

PARTICLE SIZING - PROPOSED MODIFICATION METHOD 201A

Method 201A applies to the in-stack measurement of particulate matter (PM) emissions equal to or less than an aerodynamic diameter of nominally 10 microns (PM_{10}) and or 2.5 microns from stationary sources. A gas sample is extracted at a constant flow rate through Apex instruments cyclone, which separates PM greater than PM_{10} . PM less than PM_{10} is collected on the in-line filter. In order to maintain a cut size of 10 microns in the cyclone, the flow rate must be maintained at a constant, discrete value during the run. Apex cyclones meets the specifications of Method 201A and allows use of the equations in Method 201A to calculate the constant sample flow rate.



PM1-K

Packing List

Introducing PM1 Cyclone

Apex Instruments now offers a cyclone designed for sampling very fine particulate matter in the 1.5 to 0.5 micron range. The cyclone is based on the cyclone "V" from the Multi-stage cyclone system designed and calibrated by Southern Research Institute under contract for the EPA. The design has been modified to accept the nozzles from the PM 2.5 cyclone, which has been expanded to a set of 12 different size nozzles. The sample flow rate must be maintained, in which the constant rate determines the actual "D₅₀" cut-point. The cyclone is followed by a 47 mm filter assembly. Quartz or PTFE coated glass fiber filters should be used to minimize reactivity with the flue gas. The cyclone and nozzles are constructed from grade 316 stainless steel with Viton o-rings. Other materials are available upon request for corrosive or high temperature applications.

PM1 Cyclone Kit Components

The PM1 Cyclone is used for in-stack measurement of very fine particulate matter. The 47 mm filter assembly outlet connector has a 5/8" outer diameter for easy installation Method 5 Probe Assemblies. The cyclone kit is enclosed in a sturdy plastic case.

Product	Description
PM1-K	PM1 Cyclone Set Includes: Cyclone Body, 12 Nozzles, (PM2-NS), Filter (SFA-47), Manual and Case
PM1	PM1 Cyclone Body Only, Stainless Steel with Viton® O-Rings
PM2-NS	Set of 12 Nozzles for PM1 and/or PM2.5 Cyclone, Stainless Steel

PM2.5 Cyclone Kit

The PM2.5 Cyclone is used for in-stack measurement of particulate matter equal to or less than 2.5 microns. The shank has a 5/8" outer diameter for easy adaptation to the Method 5 Probe Assemblies. The kit is enclosed in a sturdy plastic case with 12 nozzles.

PM2.5 Cyclone Kit Components

Product	Description
PM2-K	PM2.5 Cyclone Set Includes: Cyclone Body, 12 Nozzles, (PM2-NS), Filter (SFA-47), Manual and Case
PM2	PM2.5 Cyclone Body Only, Stainless Steel with Viton® O-Rings
PM2-NS	Set of 12 Nozzles for PM2.5 Cyclone, Stainless Steel
PM2-NSA	Add-On Set of 6 Nozzles (NS-7, 8, 9, 10, 11, 12) for upgrading PM2.5 Cyclone Existing Kits, Stainless Steel
O-024V	Viton® O-Ring for PM2.5 Cyclone, (2 per cyclone).
O-024H	High Temperature O-Ring for PM2.5 Cyclone, Stainless Steel

Alloy 600 Components Available. Call for Pricing.



PM2-K

Packing List

Apex Expanded Nozzle Set

PM2-NS Nozzle Set Includes 1 Each

Product	Size	Product	Size
PM2-N1	.125 Size 1	PM2-N4	.172 Size 4
PM2-N2	.138 Size 2	PM2-N5	.188 Size 5
PM2-N3	.156 Size 3	PM2-N6	.200 Size 6

PM2-NS Nozzle Set Includes 1 Each

Product	Size	Product	Size
PM2-N7	.216 Size 7	PM2-N10	.274 Size 10
PM2-N8	.234 Size 8	PM2-N11	.296 Size 11
PM2-N9	.253 Size 9	PM2-N12	.320 Size 12

ISOKINETIC SOURCE SAMPLING EQUIPMENT

PM10 Cyclone Kit

PM10 is used for Method 201A testing and is designed for in-stack measurement of particulate matter equal to or less than 10 microns. The shank has a 5/8" outer diameter for easy adaptation to Method 5 Probe Assemblies. The cyclone kit is enclosed in a sturdy plastic case with twelve nozzles. *Call for High Temperature Alloy 600 PM10 Cyclones and Filter Holders.*

PM10 Cyclone Kit Components



PM10-K

Packing List

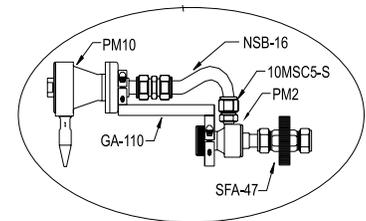
Product	Description
PM10-K	PM10-K Cyclone Kit, Includes: Cyclone, 12 Nozzles Set (PM10-NS), 47mm Filter Holder (SFA-47), Manual & Case
PM10	PM10 Cyclone Only, Stainless Steel with Viton® O-Rings
PM10-NS	Set of 12 Nozzles for PM10 Cyclone (Now with 12 Nozzles)
O-032V	Viton® O-Ring for PM10 Cyclone
O-032H	High Temperature Stainless Steel O-Ring for PM10, Cyclone
MPT-6-320	Extended Pitot Tip for PM10, SFA-300, and SFA-2590

PM10/2.5 Cyclone 12 Nozzle Set - 1 Each

Product	Size	Product	Size	Product	Size	Product	Size
PM10-N0	.125 Size 0	PM10-N3	.164 Size 3	PM10-N6	.215 Size 6	PM10-N10	.342 Size 10
PM10-N1	.136 Size 1	PM10-N4	.180 Size 4	PM10-N7	.233 Size 7	PM10-N11	.390 Size 11
PM10-N2	.150 Size 2	PM10-N5	.197 Size 5	PM10-N9	.300 Size 9	PM10-N12	.320 Size 12

PM10/2.5 Cyclone Kit

PM10/PM2.5 Set combines the in-stack measurement of particulate matter (PM) equal to or less than an aerodynamic diameter of nominally 10 (PM₁₀) and 2.5 (PM_{2.5}) microns from stationary sources. The sampling train and operation are identical to Method 201A except that the PM2.5 cyclone is inserted between the PM10 cyclone and the 47mm filter. The PM10 cyclone collects particulate matter greater than PM₁₀ while the PM2.5 collects PM less than PM10 and greater than PM2.5. The in-line filter collects PM less than PM2.5.

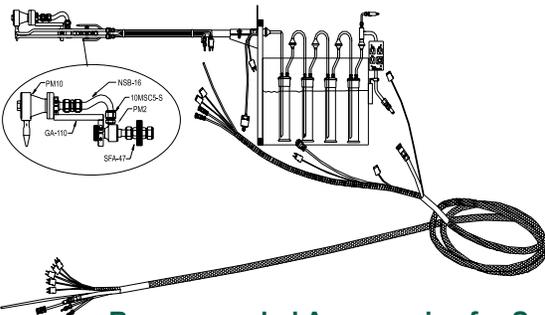


PM10/2.5 Cyclone Kit Components

Product	Description
PM2.5-10K	PM 2.5/10 Cyclone Kit Includes: PM10 Kit, with PM10/PM2.5 Nozzle, Cyclone Assembly, 47 mm Filter Assembly, Stainless Steel, Adapters, Pitot & Case
PM2/10-CK	Connector Kit includes: GA-110 Strain Relief Adapter for PM2.5 and PM10 Cyclones, NSB-16 Button Hook Adapter for connecting the PM10/2.5 Cyclones, 10MSC5-S Connector, adapts NSB-16 to PM2.5 Cyclone, 5/8" TU to 5/16" bevel seat, Stainless Steel, and N-10UBNN SS Union, 5/8", Bored out .660 with shoulder, Body only, No Nuts or Ferrules
PM2/10-CKI	Connector Kit includes: INCONEL EQUIVALENT TO: GA-110 Strain Relief Adapter for PM2.5 and PM10 Cyclones, NSB-16 Button Hook Adapter for connecting the PM10/2.5 Cyclones, 10MSC5-S Connector, adapts NSB-16 to PM2.5 Cyclone, 5/8" TU to 5/16" bevel seat, and N-10UBNN Union, 5/8", Bored out .660 with shoulder, Body only, No Nuts or Ferrules
SFA-47	Filter Assembly, 47mm, 5/8TU, Stainless Steel, Method 17 In-Stack Filter Unit, 5/8 inch Tube Unions, uses 47mm diameter Filter Element
GA-110	Strain Relief Adapter for PM2.5 and PM10 Cyclones
NSB-16	Button Hook Adapter for Connecting the PM10/2.5 Cyclones
10MSC5-S	PM10/2.5 Connector, Adapts NSB-16 to PM2.5 Cyclone, 5/8" TU to 5/16" Bevel Seat, Stainless Steel



PM2.5-10K



Recommended Accessories for Sampling with Cyclone Sets.

Power Box Adapter, Includes 1/2 inch Mounting Clamp and 4 Pin Amphenol to 3 Receptacles.

UA-3J

Extended Pitot Tip for PM10/2.5 Sampling, Tube Diameter 3/8", Length 421 mm

MPT-6-421

47mm Glass Fiber Filters, 100/box (Whatman 934AH-4.7cm).

GF-47

Sample Frame with Probe Clamp & Impinger Box Slides

SB-8

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