

# SECTION 7

## Resin & Media



### WATER QUALITY PRODUCTS

#### Catalog 10

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# Ion Exchange Resin



## Alamo Brand A4000 Resin

Alamo brand A4000 resin is a high purity, premium grade, prewashed, strong acid gel-type cation exchange resin specially designed for residential water treatment. A4000 is a bead type, cross-linked, polystyrene divinylbenzene resin that offers excellent bead integrity and very low extractables.



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NSF / ANSI Std. 44  
(A4000)

## Design Conditions

Bed depth	>30 in
Flow rate	2-5 gpm/ft <sup>3</sup>
Freeboard	50% of bed depth
Backwash expansion	50% of bed depth
NaCl concentration for regeneration	5-25%
NaCl flow rate for regeneration	0.25-0.5 gpm/ft <sup>3</sup>
Turbidity	<5.0 NTU
Free chlorine	<1 ppm

## Resin Properties

Type	8% crosslink polystyrene
Form	Gel- type, light amber bead
Ionic form	Na <sup>+</sup> (as shipped)
Functional group	Sulphonic acid
Bead size	16 x40 mesh
Effective size	0.45 ± 0.07 mm
Bulk density	53 lb/ft <sup>3</sup>
Real density	1.28 g/cm <sup>3</sup>
Bead count	>95%
Water retention	45-48%
Total capacity	>2.0meq/l
Volume change	Na <sup>+</sup> - H <sup>+</sup> <5%
Stability, temp.	<300°F
Stability pH	0 – 14

## Ordering Information

### Cation

Part Number	Description	Application	Ionic Form	lbs. Cu. Ft.	Cu. Ft. Pallet
A4000	Alamo Brand 8% crosslink	Softening	NA	52	40
A9009-09	Thermax T-42 8% crosslink	Softening	NA	52	40
A4005	Purolite C-100FM fine mesh	Softening	NA	52	40
A4004	Purolite C-100E	Softening	NA	52	40
A4012	Purolite C-100H	DI	H+	52	40
A4016	Purolite C-100X10 10% crosslink	Softening	NA	52	40
A9000-14	Thermax T-52 10% crosslink	Softening	NA	52	40
A9000-25	Thermax T-42MP 8% macro	Condensate	NA	52	40

### Anion

Part Number	Description	Application	Ionic Form	lbs. Cu. Ft.	Cu. Ft. Pallet
A4040	Purolite A-400 Type I	DI	CL	43	40
A4044	Purolite A-300 Type II	Alkalinity	CL	43	40
A4064	Purolite A-500P Type I macro	DI/Tannins	CL	43	40
A4073	Purolite A-850 gel acrylic	Tannins	CL	43	40
A9000-35	Thermax A-72MP Type I styrene base	Tannins	CL	43	36
A9000-37	Thermax A-30MP Type I acrylic macro	Tannins	CL	43	36
A9000-36	Thermax A-62MP macro	Nitrates	CL	43	36
A4050	Purolite A-520E macro	Nitrates	CL	43	40

### Mixed Bed

Part Number	Description	Application	Ionic Form	lbs. Cu. Ft.	Cu. Ft. Pallet
A4140	Purolite NRW-37SC Semiconductor 1:1 chem equiv	DI	H+/OH-	43	40
A9000-31	Thermax MB-108P 1:1 volume basis	DI	H+/OH-	43	36

# Ion Exchange Media Cross Reference Chart



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(A4000)



## Strong Acid Cation

WATTS WQP	PUROLITE	THERMAX	RESINTECH	DOW	mitsubishi	R & H	SYBRON
A4000	C-100	T-42	CG8	HCR - S	SK - 1B	IR -120	C 249
A9000-09	C-100	T-42	CG8	HCR - S	SK - 1B	IR -120	C 249
A4004	C-100 E	T-40		HCR-S(E)S		IR -120	
A4005	C-100 FM	T - 240					
A9000-14	C-100 x 10	T-52	CG 10-Na	HGR	SK-110	IR - 122	C 250
A4016	C-100 x 10	T-52	CG 10-Na	HGR	SK-110	IR - 122	C 250
A9000-25	C-150	T-42 MP	SACMP	MSC - 1	PK-220	IR - 200	CFP - 110
A4012	C100(H)		CG8-H	HCRS-H		IR-120+H	C 267

## Strong Base Anion

WATTS WQP	PUROLITE	THERMAX	RESINTECH	DOW	mitsubishi	R & H	SYBRON
A4040	A - 400	A-23 P	SBG 1P	SBR - P	SA - 12A	IRA - 402	ASB 1-P
A4044	A - 300	A -32	SBG 2	SAR	SA - 20A	IRA - 410	ASB - 2
A4064	A - 500 P	-	-	-	-	IRA - 904	A - 642

## Weak Acid Cation

WATTS WQP	PUROLITE	THERMAX	RESINTECH	DOW	mitsubishi	R & H	SYBRON
A4006	C - 106	CXO - 12 MP	WACMP	MWC - 1	WK - 40	IRC - 76	CNP -80

## Weak Based Anion

WATTS WQP	PUROLITE	THERMAX	RESINTECH	DOW	mitsubishi	R & H	SYBRON
A4076	A - 100	A -2X MP	WBMP	DOWEX - 66	WA - 30	IRA - 93	AFP - 329

## Mixed Bed Resins

WATTS WQP	PUROLITE	THERMAX	RESINTECH	DOW	mitsubishi	R & H	SYBRON
A9000-31	-	MB - 108 P	-	-	-		
A4140	NRW - 37	MB - 115	MBD - 15	MR - 3	-	IRN - 150	NM - 60

## Color And Organic Removal

WATTS WQP	PUROLITE	THERMAX	RESINTECH	DOW	mitsubishi	R & H	SYBRON
A9000-35	-	A - 72 MP	-	-	PA - 308	IRA - 904	A - 642
A9000-37	A-860	A - 30 MP	SBACR	-	-	IRA - 958	MACRO - T
A4073	A-850	-	-	-	-	IRA-458	SR-7

## Nitrate Removal

WATTS WQP	PUROLITE	THERMAX	RESINTECH	DOW	mitsubishi	R & H	SYBRON
A9000-36	A - 520 E	A - 62 MP	SIR - 100	-	-	IRA - 996	SR - 6
A4050	A - 520 E	A - 62 MP	SIR - 100	-	-	IRA - 996	SR - 6

## MEDIA LOADING OR REPLACEMENT PROCEDURE

Media loading or replacement for water softeners or filters is sometimes required for units in the field. Replacement of media is relatively simple, if the following procedure is followed:

### Replacement of Media Simplex Unit

Open bypass valve and close inlet/outlet isolation valves. Duplex Unit - Close inlet/outlet isolation valve of unit to be rebedded. Manually turn timer dial to backwash position (Manual Regeneration) to relieve vessel pressure. Unplug electrical connection of unit. Disconnect inlet, outlet, drain, and brine lines. Unscrew valve head from tank. Remove

distribution tube from tank and visually inspect for any damage or wear and replace if necessary. Empty media into a vessel with resin trap/strainer, to retain the resin/gravel and allowing water to drain. Dispose of used media. Relocate softener tank in original location.

### Loading of Media

Install distribution tube in mineral tank. Place a cap or tape over the open end of distributor to prevent any media from entering. Fill tank approximately one-third with water to act as a buffer. Slowly pour the required amount of media in each vessel: Gravel to be loaded first. Resin to be

loaded second. Clean top of tank and tank threads of any resin or gravel. remove cap or tape from distribution tube and clean. Visually check and clean valve and distribution "O" Ring of any foreign matter and lubricate with silicone or soap.

**NOTE:** Do not use Vaseline or grease. Locate control valve on tank making certain riser tube is centered. Tighten valve to tank. Reposition and level tank if necessary to assure proper alignment. Connect inlet, outlet, drain, and brine connections

# MICRO-Z™



## Superior Filtration Media

Alamo's Micro-Z™ granular filter media outperforms conventional multimedia materials due to its unique structure, allowing particulate to penetrate deeply into the filter bed to provide superior filtration at increased flow rates.

## Physical Properties

Color	Light green
Bulk density	55 lbs. per cu. ft.
Specific gravity	2.2 gm/cc
Mesh size	14x40
Uniform coefficient	1.9
Hardness (Mohs scale)	4

## Features & Benefits

- Higher solids loading capability
- Superior filtration performance
- Reduced backwash frequency
- Removes finer particles
- Reduces pressure drop
- Provides higher flow rates
- Light weight
- Reduces shipping costs
- Easy to handle



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(A7200)

## Conditions Of Operation

Recommended bed depth	36" - 48"
Recommended freeboard	50% of bed depth
Service flow rate	12-20 GPM/sq. ft.
Backwash flow rate	12-16 GPM/sq. ft.
Backwash bed expansion	30-40 percent

Note: Allow bed to soak overnight before initial backwash.

## MICRO-Z vs Conventional Filter Media

Media	Nominal Micron Rating	Loading Capacity
Sand	20	1.0 X
Sand & Anthracite	15	1.4 X
Multimedia	12	1.6 X
Micro-Z	5	2.8 X

## MICRO-Z Loading Information

Vessel Diameter (Inches)	Media Quantity A7200 (Cubic Ft.)	Under Bed A7005 (Lbs.)	Service Flow Rate	Backwash Flow Rate (GPM)
9	1	12	5-9	5
10	1.5	15	7-10	7
12	2	25	9-15	10
14	3	40	13-21	15
16	4	55	17-28	20
22	6	100	30-50	32
24	8	200	38-62	40
30	10	300	59-98	60
36	20	500	85-140	85
42	30	700	115-190	110
48	40	900	150-250	150

## Ordering Information

Part Number	Description	Cubic Foot	Weight (Lbs.)	Package
A7200	Micro-Z	1	55	Bag
A7200-B	Micro-Z	40	2,200	Super Sack

# Activated Carbon Media



## Adsorption Influencing Factors

<b>Temperature</b>	Most effective 60°F - 80°F.
<b>pH</b>	Most organics in water are more soluble at pH lower than 7.0.
<b>Contact time</b>	Very important to achieve proper flow rates for any adsorption system to function properly.

## Carbon Media Types

<b>Bituminous</b>	Basic coal based granular media
<b>Coconut shell</b>	Superior level of hardness; high activity level; trihalomethane removal; longer life expectancy;
<b>Acid washed</b>	Increases adsorptive capacity of carbon base and lowers the level of impurities.
<b>Catalytic</b>	Specialized carbon media to remove hydrogen sulfide gas and chloramines.

## Granular Activated Carbon

Activated carbon (AC) is a natural material derived from bituminous coal, lignite, wood, coconut shell etc., activated by steam and other means. Carbon is very popular due to its ability to correct many water quality problems.

## Benefits

- Improve taste and remove odors
- Dechlorination of water
- Remove color from water
- Removal of organic substances
- Removal of synthetic organic substances
- Clear water for drinking, bathing and cooking!



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## Standard Operating Conditions

Service flow rate	2 - 6 gpm/cu.ft.
Freeboard	50% of bed depth
pH	6.5 - 7.5

## Contaminates Adsorbed

- Chlorine
- Organic Chemicals
- Fertilizers
- TCE (Trichloroethylene)
- EDB (Ethylene dibromide)
- THM (Trihalomethanes)
- Sediment
- Chemical odor
- Pesticides
- Detergents
- Chloramines

**Note:** Service flow rates are calculated at 2-6 gpm/ft<sup>3</sup> for standard taste, odor and chlorine removal application using bituminous carbon. Chloramines and TDS applications will require lower service flow rates and longer empty bed contact time or specialized carbon formulations.

## Ordering Information

Part Number	Description	Type	Mesh	Cubic Feet Per Bag	Container Wt. (Lbs)	Per Pallet
A9231-JCLF	Jacobi Low fine Aquasorb CS Carbon	Coconut	12 x 40	1	27.5	40
A9230-J	Jacobi acid wash Aquasorb HS Carbon	Coconut	12 x 40	1	27.5	40
A9030A	Acid washed, low fines	Bituminous	12 x 40	1	27.5	40
A9030-C	Calgon F-200 acid washed, low fines	Bituminous	12 x 40	1	31	40
A9231-J	Jacobi Aquasorb CS Carbon	Coconut	12 x 40	1	27.5	40
A9031A	Carbsorb™ 40	Bituminous	12 x 40	1	27.5	40
A9031-C	Calgon F-400 low fines	Bituminous	12 x 40	1	27.5	40
A9032A	Carbsorb™ 30	Bituminous	8 x 30	1	27.5	40
A9232-J	Jacobi Aquasorb CS Carbon	Coconut	8 x 30	1	27.5	40
A9044A	Calgon 20 x 50 mesh media	Bituminous	20 x 50	1	27.5	8
A9231-A	Calgon coconut shell carbon media	Coconut	12 x 40	1	27.5	40

**SAFETY MESSAGE:** Wet activated carbon preferentially removes oxygen from air. In closed or partially closed containers and vessels, oxygen depletion may reach hazardous levels. If workers are to enter a vessel containing carbon, appropriate procedures for potentially low-oxygen environment should be followed.

# Catalytic<sup>®</sup> Granular Activated Carbon

## Hydrogen sulfide and chloramines removal



Part # A8056-J

Catalytic carbon is a liquid phase virgin activated carbon that has been manufactured to develop catalytic functionality. The product is unique in that it concentrates reactants via adsorption and then promotes their reaction on the surface of the pores.

### Features & Benefits

- Catalytic activity allows for smaller more compact system sizing and lower capital requirements.
- No safety concerns with exotherms or toxicity like some impregnated medias.
- Improved trace organic capacity per unit volume.
- High hardness reduces fines and losses due to handling.
- Works with low oxidant levels and limits the need for chemicals.
- Simple and reliable equipment design that will handle spikes in concentration without metering of chemicals.
- Reduced carbon requirements reduce operating costs.
- Enhanced carbon media performance for a greater degree of contaminant removal at reduced costs.
- Thermal reactivation is an option for recycle and reuse to minimize operating costs and eliminates disposal concerns.

### Specification

Iodine number	Min. 1000 mg/g
Moisture content (as packaged)	Max. 5%
Total ash content	Max. 4%
Ball-pan hardness	Min. 98%
CTC activity	Min. 50%
Catalytic activity	Min. 20° C

### Typical Properties

Surface area (BET)	1060 m <sup>2</sup> /g
Apparent density	514 kg/m <sup>3</sup>
Bed density, backwashed and drained	437 kg/m <sup>3</sup>
pH	10

### Design Considerations

Catalytic carbon is produced from bituminous coal using a patented process for the use in liquid phase systems to promote catalytic reactions. The reactant concentration determines the effective contact time. Although it is not impregnated with metals or alkali, it displays the catalytic functionality of these materials.

### Ordering Information

Part Number	Description	Type	Mesh	Cubic Feet Per Bag	Container Wt. (Lbs.,)	Per Pallet
A8056-J	Jacobi CX-MCA Carbon	Catalytic	12x40	1	27.5	40

### Applications

- Chloramines
- Hydrogen sulfide
- Taste and odor
- VOC removal
- Iron removal
- Residential water filters
- Commercial water filters
- Bottling and soft drink industries
- Aquarium water treatment



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**Safety message:** Wet activated carbon preferentially removes oxygen from air. In closed or partially closed containers and vessels, oxygen depletion may reach hazardous levels. If workers are to enter a vessel containing carbon, appropriate sampling and work procedures for potentially low oxygen spaces should be followed, including all applicable federal and state requirements.

# Filox-R™

## Iron, Hydrogen Sulfide, and Manganese Removal



### Filox-R™ Media

Filox-R™ media is an economical Iron and Hydrogen Sulfide filtration media that out performs traditional Greensand and Birm.

### Features & Benefits

- Superior high efficiency media for filtration and removal capabilities
- No oxidizing chemicals needed for regeneration.
- High efficiency with 80% manganese dioxide for enhanced performance and capacity.
- Effective, from 5.0 pH to 9.0 pH
- Highest flow rate of any standard iron removal media.

### Operating Conditions

Active Ingredient	75-85% Manganese Dioxide
Service Flow	6 gpm/cu.ft.
Freeboard	30-50% of bed depth
Backwash rate	20-25 gpm/sq.ft @ 60F
Bed depth	20 inch Minimum
pH Range	5.0 – 9.0
Screen size	12 x 40
Bulk density	114 lbs/cu.ft.
Removal Capacity	
Iron	27 ppm
Hydrogen Sulfide	17 ppm
Manganese	11 ppm

### Comparative Information

Product Name	Active Ingredient	Relative Life
Greensand	0.5% Manganese Dioxide	50 X birm
Filox-R™	75% - 85% Manganese Dioxide	7500X birm



### Ordering Information

Part Number	Description	Cubic foot	Weight (Lbs.)	Package	Pallet Qty
A8033	Filox-R™ media	0.5	57	Bag	37

The use of additional oxidizing agents (oxygen, chlorine, ozone, hydrogen peroxide, potassium permanganate, etc.) is recommended. Oxidizers will not adversely affect Filox-R™. As a matter of fact, they will enhance its performance. They oxidize the media, which enables Filox-R™ to perform quicker and keep cleaner. It is always a safe practice to install an oxidation method upstream (in front) of the Filox-R™ bed.

### Testing For ORP

Oxidation Reduction Potential (ORP) can be the most important factor to take into consideration in certain waters. Highly reducing waters may cause premature exhaustion or even destruction of the Filox-R™ bed. Precautions can be taken prior to installation that can prevent ORP problems. Use one of the screening tests and follow the instructions below if the subject water has reducing properties that will require additional oxidants.

### Simple Test

Mix 1.75 ounces (50 grams) water with 0.75 ounces (22 grams) of potassium permanganate crystals. Then take 2 drops of the mixture and stir into a fresh 1/4 gallon (1 liter) sample of the subject water. Let the subject water stand for 15 minutes. If the pink color remains, Filox-R™ can be installed without additional oxidants. If the pink color disappears, additional oxidants will be needed for Filox-R™ to function properly.

### ORP Meter Test

Note: Must use a calibrated ORP meter. Any reading that is above a negative 170 millivolts indicates that Filox-R™ can be used effectively without additional oxidants. Any reading falling below a negative 170 millivolts indicates that additional oxidants will be required.

# Additional Media Types

## Sand

Part Number	Description	Application	Cubic Feet Per Bag	Container Wt. (Lbs.)	Per Pallet
A7002A	Filter sand 0.45-0.55 mm	Sediment turbidity	0.5	50	56
A7003A	Filter sand 0.6-0.8 mm	Sediment, turbidity	0.5	50	56
A7004A	Filter sand 0.8-1.2 mm	Sediment, turbidity	0.5	50	56

## Gravel

Part Number	Description	Application	Cubic Feet Per Bag	Container Wt. (Lbs.)	Per Pallet
A7005A	Gravel flint #20 1/8"x1/16" red marking	Sediment, bed support	0.5	50	56
A7006A	Gravel 1/4"x1/8" orange marking	Sediment, bed support	0.5	50	56
A7007A	Gravel 1/2"x1/4" black marking	Sediment, bed support	0.5	50	56

## Anthracite

Part Number	Description	Application	Cubic Feet Per Bag	Container Wt. (Lbs.)	Per Pallet
A7050	Anthracite #1 (.6-8 mm) orange bags	Sediment, turbidity	1	52	50
A7051	Anthracite #1.5 (0.85-0.95 mm) blue bags	Sediment, turbidity	1	52	50
A7052	Anthracite #2 (2-4 mm) yellow bags	Sediment, turbidity	1	52	50

## Garnet

Part Number	Description	Application	Cubic Feet Per Bag	Container Wt. (Lbs.)	Per Pallet
A7084-50	Garnet #036 (0.5-0.65 mm)	Sediment, turbidity	0.5	50	80
A7085-50	Garnet #030/40 (0.32-0.39 mm)	Sediment, turbidity	0.5	50	80
A7086-50	Garnet #050 (0.24-0.33 mm)	Sediment, turbidity	0.5	50	80

## Birm

Part Number	Description	Application	Cubic Feet Per Bag	Container Wt. (Lbs.)	Per Pallet
A8006	Birm (regular)	Iron, HS reduction	1	44	40

## Greensand

Part Number	Description	Application	Cubic Feet Per Bag	Container Wt. (Lbs.)	Per Pallet
A8041-P	Greensand Plus	Iron, HS reduction	0.5	42	50

## Neutralizer

Part Number	Description	Application	Cubic Feet Per Bag	Container Wt. (Lbs.)	Per Pallet
A8021A	Flomag PWT Magnesium Oxide (similar to Corsex)	NSF Neutralizer	0.5	50	60
A8021-50	Calcite	NSF Neutralizer	0.5	50	60

## KDF

Part Number	Description	Application	Cubic Feet Per Bag	Container Wt. (Lbs.)	Per Pallet
KDF55-DRUM	KDF-55	Chlorine reduction	Drum	57	48
KDF85-DRUM	KDF-85	Fe, Chlorine reduction	Drum	57	48

## ScaleNet™

Part Number	Description	Application	Cubic Feet Per Bag	Container Wt. (Lbs.)	Per Pallet
A8200	ScaleNet, 60 liter drum	Anti-scale	60 liter	50	-

## Misc.

Part Number	Description	Application	Cubic Feet Per Bag	Container Wt. (Lbs.)	Per Pallet
A8014-FL	Filter Lite	Sediment, turbidity	1	25	80

# Funnels

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Part Number	Description
U1006	Tool funnell 10", 2.5" hole, blue plastic
U1007	Tool Funnel 4", white, heavy duty
U1008	Tool funnel 2.5", white, heavy duty