

Betafine™ T Series

Pleated Media Filter Cartridges

Betafine™ T Series Filter Cartridges

The 3M™ Betafine™ T series filter is a durable and versatile pleated media filter offering submicron filtration. The filter is constructed with a pleated, positively charge-modified filter media composed of cellulose and inorganic filter aids.

Charge modification of the media enhances the particle reduction efficiency of the nominally rated Betafine T series filter. Contaminants too small to be mechanically strained are electrokinetically adsorbed by the Betafine T series filter media. The tortuous matrix allows for high contaminate loading capabilities.

Betafine T series filters are available in two grades, 050TG and 100TG with nominal particle retention rating of 0.5 µm and 1.0 µm, respectively based upon their mechanical straining efficiencies.

Extractables

Inorganic and organic extractable levels for Betafine T series cartridges are tabulated on the next page. Cartridges were rinsed with 30 liters of deionized water and samples collected. Inorganic levels were determined by graphite furnace atomic absorption techniques and wet chemical analysis. Organic extractables were quantified by a low temperature carbon analyzer.

Features & Benefits

Robust cartridge/filter media construction

- Durable and versatile

Charge-modified filter media

- Enhanced fine particulate retention

Pleated filter media design

- Faster flow rates compared to cylindrical depth filters



Applications

Pharmaceutical Catalyst and carbon reduction from active pharmaceutical ingredients and high purity chemicals.

Performance

The Betafine™ T series cartridge is an efficient nominally rated filter. In addition to mechanical straining efficiencies, the Betafine T series cartridge is charge modified to provide sub micron particle filtration. Studies with AC Fine Test Dust have shown Betafine T series cartridges will provide excellent particle retention and high contaminant-holding capacity. These results demonstrate the combined effects of electrokinetic and mechanical straining absorption.

Test Results Betafine™ T Series 050TG

Flow Rate		Pressure			Particle Reduction Efficiency %				
lpm	gpm	bar	psi	0.5µm	>1µm	>10µm	>20µm	>25µm	
11.4	3.0	0.34	5.0	99.64	99.89	99.95	99.98	99.99	
7.6	2.0	2.28	33.0	99.99	99.99	99.99	99.99	99.99	
3.8	1.0	4.0	58.0	99.99	99.99	99.99	99.99	99.99	

Test Results Betafine™ T Series 100TG

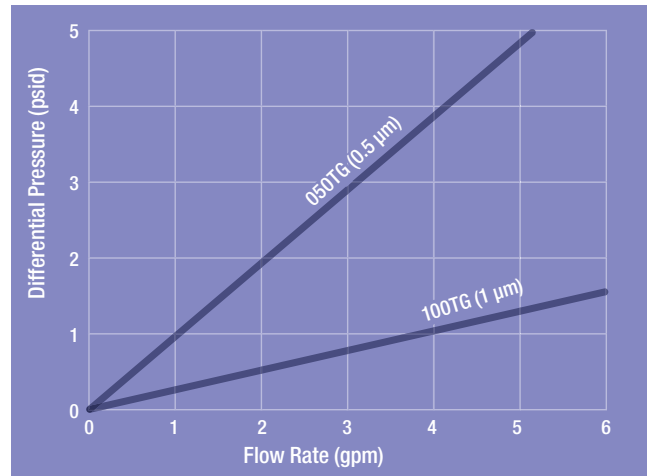
Flow Rate		Pressure			Particle Reduction Efficiency %				
lpm	gpm	bar	psi	0.5µm	>1µm	>10µm	>20µm	>25µm	
11.4	3.0	0.21	3.0	99.35	96.95	96.55	97.65	98.58	
7.6	2.0	3.24	47.0	99.99	99.99	99.99	99.99	99.99	
3.8	1.0	4.0	58.0	99.99	99.99	99.99	99.99	99.99	

Inorganics

Extractable Levels	Substance
<1 ppb	Ca, Fe, Cr, Mn, Zn, Co, Al
<10 ppb	K, Ni, PO4, NO3, F
<50 ppb	Si, Cu
<100 ppb	SO4, HCO3
<500 ppb	Cl, Na

Inorganics

Total Carbon and Total Organic Carbon	Purgeable Organic Carbon
<1.6 ppm	<1.0 ppb



Graph 1. Water Flow Rate Betafine™ T Series 050TG and 100TG 10" cartridge.

Contaminant Holding Capacity per 10" element	
Betafine™ T Series 050TG	260 grams
Betafine™ T Series 100TG	225 grams

Biological Reactivity

Betafine T series filter product is compliant with USP <88> Class VI Biological Reactivity Tests.

Particulate Matter

Betafine™ T series filters have been examined for particulate matter that may be extracted during normal cartridge use. The test was designed using the USP procedure for Particulate Matter in Injections as a guide. In all tests, the cartridges did not exceed the USP <123> Water for Injection limit of not greater than 25 particles per mL that are larger than or equal to 10 µm.

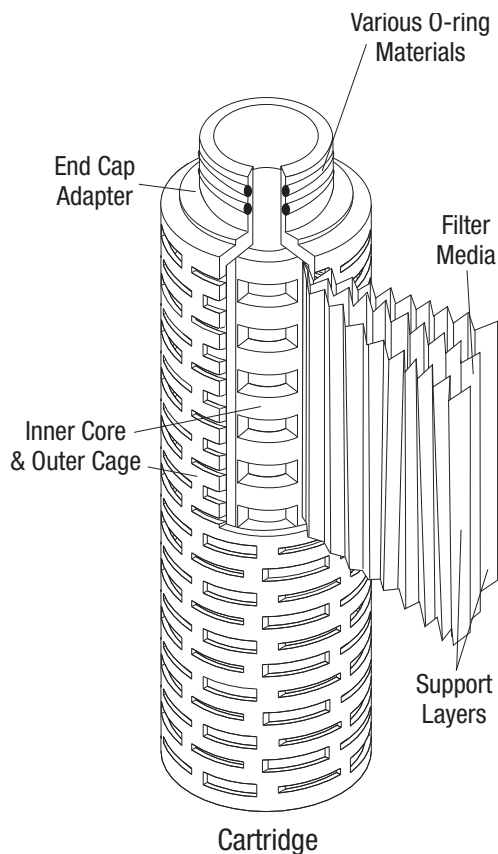
Sterilization

Betafine T series filters are sterilizable by autoclaving, *in-situ* steaming and by chemical methods. Betafine T series media maintains stability at elevated temperatures without any alteration in performance.

Materials of Construction

The Betafine T series cartridge is constructed with a pleated media composed of cellulose and inorganic filter aids completely free of glass microfibers.

The cartridge inner core, outer cage, and end cap adapter styles are produced by thermal bonding to reduce the need for adapters. No adhesives are used in the cartridge assembly process.



Operating Parameters and Specifications

Materials of Construction		
Filter Media & Supports	Cellulose/Inorganic Filter Aids	
Inner Core, Outer Cage, End Cap Adapter/Supports	Polypropylene	
Gasket & O-ring Options	Various	
Dimensions	050TG	050TG
Filtration Surface Area*	6ft ²	6 ft ²
Outer Diameter	2.8"	
Length	10", 20", 30" & 40"	

Operating Conditions	Betafine™ T Series	
Maximum Differential Pressure	50 psid 25 °F	
Maximum Operating Temperature	185 °F (85 °C)	
Minimum Required Pre-Conditioning Flush	30 liters/10" cartridge	
Specified Parameters	050TG	100TG
Nominal Rating	0.5 µm	1 µm

Betafine™ T Series Cartridge Ordering Guide

Code	Nominal Length Code	Gasket/O-ring Material Code	Grade Code/ & Rating
70002 Single Open End (SOE) Code 7, 226 O-ring & Bayonet Lock	01 10 ³ / ₁₆ " 02 19 ¹⁵ / ₁₆ " 03 29 ¹¹ / ₁₆ " 04 39 ⁷ / ₁₆ "	A — Silicone B — Fluorocarbon	050TG (0.5 µm) 100TG (1 µm)
70003 SOE, Code 8, 222 O-ring & Bayonet Lock	01 10 ⁷ / ₃₂ " 02 19 ³¹ / ₃₂ " 03 29 ²³ / ₃₂ " 04 39 ¹⁵ / ₃₂ "		
70025 SOE, Code 3, 222 O-ring	01 10 ⁷ / ₃₂ " 02 19 ³¹ / ₃₂ " 03 29 ²³ / ₃₂ " 04 39 ¹⁵ / ₃₂ "		
70005 Double Open End (DOE), Flat Gasket	01 10" 02 20" 03 30" 04 40"		
70006 DOE, Flat Gasket	01 9 ³ / ₄ " 02 19 ¹ / ₂ " 03 29 ¹ / ₄ " 04 39"		

Please Note: Care must be exercised in applying Betafine equivalent cartridges to competitive housings. While every effort has been made to ensure compatibility, exceptions may exist. A dimensional check is recommended.

Product Use

Identified uses: Manufacturing of pharmaceutical (drug) products, including active pharmaceutical ingredients and vaccines.

Prohibited uses: As a component in a medical device that is regulated by any agency, and/or globally exemplary agencies, including but not limited to: a) FDA, b) European Medical Device Directive (MDD), c) Japan Pharmaceuticals and Medical Devices Agency (PMDA); Applications involving permanent implantation into the body; Life-sustaining medical applications; Applications requiring FDA Food Contact compliance without use restrictions

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