

GS-3 Respirable Dust Cyclone

Listed in OSHA Proposed Silica Rule

- ▶ Operates at 2.75 L/min to conform to ISO/CEN particle size selection criteria
 - Meets requirements in the OSHA proposed rule for silica
- ▶ Tangential inlet design decreases particle losses due to impaction
- ▶ Multiple-inlet design overcomes problems reported with the Dorr-Oliver Cyclone
 - Eliminates ambient wind speed and orientation effects
- ▶ Conductive plastic is safe for underground mine use
 - Eliminates adverse electrostatic effects

GS-3 Cyclone's Unique Design

- Conductive plastic construction eliminates static collection problems with charged particles.
- Tangential inlets lessen sampling errors that can occur when particles impact on the wall of the cyclone opposite the inlet.
- Multiple inlets eliminate sensitivity to wind velocity and user orientation to the contaminant source.

The Multiple-inlet GS-3 Cyclone

The GS-3 Cyclone is a 10-mm lightweight conductive plastic sampler used with a standard three-piece cassette with filter for the collection of respirable dust particles. The GS-3 Cyclone's removable cassette adapter securely holds the filter cassette in place during sampling. Designed to conform to ISO/CEN particle size selection criteria (ISO 7708:1995), the GS-3 Cyclone has a 50% cut-point of 4.0 μm (bias within ISO/OSHA/NIOSH requirements) at 2.75 L/min* or a 3.5 μm at 3.7 L/min† for alternate applications. In addition, the GS-3 Cyclone meets the requirements in the OSHA proposed rule for silica.

GS-3 Cyclone Superior Performance

With low mean bias and higher flow rate requirements, the GS-3 Cyclone provides better sampling accuracy when compared to the performance of other cyclones used for respirable dust collection. Furthermore, the multiple-inlet GS-3 Cyclone overcomes sampling problems that have been reported with the single-inlet Dorr-Oliver Cyclone.

References

- Kar, K. and Gautam, M., "Orientation Bias of the Isolated 10 mm Nylon Cyclone at Low Stream Velocity," *AIHA Journal*, Vol. 56, 1995, pp. 1090-1098
- Gautam, M. and Sreenath, A., "Performance of a Respirable Multi-inlet Cyclone," *Journal of Aerosol Science (U.K.)*; Vol. 28, No. 7, 1997, pp. 1265-1281
- Trakumas, S., et al., *Performance Assessment of Personal Respirable Cyclone Samplers*, AIHce Presentation 191, 2003



Sample Time:	Varies
Sample Rate:	2.75 L/min for 4- μm cut-point* 3.7 L/min for 3.5- μm cut-point†
Sample Pump:	Universal XR or AirChek Series
Sample Media:	25 or 37-mm filters in 3-piece cassettes
Tubing:	1/4-inch ID

Ordering Information

Description		Cat. No.
GS-3 Cyclone with bowl adapter, cassette	37 mm	225-100
adapter, and grit pot	25 mm	225-103
Accessories		
Replacement Cassette Adapter	37 mm	225-102
	25 mm	225-101
Filter Cassette/Cyclone Holder		225-1
Multi-purpose Calibration Jar		225-111
Replacement Grit Pots, pk/25		P225012

* Calibrated at U.K. Health and Safety Laboratory. Visit www.skinc.com/prod/225-100.asp to view the collection efficiency curve.

† Determined using experimental data obtained at flows from 2 to 4 L/min

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GS-1 Respirable Dust Cyclone

Dorr-Oliver Equivalent Design Without Static Concerns

► Use with SKC DPM Cassette; meets MSHA specifications

- Screens out large particles to prevent impactor and filter overload

► Conductive plastic construction

- Overcomes electrostatic effects experienced with the non-conductive nylon Dorr-Oliver cyclone
- Conductive material is safe for underground mine use

► Operate at different flow rates for sharp size selection to meet your application

- Sample at 2 L/min to meet ISO/CEN criteria in the OSHA proposed rulemaking for silica
- Sample at 1.7 or 2 L/min for MSHA DPM compliance sampling

Flow Rate (L/min)	Cut-point (μm)	Application
2.0 [†]	4.0	ACGIH/ISO/CEN respirable convention
3.0 [†]	3.5	Alternate applications
1.7 or 2.0	< 1.0	Sampling with DPM Cassette

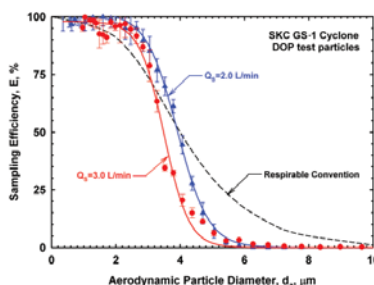


Sample Time:	Varies
Sample Rate:	2.0 L/min for 4- μm cut-point [†] 3.0 L/min for 3.5- μm cut-point [†] 1.7 or 2.0 L/min for < 1.0 μm cut-point (DPM)
Sample Pump:	Universal XR or AirChek Series
Sample Media:	37-mm cassettes, 25-mm cassettes with adapter accessory, or SKC DPM cassette
Tubing:	1/4-inch ID

The lightweight 10-mm single-inlet GS-1 cyclone is an equivalent design to the Dorr-Oliver Cyclone. The advantage is its conductive plastic construction that eliminates the electrostatic effects of the non-conductive nylon Dorr-Oliver Cyclone making it safe for use in underground mines.

About GS-1 Cyclone Flow Rate

The GS-1 Cyclone is designed for use with the SKC DPM Cassette at 1.7 or 2 L/min and for respirable dust sampling to meet the ACGIH/ISO/CEN respirable convention with a 50% cut-point of 4 μm at 2 L/min. The GS-1 Cyclone can also provide a 3.5- μm 50% cut-point when operated at 3 L/min[†] to meet U.S. regulatory requirements currently in place.



References

Kar, K. and Gautam, M., "Orientation Bias of the Isolated 10 mm Nylon Cyclone at Low Stream Velocity," *AIHA Journal*, Vol. 56, 1995, pp. 1090-1098
 Trakumas, S., et. al., *Performance Assessment of Personal Respirable Cyclone Samplers*, AIHce Presentation 191, 2003



Using the GS-1 Cyclone with the SKC DPM Cassette

The SKC DPM Cassette with built-in precision-jeweled impactor is designed for sampling in atmospheres where it is necessary to differentiate diesel particulate matter from other respirable dust (such as coal dust) based on particle size. The built-in impactor screens out respirable particles $\geq 1.0 \mu\text{m}$; particles less than $1.0 \mu\text{m}$ collect on the heat-treated quartz filter. The GS-1 Cyclone can be used with the DPM Cassette to prevent the impactor from clogging in atmospheres where larger particles ($> 4 \mu\text{m}$) may be present as recommended in NIOSH Method 5040.



Ordering Information

Description	Cat. No.
GS-1 Single-inlet Cyclone includes bowl adapter, 37-mm cassette adapter, and grit pot	225-105
Accessories	
Replacement Cassette Adapter 37 mm (supplied with cyclone)	225-102
25 mm	225-101
Filter Cassette/Cyclone Holder , for attaching a DPM or standard filter cassette to a worker's clothing in the breathing zone. May be used with or without a cyclone, <i>required when using DPM Cassette with GS-1 Cyclone (cassette and cyclone in photo not included)</i>	225-1
Multi-purpose Calibration Jar	225-111
Replacement Grit Pots , pk/25	P225012

[†] Determined using experimental data obtained at flows from 2 to 4 L/min

[‡] Trakumas, S., et. al., "Performance Assessment of Personal Respirable Cyclone Samplers," AIHce Presentation 191, 2003

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