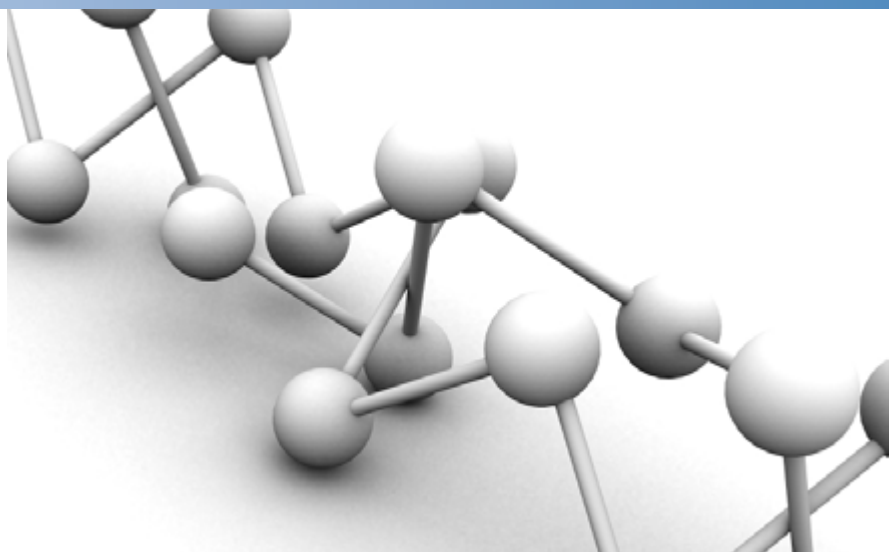
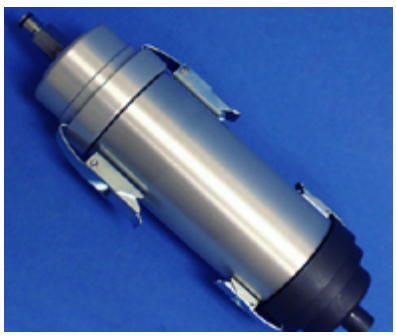
Thermo Scientific ChemComb 3500 Speciation Collection Cartridge

Flexible system for the collection of gases and particulate matter

The Thermo Scientific™ ChemComb® 3500 Speciation Sampling Cartridge provides a flexible means of sampling particulate matter (PM) and gases from ambient air for analysis in a laboratory.

- Field-proven sampling system characterized by Harvard and UMEG
- Configurations for collecting inorganic and organic gases and particles
- Compact, flexible design facilitates transport and handling, sample integrity
- Honeycomb materials partition gases and particles, scrub ozone and acid gases; PUF/XAD unit for organic gases
- Inlets for PM-2.5, PM-10, PM-1





The Thermo Scientific™ ChemComb® was developed by the Harvard School of Public Health, and its performance has been characterized and documented in a number of peer-reviewed publications.

The sampling device is made up of a single cartridge that contains a well-characterized inlet with a PM-2.5 or PM-10 impactor, up to two honeycomb denuders for the removal or collection of selected gases, and a four-stage 47 mm diameter filter pack for the collection of particle-related components.

PM-2.5 inlets are available for flow rates of 10 and 16.7 l/min, and a PM-10 inlet for 10 l/min.

The honeycomb denuders are used in systems operated at 10 l/min. Systems can also be configured without honeycomb denuders to operate as a multistage filter pack for PM-2.5 or PM-10.

A version designed for collecting organic species adds the capability of sampling on polyurethane foam (PUF) and/or XAD after the filter pack.

The collector can be installed in a number of sampling systems, including the Thermo Scientific™ Partisol™ Speciation Sampler and original Partisol Air Sampler, as well as simple constant-flow pumping systems.

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System Overview	The ChemComb 3500 Speciation Sampling Cartridge is composed of the following main sections: A PM-2.5 or PM-10 inlet/impactor, available in 10 and 16.7 l/min configurations for PM-2.5, and for a 10 l/min flow rate for PM-10. These inlets are either clear anodized or have a PTFE coating over a clear anodized surface. The PTFE coating is used in most applications, and minimizes losses of HNO_3 and NH_3. Clear anodized inlets are available for the collection of organic and elemental carbon on quartz fiber filters to avoid possible interferences from inlet surface coatings. A denuder section, which can be empty if no gas stripping or collection is desired. This part of the sampling module can accommodate up to two honeycomb denuders. A 4-stage filter pack section can house between one and four 47 mm diameter filters in separate levels. All components of the filter pack are made of PTFE material to minimize interactions with the collection hardware. At the exit of the filter pack section is a 1/4 inch diameter quick-connect fitting for easy integration with a variety of sampling platforms. The cartridge's glass honeycomb denuders is patented by Harvard University with exclusive rights held by Thermo Fisher Scientific, and has a length of 38 mm and diameter of 47 mm. Each honeycomb denuder contains approximately 212 hexagonal flow channels that are approximately 2 mm on a side. The total internal surface area is approximately 310 cm^2. The honeycomb denuders are made completely of glass to avoid gas losses that can take place due to nitric acid and ammonia adsorption on the epoxy resin sometimes used in annular denuders. The use of the same material throughout the denuder avoids cracking that can otherwise occur in the face of large temperature changes. To optimize the denuder gas collection efficiency, ChemComb Cartridges containing honeycomb denuders which should be operated at a 10 l/min flow rate and fitted with the corresponding inlet. In this configuration, a honeycomb denuder typically attains a collection effciency of better than 98%. Each honeycomb denuder is provided with two caps for use in collector preparation and sample analysis in the laboratory.
Honeycomb Denuder Analysis	The Harvard University-developed glass honeycomb denuders have a long history of use in a number of sampling applications. Numerous laboratories are well-practiced in the analytical procedures required for their evaluation. Step-by-step preparation and analytical procedures are provided by Thermo Fisher Scientific and are based upon the methodologies developed by Harvard University and Research Triangle Institute. Ion chromatography is most often used as the analytical method.
Physical Dimensions/Weight	External diameter (not including clips): 2.95" (7.49 cm) External diameter (including clips): 3.81" (9.68 cm) Length (from inlet to end of 1/4" connector): 11.13" (28.27 cm) Weight (with empty denuder section): 2.7 lb (1.23 kg) Weight (fully equipped with 2 denuders): 3.2 lb (1.45 kg)

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For more information, visit our website at thermoscientific.com/air

This product is manufactured in a plant whose quality management system is ISO 9001 certified.

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