

WHAT IS COALESCING?

Coalescing is the process where liquid aerosols in a compressed gas/air system, are forced to join together into large droplets. These combined droplets then can be drained away by gravity.

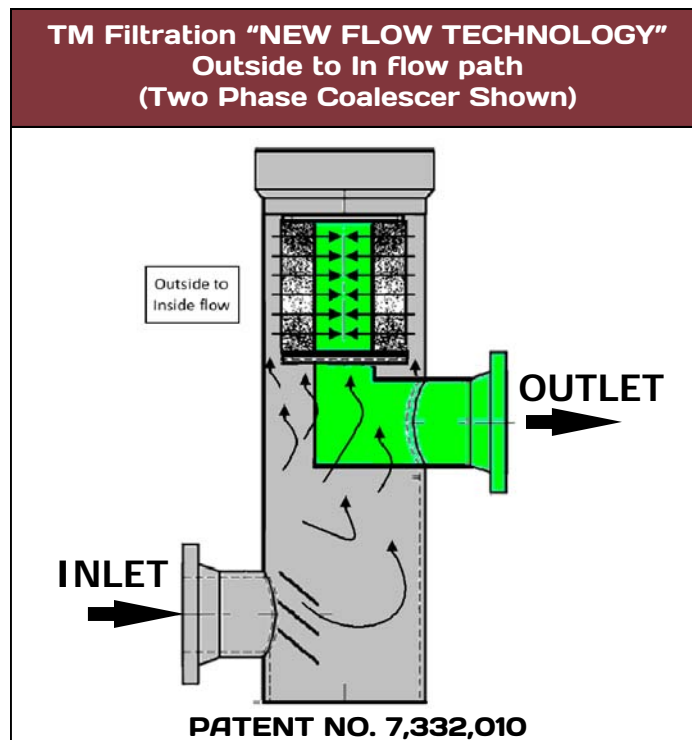
The coalescing media is made up of a matrix of non-wicking glass fibers. These fibers enhance the removal of the liquid aerosols within the gas/air stream. As the wet gas/air passes through the coalescing media, the liquid aerosols in the gas/air will collide and fuse to form droplets. These droplets eventually become large enough that gravity will draw them away from the element, down to the sump/reservoir area of the filter housing.

The "old style" coalescing element have the compressed gas/air flowing from inside the element outward. This has been the design, since the inception of coalescing filtration. TM Filtration has now developed and patented the "NEW FLOW TECHNOLOGY" where the gas/air flows through the element from the outside to in. This simple design change is one of the most significant technology leaps that modern coalescing filtration has seen. It allows for a pleated element design to be utilized. A pleated design allows more contaminant holding capacity, and maximizes the life cycle of the element..



The GREEN movement is an effort to look at the impact that a product has on the environment. TM's coalescing elements are manufactured using special materials, which may be cleaned using commonly available ultrasonic cleaning methods.

Since the element is cleanable there is less waste going into the landfills, and more money staying in your pocket.

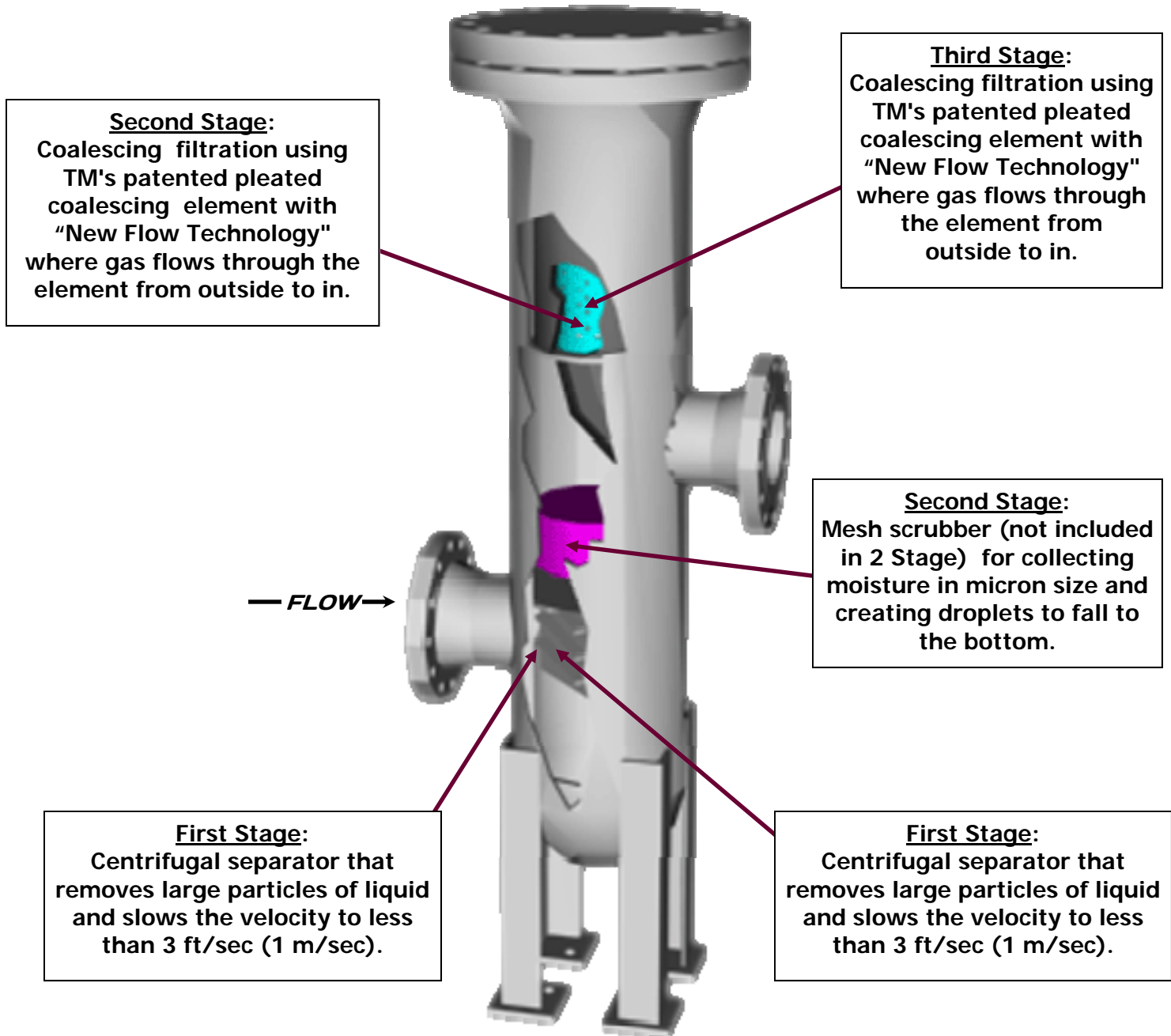


2 STAGE (PHASE) GAS FILTRATION



PATENT NO. 7,332,010

3 STAGE (PHASE) GAS FILTRATION





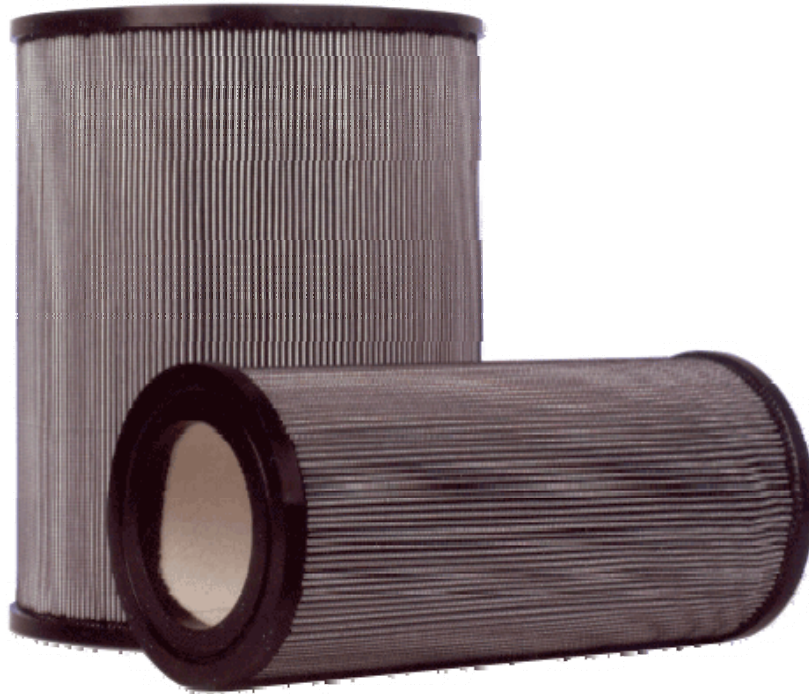
TM Filtration

TM'S GFC CLEANABLE GAS COALESCING ELEMENTS



PATENT NO. 7,332,010

COMPONENTS	MATERIAL	PURPOSE
PLEATED MESH SCREEN	METALLIC SCREEN	RE- ENFORCEMENT, PARTICULATE RETENTION
SUBSTRATE	SPUN BONDED POLYESTER	PARTICULATE FILTRATION
FILTER MEDIA	MICRO BOROSILICATED GLASS	COALESCING, AEROSOL RETENTION
INNER CORE	SINTERED POLYETHYLENE TUBE	FINAL GAS POLISHING, LIQUID BARRIER
END CAPS	POLYURETHANE	RIGIDITY, SEALING SURFACE



ELEMENT NO	OD	ID	LENGTH	SURFACE AREA
	IN / MM	IN / MM	IN / MM	FT ² / M ²
991-GFC-03-00	3.56 / 90.4	1.50 / 38.1	12.0 / 304.8	6.6 / 0.61
991-GFC-03-0	4.50 / 114.3	2.25 / 57.1	12.0 / 304.8	11.0 / 1.02
991-GFC-03-1	5.53 / 140.5	3.53 / 89.7	12.0 / 304.8	17.4 / 1.61
991-GFC-03-4	9.56 / 243.0	6.65 / 169.0	18.0 / 457.2	60.8 / 5.64
991-GFC-03-5	15.75 / 400.0	13.00 / 330.2	18.0 / 457.2	99.6 / 9.25

PATENTED & INNOVATIVE FILTRATION TECHNOLOGIES



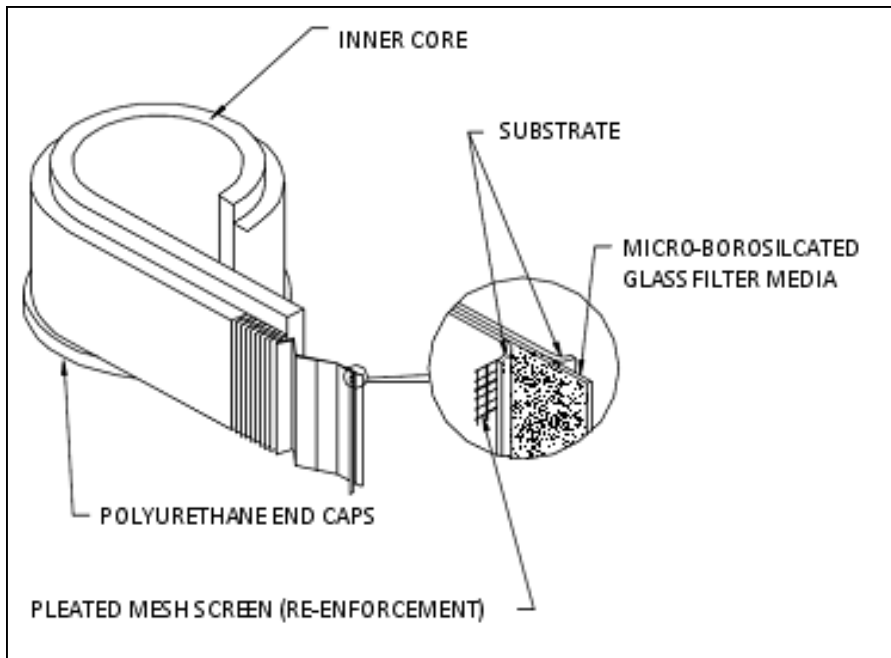
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EFFICIENCIES OF ELEMENT (IN CONSTRUCTED FORM)	
Liquid Removal	99.99% (Greater than 3.0 μ), 99.5% (Less than 3.0 μ)
Solid Removal	99.95% (Greater than 3.0 μ), 99.5% (0.5 to 3.0 μ)

MAXIMUM TEMP RATING (CONTACT FACTORY FOR OTHER HIGH TEMP OPTIONS)
180° F (83° C)



The outer layer of the element is a **Pleated Mesh Screen**, which acts as a re-enforcement.

The **Substrate** is a spun bond polyester, which acts as a solid particulate filter layer (3 micron).

The **Micro Borosilicate Glass** is the coalescing filtration layer (3 micron absolute).

The **Inner Core** is a polyethylene tube which is designed to polish the Gas to (3 Micron absolute) This also functions as a liquid barrier, that only allows gas to pass.

GLASS FILTER MEDIA ANALYSIS				
TYPICAL PROPERTIES	STANDARD UNITS		METRIC UNITS	
Caliper (Thickness measured at 8psi)	22	mils	0.56	mm
Resistance	40	mm	391	Pa
Frazier	3.7	cfm	1.8	cc/sec/cm ²
Mean Flow Pore	4	micron	4	micron
Flat Sheet Multipass Efficiency – Beta 200	< 4	micron	< 4	micron
Flat Sheet Multipass Efficiency – Beta 1000	< 4	micron	< 4	micron
DOP Penetration	0.016	%	0.016	%

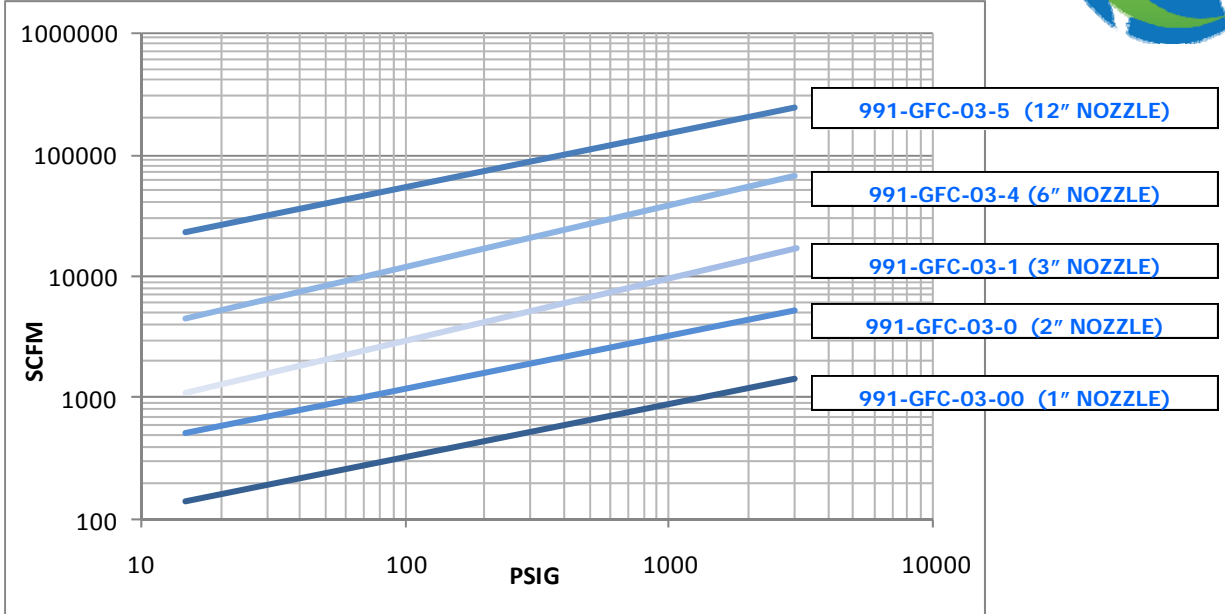
NOTE: Caliper Test :The thickness measured at a specific pressure. Frazier Test : The column of air, in CFM , that can flow through 1 square foot of media 0.5 W.G. pressure drop . Mean Flow Pore : The average particle size. Flat Sheet Multipass Efficiency: Beta 200 or 1000: Size of contaminant that can be captured with a efficiency of 99.5% for Beta 200, and 99.95% for Beta 1000. DOP Penetration test: 0.3 micron particle @ 32 l/min/cm²

FLOW (SCFM VS PSIG) OF GFC CLEANABLE GAS COALESCING ELEMENTS

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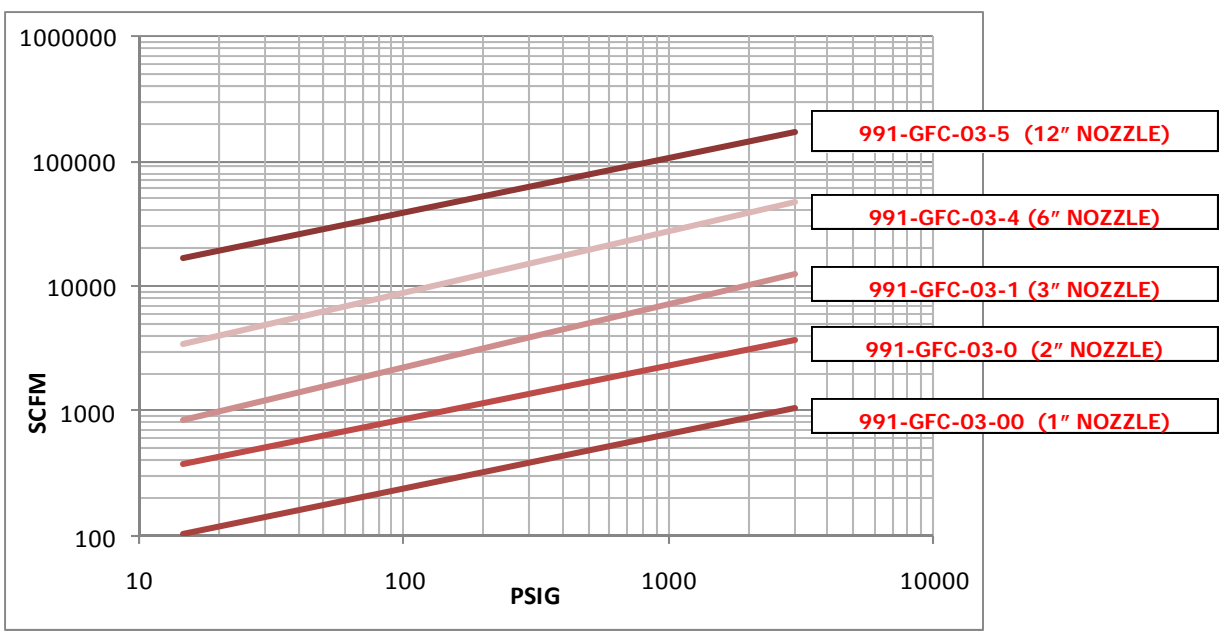


Mole weight = 16.05
 Specific gravity = 0.555
 SCFM = Free Gas @ 14.7 PSIA @ 60°F



NATURAL GAS (@1 PSID)

Mole weight = 28.97
 Specific gravity = 1.0
 SCFM = Free Gas @ 14.7 PSIA @ 60°F



COMPRESSED AIR (@1 PSID)

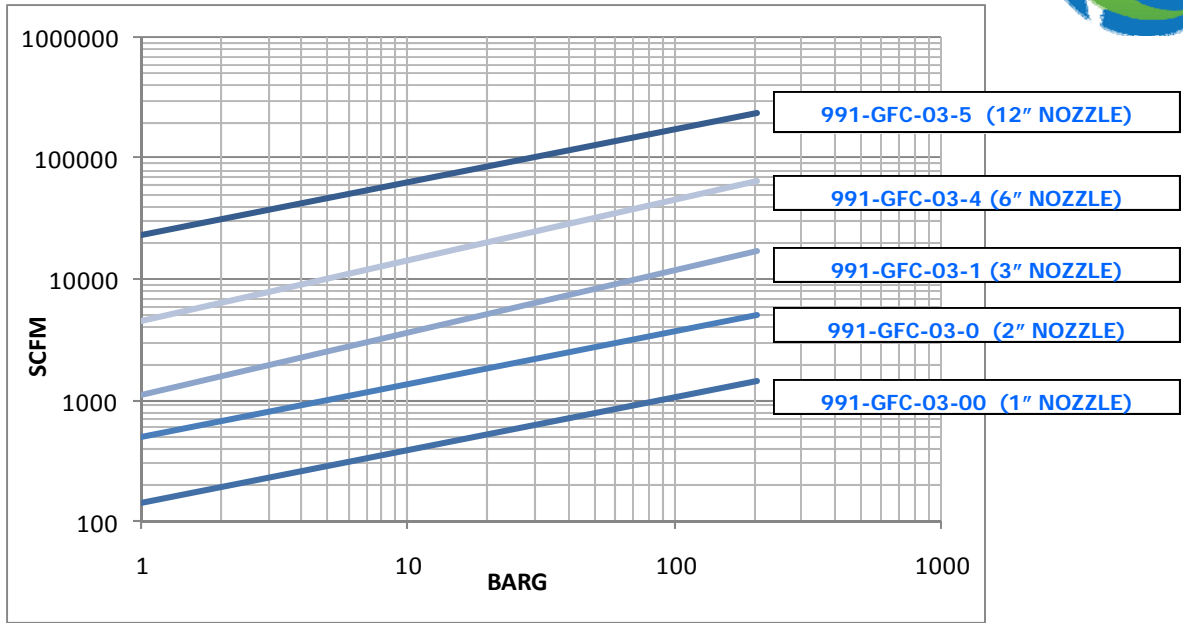
FOR FLOW AND PRESSURE DATA REGARDING YOUR SPECIFIC APPLICATION, PLEASE COMPLETE GAS DATA SHEET ON PAGE 49 AND FAX TO 814-452-6573 OR EMAIL TO SALES@TMFILTRATION.COM

FLOW (SCFM VS BARG) OF GFC CLEANABLE GAS COALESCING ELEMENTS

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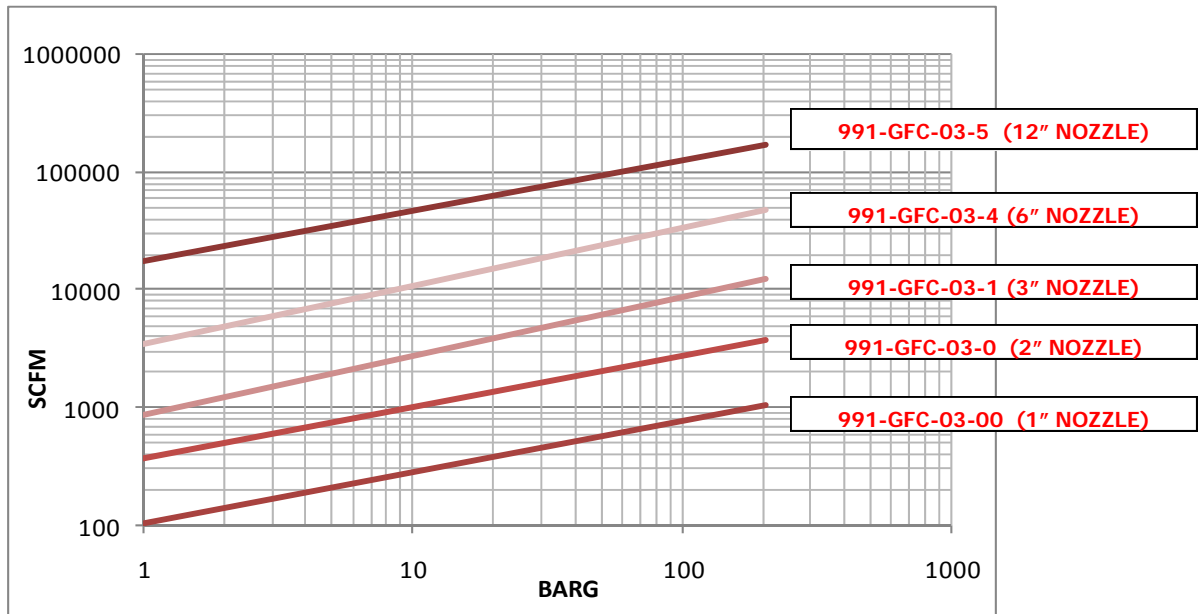


Mole weight = 16.05
 Specific gravity = 0.555
 SCFM = Free Gas @ 14.7 PSIA @ 60°F



NATURAL GAS (@0.069 BARD)

Mole weight = 28.97
 Specific gravity = 1.0
 SCFM = Free Gas @ 14.7 PSIA @ 60°F



COMPRESSED AIR (@0.069 BARD)

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COMMON QUESTIONS REGARDING THE GFC “NEW FLOW TECHNOLOGY” FILTER ELEMENTS

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What is the “NEW FLOW TECHNOLOGY”?

New Flow Technology is the concept that the air/gas will flow through the element from the outside to in. This flow path also allows TM Filtration to design the GFC pleated coalescing element.

Why is a pleated design important?

A pleated design allows for more contaminant holding capacity, and therefore a longer working life, fewer change-outs, and less downtime. The working life is the time from the commissioning of the filter, until the time when the element reaches a 15 PSID (~1 BARD).

How will a longer working life benefit me?

Using the GFC element, you will spend less time changing out filter elements. The surface area of a GFC element may have up to 20 times greater holding capacity than similar sized “old style” elements.

Is the contaminant holding capacity the only design function that affects the working life of an element?

No, high radial velocity, or the impact force being generated by the Air/Gas contacting the coalescing media, is another culprit in the reduction of working life. The smaller the radial velocity is, the longer the life expectancy of the filter element. TM's filter element design decreases the radial velocity of the Air/Gas to less than 0.5 ft/ sec, which again increases the working life.

What is the pressure differential that this element can handle?

TM Filtration recommends that our elements be cleaned at a differential pressure of 15 PSID. That is a difference in pressure of 15 PSI, between the inlet and the outlet readings.

Any other reasons that I should use TM Filtration Gas Filters?

This is the first “GREEN” Coalescing Element ever built. Since TM's elements are manufactured using special materials, they may be cleaned and reused, using commonly available ultrasonic cleaning methods.

You state that this element is “GREEN”, how can an element be “GREEN”?

The “GREEN” movement is an effort to look at the impact that a product has on the environment. Since the element is cleanable, there is less waste going into the landfills.

Another Green concept is cost savings. Since the elements are cleanable, there are lower replacement costs over time with the GFC elements, compared to other “old style” elements.

