers," *Annals of Work Exposure and Health*, 2017, Vol. 61, No. 7, 784-796

ISO 7708:1995 (2008), *Air Quality — Particle Size Fraction Definitions for Health-related Sampling*, [www.iso.org](http://www.iso.org), search on 7708

## Ordering Information

Disposable PPI Samplers**	Cat. No.
Preloaded Disposable PPI Samplers contain four porous plastic disc impaction substrates, one 37-mm collection filter, and one 37-mm cellulose support	
Thoracic PPI (blue), 2 L/min, plastic, with 0.8-μm MCE collection filter	225-3861
Thoracic PPI (blue), 2 L/min, plastic, with R-100 Quartz collection filter	225-3862

User-loaded Disposable PPI Samplers contain four porous plastic disc impaction substrates, require collection filter and support; see below	
Thoracic PPI (blue), 2 L/min, plastic	225-386

Reusable Aluminum PPI Sampler	Cat. No.
Thoracic PPI (blue), 2 L/min, anodized aluminum, requires collection filter, support, and impaction substrate; see below	225-381

Recommended Collection Filters for User-loaded Disposable and Reusable Aluminum PPI Samplers, required for sampling. Select a filter based on your application.	
PTFE Filters,† 37 mm, 2.0 μm, for metalworking fluids, NIOSH 5524, pk/100	225-17-33
MCE Filters, 37 mm, 0.8 μm, pk/100	225-1939
Quartz Filters, 37 mm, pk/100	225-1827

Filter Supports for User-loaded PPI Sampler, required for sampling Select either cellulose or stainless steel.	
Support Pads, cellulose, 37 mm, pk/100	225-27
Stainless Steel Support Screen, 37 mm, wide mesh	225-26

Impaction Substrates for Aluminum PPI Sampler, four required for each sample Porous Plastic Discs, 3/8-inch diameter, pre-oiled, ready to use, disposable, pk/200	
	225-388

Accessories	Cat. No.
Calibration Adapter for Disposable PPI	225-389
Multi-purpose Calibration Jar for Aluminum PPI	225-111
Filter-Keeper, for transport and storage of 37-mm filters, pk/10	225-8303A
Forceps, stainless steel, with non-serrated flat tips	225-8371

† Back pressure on PTFE filters can vary within the same lot.

\*\* Designed for one-time use