

Ceramic Filters



The generic word 'filtration' can encompass many applications across a wide range of industries, the majority of which can be served by the commonly available filter media where process temperatures are low and / or the environment inert.

It therefore takes a very special medium to tackle the difficult and unusual conditions found in today's chemical, petrochemical or general process industries.

Mantec solves these difficult problems by supplying porous ceramic media that are chemically inert, stable and available in a variety of controlled and special grades, with temperature capabilities of up to 900°C.

Applications for filtration tubes fall into two main groups, each explained further below.

Gas and Air Filtration

Mantec has many years experience in the manufacture and selection of ceramic filters for gas/air filtration. Our range of porous ceramic elements and filter units meet industrial demands for an effective and highly efficient filter to remove solids and traces of free oil and water from compressed air, gas lines and industrial processes.

The following table shows the retention capability for specific ceramic grades:

Air/Gas Duties	P3	P4	P5	P6	P8	P9	
Ceramic Element Grade	C3	C4	C5	C6	C8	C9	C0
Retention (microns)	50	30	20	10	3	1	0.3

Key Features

- **Efficiencies:** a wide range of efficiencies with pore structures to give filtration from 0.3 to 100 micron.
- **Sterile Air:** with an efficiency of 99.999% at 0.3 micron.
- **Coalescing:** with specially treated ceramic for removal, by impingement, of liquids such as oil and water from air and gas streams.
- **Hot Gases:** materials are available with special properties to resist thermal shock.
Environments: suitable for aggressive and corrosive applications.

Typical Applications for Gas and Air Filtration

- Hot Gas Filtration
- Precoat Filtration
- Coalescing Filtration
- Process Filtration - Both
- Dust and Fume Filtration
- Compressed Air Filtration

Liquid Filtration

Liquid filtration is presented with similar problems to air and gas when faced with high temperatures and aggressive acidic conditions. Ceramic elements prove to be reliable and cost effective solutions to removing solids from water, chemical and petrochemical products, and other processes.

The same features that benefit air and gas apply to liquid but with slightly differing filtration characteristics. The following table shows the retention capability for specific ceramic grades:

Liquid Duties	P3	P4	P5	P6	P8	P9	
Ceramic Element Grade	C3	C4	C5	C6	C8	C9	C0
Retention (microns)	150	60	40	20	6	2	1

Ceramic Filters

Key Features

- Support Structure: for either filter bag/sleeves or a precoat filter medium.
- Chemical Compatibility: suitable for the filtration of aggressive liquids, including alkaline solutions and many acids.
- High Mechanical Strength: to withstand high differential pressures and in-situ back flushing

Typical Applications for Liquid Filtration

- Process Filtration
- Industrial Waste Water Treatment
- Filtration for chemical processing plant
- Paper and cardboard processing
- Solvent filtration
- Precoat filtration
- Liquid backwash
- Filtration of corrosive fluids

Common Benefits

- Controlled pore size
- Controlled porosity and permeability
- Coalescing capability
- Chemically inert - can handle acidic gases
- High Temperature capability to 900°C
- Range of standard element sizes
- Low cost of ownership

Available Ceramic Filter Media

Mantec Filtration has a range of standard ceramic materials. Each has its unique characteristics and capabilities. The materials used most commonly are Pyrolith and Coralith.

Pyrolith

Aluminosilicate particles bonded by glass. Pyrolith can withstand hot and cold acids (not hydrofluoric acid or acid fluorides), alkaline solutions up to pH9 and hot gases up to 900°C.

Chemical Composition

SiO₂ 57%
Al₂O₃ 36%

Coralith

Aluminosilicate particles bonded by glass. Coralith can withstand hot and cold acids (not hydrofluoric acid or acid fluorides), alkaline solutions up to pH9 and hot gases up to 900°C.

Chemical Composition

SiO₂ 10%
Al₂O₃ 85%

Trace Elements

Typical Filtration Tube Sizes

Mantec Filtration has a range of standard ceramic elements although specific sizes are available on request.

Dimensions L x OD x ID mm	Dimensions L x OD x ID Inch	Material Grades Pyrolith and Coralith							
		P3 C3	P4 C4	P5 C5	P6 C6	P8 C8	P9 C9		
114 x 29 x 13	4.5 x 1.125 x 0.5	✓	✓	✓	✓	✓	✓	✓	✓
152 x 70 x 51	6 x 2.75 x 2	✓	✓	✓	✓	✓	✓	✓	✓
229 x 102 x 76	9 x 4 x 3	✓	✓	✓	✓	✓	✓	✓	✓
254 x 51 x 32	10 x 2 x 1.25	✓	✓	✓	✓	✓	✓	✓	✓
254 x 70 x 51	10 x 2.75 x 2	✓	✓	✓	✓	✓	✓	✓	✓
305 x 70 x 51	12 x 2.75 x 2	✗	✓	✓	✓	✓	✓	✓	✓
305 x 102 x 76	12 x 4 x 3	✗	✓	✓	✓	✓	✓	✓	✓
381 x 70 x 51	15 x 2.75 x 2	✗	✓	✓	✓	✓	✓	✓	✓
457 x 76 x 51	18 x 3 x 2	✗	✓	✓	✓	✓	✓	✓	✓
500 x 70 x 40	19.7 x 2.75 x 1.5	✗	✓	✓	✓	✓	✓	✓	✓
1000 x 60 x 40	39.4 x 2.4 x 1.5	✗	✗	✓	✓	✓	✓	✓	✓
1000 x 70 x 40	39.4 x 2.75 x 1.5	✗	✗	✓	✓	✓	✓	✓	✓