
CLOSED CRANKCASE VENTILATION (CCV) FILTERS

Direct-formed filter delivers low pressure drop
with high filtration efficiency to meet global
emission standards

Closed Crankcase Ventilation (CCV) Filters

POREX® CCV filters remove 96.4%* of oil mist and particulates >0.3µm from hot crankcase blow-by gases, meeting emission standards to reduce NOx emission for EURO VI, China VI-a and VI-b**, LEVIII, Tier IV Final and BS VI.

Our unique bonded fiber technology delivers a consistently low pressure drop for improved oil retention that delivers greater engine efficiency and longer filter life even at high air flows. This not only maintains cleaner air in the crankcase, but also helps prevent utilization of the by-pass system, further reducing emissions. POREX CCV filters repel oil, which reduces clogging of the filter, while exhibiting a very low-pressure drop that provides consistent filtration efficiency and extended filter life.

The robust direct-formed shape and low-pressure drop also enable a smaller filter footprint for greater design flexibility, reduced filter housing costs, and increased engine cavity space. The design of our filters also reduces part-to-part variability, the number of parts needed, and the steps required for complete filter assembly. This decrease in footprint also lowers the completed filter weight.

POREX CCV filters are customizable to specific dimensional and performance requirements, including oleophobic treatment options to increase filter life.

* Average percentage based on particulate sizes from .3 µm and greater

Sustainability:
Porex direct formed filters are recyclable.



Key Benefits

Meet global emission standards

- Ultra-fine filtration captures and separates more fine oil molecules, particulate matter, and hydrocarbons
- Oleophobic treatment removes and coalesces oil particles from the airstream for return to the crankcase
- Superior aerosol filtration and collection for clean system operation

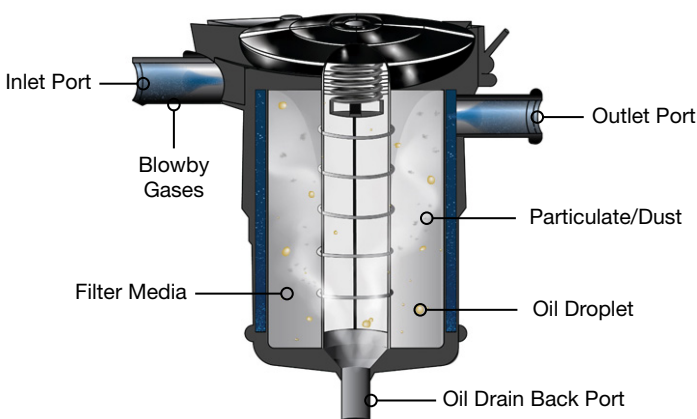
Save space and cost with greater design flexibility

- Eliminate pleating, use of binders or adhesives, and multilayer filter media
- Reduce production costs with direct-formed filter, eliminating up to four assembly steps
- Prevent media migration with cleaner component part and no shedding
- Provide high filtration and low pressure drop with a smaller filter footprint

Improve engine performance and longevity

- Excellent oil drainage capabilities for longer filter life
- Lower pressure drop that maintains a high filtration efficiency for a more efficient system performance
- Better filtration stability regardless of fuel and airflow rate fluctuations
 - Virtually eliminates oil drip
 - Reduces oil consumption
 - Reduces engine maintenance and down time
 - System Life = Engine Life

How the POREX CCV filter media works



The CCV system works to relieve any pressure from the engine's crankcase attributed to blow by gases by rerouting the gases back into the engine's intake manifold to be consumed by the engine.

The **CCV filter media** accepts the blowby gases from the engine through the inlet port and coalesces the aerosols formed by the engine oils in the exhaust gases while filtering out fine dust, particulate matter, nitrous oxides (NOx) and hydrocarbons before allowing the gases to exit the outlet port back to the intake manifold - and the oil to exit the oil drain back to the oil sump.

Technical Specifications

Dimension Options	
Dimensional Options	ID: 15 – 140 mm OD: 25 – 225 mm L: 15 – 600+ mm Minimum 10mm wall thickness
Oil Removal Efficiency	>96.4% @ 0.4 kPa
Material Options	Polyesters, Polyolefins, Nylons
Surface Affinity Options	<ul style="list-style-type: none">HydrophobicHydrophilicOleophobic & Hydrophobic
Thermal Stability	120°C / 250°F
Available Micron Rating	5µm, 10µm, 25µm
Recommended Differential Pressure	With Core: 35 PSI Without Core: 20 PSI
Air Permeability @ 2 mbar	Range 2.0 – 30.9 L/s*m²
Testing	CAGI ADF 400, Fractional Filtration Efficiency (ISO/TS 17536-5), Filter Life (extended 17536-5 hot oil)



Filtration Efficiency					
Sample	ΔP, kPa	Filtration Efficiency per Micron Range			
		0.3 – 1.0	1.0 – 3.0	3.0 – 5.0	Avg.
Porex CCV Filter	0.4	89.9 %	99.4 %	100.0 %	96.4 %
Competitor 1	1.1	92.1 %	99.8 %	100.0 %	97.3 %
Competitor 2	0.3	86.3 %	98.1 %	100.0 %	94.8 %

ISO 17536 – 5, modified with Hot Oil (80°C), 200l/min
Approx. size: 90OD x 30ID x 200L mm

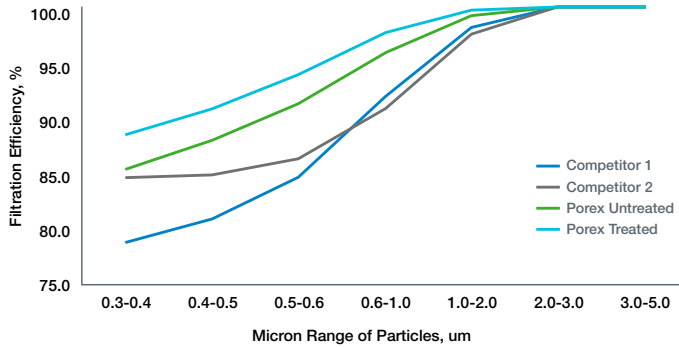


Bonded Fiber versus Fiberglass

- Greater filtration efficiency
- Longer lifespan
- Reduced media migration
- Decreased weight and part-to-part variability
- Sustainable (can be incinerated)

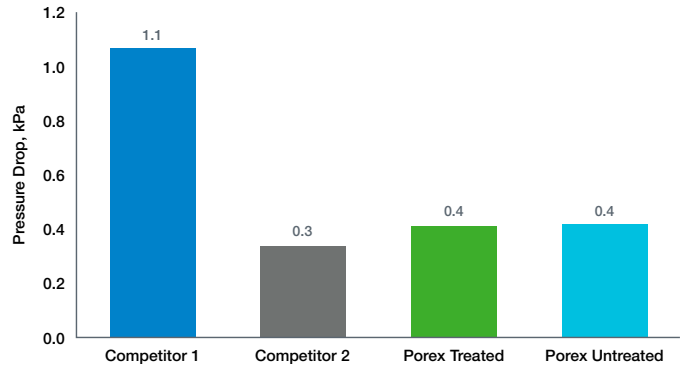
Comparative Test Results

ISO 17536-5 Filtration Efficiency with Hot Oil*



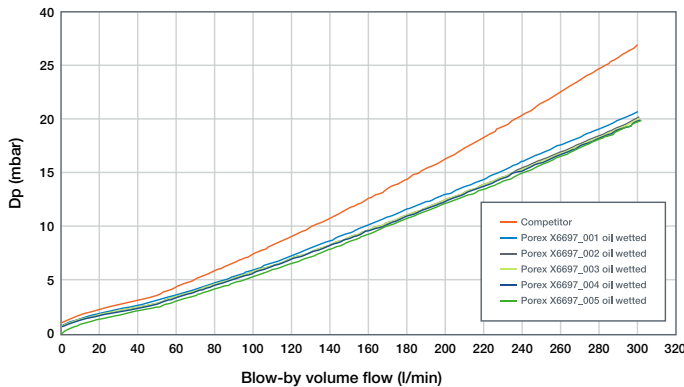
*Based on filter size 30 (ID) x 90 (OD) x 145 (L) mm

Pressure Drop, kPa



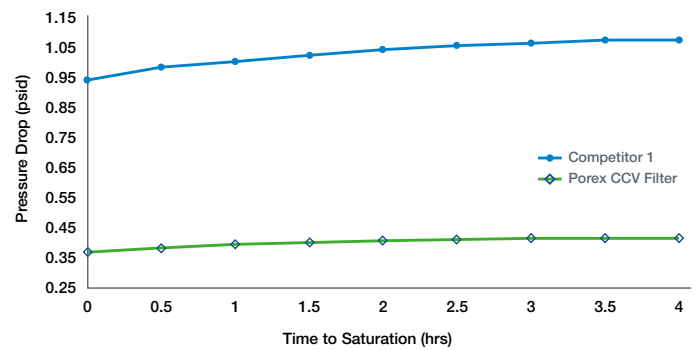
Porex CCV filter media provides better filtration stability than competitors in terms of fractional efficiency based on varying airflow rates with consistent performance over time.

Differential Pressure



Porex CCV filter media promotes an even oil pressure in the lower ranges of 20 psi to provide the engine with needed lubrication for longer filter and engine life.

Pressure Drop to Saturation / Stabilization



*Calculations available upon request

Porex CCV filter media maintain nearly constant pressure drop, even when "saturated" or stabilized (0.03 kPa)

Sample Test Data is representative of Porex fiber media and is not representative of final product or filter performance. Comprehensive testing is the responsibility of the final product manufacturer.

This information is confidential between Porex and the customer.

POREX filter media enables vehicles to handle changes when driving with little to no affect on engine or filtration performance

Average Speed / Level



Engine
Speed



Engine
Load



Blow-By
Volume



Particle
Size

Most systems operate at their peak performance when vehicle is moving at an average speed.

Fast / Level



Engine
Speed



Engine
Load



Blow-By
Volume



Particle
Size

When increasing the engine speed, the engine load and blow-by volume increases, while the particle sizes become smaller. POREX filter media handles these changes easily with its fine filtration capability and low pressure drop.

Fast / Downhill



Engine
Speed



Engine
Load



Blow-By
Volume



Particle
Size

As the vehicle moves downhill with elevated speed, engine load decreases with the blow-by volume remaining steady, but the particle sizes increase. POREX filters experience no change in filtration efficiency, supporting engine power or performance.

Slow / Level



Engine
Speed



Engine
Load



Blow-By
Volume



Particle
Size

With engine speed slowing down, engine load and blow-by volume decrease, while particle size increases. POREX filters experience no change in filtration efficiency, supporting engine power or performance.

Slow / Uphill



Engine
Speed



Engine
Load



Blow-By
Volume



Particle
Size

When the vehicle begins traveling uphill at a slower speed, engine load significantly increases and the blow-by volume is moderate with finer particulates. POREX filters experience no stress and continue to filter 96.4% of particulates with no interruption in fractional efficiency.



AMERICAS

Phone: + 1 770 964 1421

Email: Info.porex.amrs@filtrationgroup.com



EUROPE

Phone: + 49 241 9105250

Email: Info.porex.emea@filtrationgroup.com



ASIA PACIFIC

Phone: + 603 51913308

Email: Info.porex.apac@filtrationgroup.com



CHINA

Phone: + 86 574 2685 8761

Email: Info.porex.china@filtrationgroup.com