

# DPM

## Diesel Particulate Matter Cassette

DPM, Carbon Nanotube and Fibers

- **Preloaded quartz filters with submicron impactor**
  - Preloaded in specially designed cassette with internal size-selective impactor
    - Screens particles  $\geq 1$  micron
    - Contains two quartz filters: one for sample collection and one for dynamic blank
  - Use for elemental carbon analysis of DPM (NIOSH Method 5040) or for carbon nanotubes (CNTs) and carbon nanofibers (CNFs); see *NIOSH CIB 65*, [www.cdc.gov/niosh/docs/2013-145](http://www.cdc.gov/niosh/docs/2013-145)
- **Performance validated at 1.7 and 2.0 L/min**
- **Sample integrity assured**
  - Heat-treated, binder-free quartz filters assure low carbon background
  - Single-use disposable cassettes
  - Tamper-evident seal

### The DPM Advantage

- Impactor with precision sapphire orifices screens out interfering coal dust.
- Low carbon background filters assure accurate results.
- Single-use disposable cassettes are tamper-evident sealed to ensure sample integrity.
- Uses a standard personal constant flow pump such as the SKC AirChek® or Universal XR Series. Flow rates of 1.7 L/min and 2.0 L/min provide optimum collection.
- Meets specifications of NIOSH 5040 for the analysis of elemental carbon (EC) to determine total carbon (organic and elemental) in a sample. Total carbon represents more than 80% of diesel particulate emissions. Compared to gravimetric methods, NIOSH 5040 is more sensitive and specific for EC.

SKC Diesel Particulate Matter Cassettes are designed for sampling in atmospheres where it is necessary to separate DPM from other respirable dust (such as coal dust). Single-use SKC DPM Cassettes are tamper-evident sealed to ensure sample integrity. Each streamlined plastic cassette comprises an impactor plate, impaction substrate, and two heat-treated, binder-free quartz filters. The impactor screens out respirable particles  $\geq 1.0 \mu\text{m}$ . Particles less than  $1.0 \mu\text{m}$  are collected on the first filter and the second filter serves as a dynamic blank for correction of absorbed organic carbon. Samples are analyzed for organic and elemental carbon content using a highly sensitive Evolved Gas Analysis (EGA) technique with thermal-optical analyzer as specified in NIOSH 5040.

Only from  
SKC!



## Diesel Particulate Matter Cassette

For Elemental Carbon Analysis by NIOSH 5040

### The DPM Sampling Train

The SKC DPM Cassette is used with a sample pump capable of a flow rate of 1.7 or 2.0 L/min such as the AirChek or Universal XR Series. A respirable cyclone may be added to the train in sampling situations where larger particles are present that could clog the cassette impactor. SKC offers the GS-1 Single-inlet Cyclone for use with DPM Cassettes.

### The GS-1 Single-inlet Cyclone\*

The GS-1 Cyclone is a single-inlet cyclone that provides performance equivalent to the 10-mm nylon cyclone. The GS-1 Cyclone has the added advantage of conductive plastic construction. This material eliminates the electrostatic effects experienced when using the non-conductive nylon cyclone. The GS-1 Cyclone is ideal for use with the SKC DPM Cassette or for other respirable dust applications.



### Cassette Without Impactor for NIOSH 5040

SKC also offers preloaded cassettes without impactors (Cat. No. 225-401) that meet NIOSH Method 5040 specifications for sampling DPM. When it is not necessary to differentiate DPM from other respirable particles, such as coal dust, perform more economical sampling by using Cat. No. 225-401 preloaded cassettes. Each cassette contains a NIOSH-specified heat-treated, binder-free quartz filter and cellulose support pad.



### Filter Cassette/Cyclone Holder Accessory

This lightweight holder accommodates either a DPM Cassette or other filter cassette with or without a cyclone. The holder conveniently clips to a worker's collar. It is required when using the DPM Cassette with the GS-1 Cyclone.



### Ordering Information

SKC Diesel Particulate Matter (DPM) Cassette	Qty.	Cat. No.
<b>With impactor</b> , contains two 37-mm heat-treated, binder-free quartz filters, <sup>Δ</sup> tamper-evident sealed, single-use, <sup>†</sup> meets NIOSH 5040 specifications, average sample deposition area is 8.04 cm <sup>2</sup>	10	225-317

Organic Carbon and Elemental Carbon Filter Cassette	Qty.	Cat. No.
<b>Without impactor</b> , standard 3-piece clear styrene cassette loaded with 37-mm heat-treated, binder-free quartz filter <sup>Δ</sup> and support pad, banded, meets NIOSH 5040 specifications, average sample deposition area is 8.45 cm <sup>2</sup>	50	225-401

Accessories	Cat. No.
<b>GS-1 Cyclone</b> , <sup>*</sup> single inlet, 10 mm, conductive plastic	225-105
<b>Filter Cassette/Cyclone Holder</b> , 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</i>	225-1

\* A cyclone should be used in settings where larger particulate is likely to clog the impactor.

† Requires 1/4-inch ID tubing for Filter Cassette/Cyclone Holder

Δ Limited shelf-life

### Custom Cassettes with Integral Impactors

#### Only from SKC!

SKC will manufacture custom-designed sampling cassettes in the DPM cassette housing using filter media and impactors with your specified cut-points and flow rates.

Contact SKC to discuss your unique sampling requirements.



### Elemental Carbon Analysis

NIOSH 5040 recommends analysis of elemental carbon to quantitatively determine the total carbon (organic and elemental) in a sample. Total carbon represents more than 80% of diesel particulate emissions. When compared to gravimetric methods, NIOSH 5040 for Elemental Carbon Analysis is more specific and sensitive.

#### SKC Limited Warranty and Return Policy

SKC products are subject to the SKC Limited Warranty and Return Policy, which provides SKC's sole liability and the buyer's exclusive remedy. To view the complete SKC Limited Warranty and Return Policy, go to <http://www.skcinc.com/warranty>.

