Ion exchange resins and filtering media

EUROTROL®

WATER TREATMENT COMPONENTS

Pure Resin PC002

- Gel Strong Acid Cation Exchange Resin;
- Light coloured;
- Gel type sulfonated polystyrene cation resin supplied in the sodium form as moist, tough uniform spherical beads.
- Well suited for industrial, commercial or residential softening applications where free chlorine is not present because of its high capacity and good physical stability.
- D.M. n.174 dated 06/04/2004 compliant about materials suitable for contact with water for human consumption;
- NSF/ANSI 44&61 certified;
- Shipped in 25 liter bags.

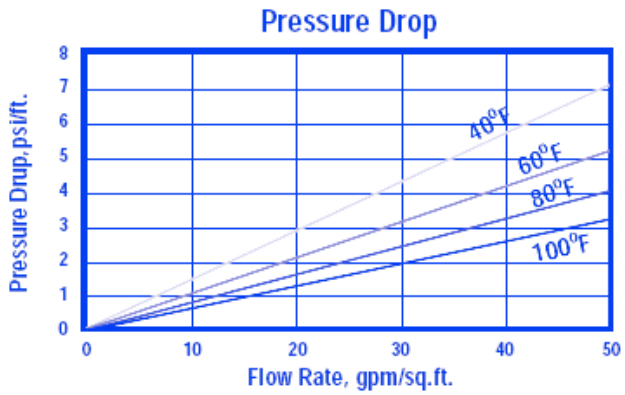
Typical Physical & Chemical Characteristics	
Polymer Matrix Structure	Polystyrene crosslinked with 7% DVB
Functional Group	$R\text{-}(SO_3)^-M^+$
Ionic Form, as shipped	Sodium (Na^+)
Physical Form and Appearance	Clear Spherical Beads
Sphericity	95% min.
Screen Size Range --- U.S. Standard Screen	16 ÷ 50 mesh, wet
Particle Size Range	+1,2 mm < 5%, - 0,3 mm < 1%
Uniformity Coefficient	1,6 max.
Water Retention, Na^+ form	45 ÷ 50%
Swelling $Na^+ \rightarrow H^+$ $Ca^{2+} \rightarrow Na^+$	10% max. 5% max.
Shipping Weight, Na^+ form	770 ÷ 870 g/l (50 lbs/cu.ft, approx.)
Total Exchange Capacity, Na^+ form	1,9 eq/l min.
pH Range	0 ÷ 14

REF.	
RA300	

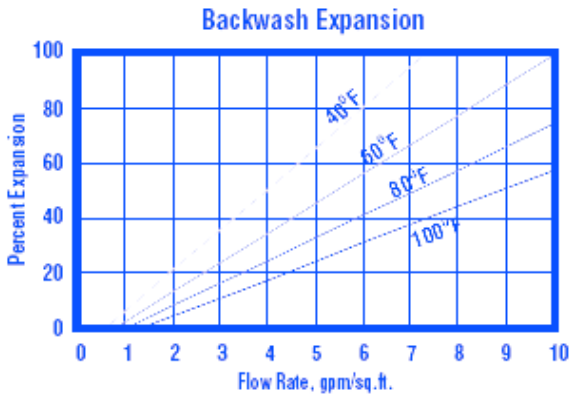
Pure Resin PC002

Suggested Operating Conditions	
Maximum Temperature Na^+ form H^+ form	 120ºC (248ºF) max. 100ºC (212ºF) max.
Minimum Bed Depth	0,6 m (24 inches)
Backwash Rate	25 ÷ 50% bed expansion
Regeneration Regenerant Concentration Flow Rate Contact Time	 8 ÷ 20% NaCl or saturated salt water 2 ÷ 4 BV/h (0,25 ÷ 0,50 gpm/cu.ft) At least 30 Minutes
Displacement Rinse Rate	Same as Regenerant Flow Rate
Displacement Rinse Volume	1 ÷ 2 BV (7,5 ÷ 15 gallons/cu.ft)
Fast Rinse Rate	Same as Service Flow Rate
Fast Rinse Volume	3 ÷ 4 BV (22,5 ÷ 30 gallons/cu.ft)
Service Flow Rate	10 ÷ 50 BV/h (1,25 ÷ 6,25 gpm/cu.ft)

Hydraulic Properties



Pressure Drop: The graph above shows the expected pressure loss per foot of bed depth as a function of flow rate at various temperatures.



Backwash: After each cycle the resin bed should be backwashed at a rate that expands the bed 25 to 50 percent. That will remove any foreign matter and reclassify the bed. The graph above shows the expansion characteristics of Pure PC002 in the sodium form.

Pure Resin PC003

- Gel Strong Acid Cation Exchange Resin;
- High capacity premium grade bead form, conventional gel polystyrene sulphonate cation exchange resin supplied in the sodium or hydrogen form;
- Intended for use in all water softening, dealcalisation, deionization and chemical processing applications, such as the following:
- In H form (PC003H), can be used in multiple and mixed bed demineralizers with strong base;
- Anion exchangers such as Pure PA101, PA102 and PA103 in OH- form.
- Well suited for industrial, commercial or residential softening applications because of its high capacity and good physical stability;
- D.M. n.174 dated 06/04/2004 compliant about materials suitable for contact with water for human consumption;
- NSF/ANSI 44&61 certified;
- Shipped in 25 liter bags.

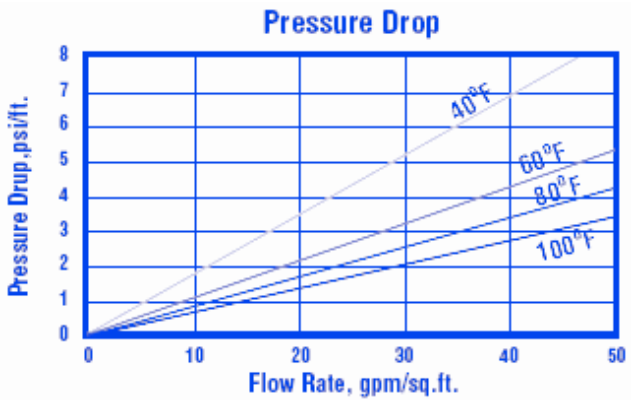
Typical Physical & Chemical Characteristics	
Polymer Matrix Structure	Polystyrene crosslinked with 8% DVB
Functional Group	$R\text{-}(SO_3)^-M^+$
Ionic Form, as shipped	Na^+ / H^+
Physical Form and Appearance	Clear Spherical Beads
Sphericity	95% min.
Screen Size Range US Standard Screen	16 ÷ 50 mesh, wet
Particle Size Range	+1,2 mm < 5%, - 0,3 mm < 1%
Uniformity Coefficient	1,6 max.
Water Retention, Na^+ form H^+ form	43 ÷ 48% 50 ÷ 56%
Swelling $Na^+ \rightarrow H^+$ $Ca^{2+} \rightarrow Na^+$	10% max. 5% max.
Shipping Weight, Na^+ form H^+ form	780 ÷ 880 g/l (51 lbs/cu.ft, approx.) 770 ÷ 870 g/l (50 lbs/cu.ft, approx.)
Total Exchange Capacity, Na^+ form H^+ form	2,0 eq/l min. 1,9 eq/l min.
pH Range	0 ÷ 14

REF.	
RA310	

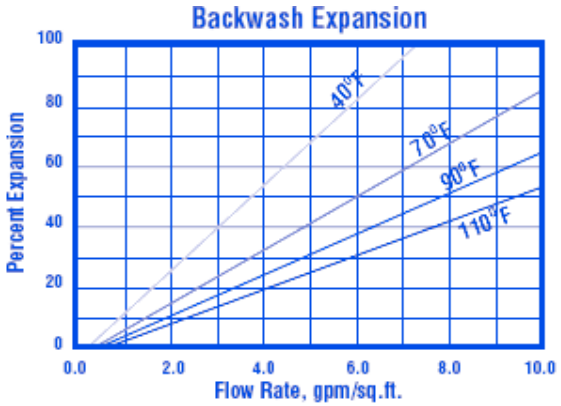
Pure Resin PC003

Suggested Operating Conditions	
Maximum Temperature Na^+ form H^+ form	 150ºC (300ºF) max. 100ºC (212ºF) max.
Minimum Bed Depth	0,6 m (24 inches)
Backwash Rate	25 ÷ 50% Bed Expansion
Regeneration Sodium Cycle Hydrogen Cycle Flow Rate	 8 ÷ 20% NaCl 5 ÷ 10% HCl, 2-8% H_2SO_4 2 ÷ 7 BV/h (0,25 ÷ 0,90 gpm/cu.ft)
Displacement Rinse Rate	Same as Regenerant Flow Rate
Displacement Rinse Volume	1,4 ÷ 2,0 BV (10 ÷ 15 gallons/cu.ft)
Fast Rinse Rate	Same as Service Flow Rate
Fast Rinse Volume	4 ÷ 8 BV (30 ÷ 60 gallons/cu.ft)
Service Flow Rate	10 ÷ 50 BV/h (1,25 ÷ 6,25 gpm/cu.ft)

Hydraulic Properties



Pressure Drop: The graph above shows the expected pressure loss per foot of bed depth as a function of flow rate at various Temperatures.



Backwash: After each cycle the resin bed should be backwashed at a rate that expands the bed 25 to 50 percent. That will remove any foreign matter and reclassify the bed. The graph above shows the expansion characteristics of Pure PC003 in the sodium form.

Pure Resin PC003 UN-NA

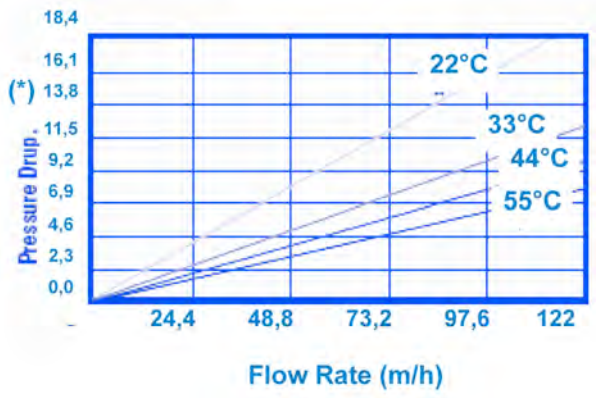
- Gel Strong Acid Cation Exchange Resin with high uniformity coefficient;
- High capacity premium grade bead form, conventional gel polystyrene sulphonate cation exchange resin supplied in the sodium or hydrogen form;
- Intended for use in all water softening, dealcalisation, deionization and chemical processing applications, such as the following:
- In H form (PC003HUN), can be used in multiple and mixed bed demineralizers with strong base;
- Anion exchangers such as Pure PA101, PA102 and PA103 in OH- form.
- Well suited for industrial, commercial or residential softening applications because of its high capacity and good physical stability;
- D.M. n.174 dated 06/04/2004 compliant about materials suitable for contact with water for human consumption;
- NSF/ANSI 44&61 certified;
- Shipped in 25 liter bags.

Typical Physical & Chemical Characteristics	
Polymer Matrix Structure	Polystyrene crosslinked with 8% DVB
Functional Group	$R\text{-}(SO_3)^-M^+$
Ionic Form, as shipped	Na^+
Physical Form and Appearance	Clear Spherical Beads
Sphericity	95% min.
Screen Size Range US Standard Screen	25 ÷ 35 mesh, wet
Particle Size Range	0,5 ÷ 0,71 mm ≥ 95%
Uniformity Coefficient	1,15 max.
Water Retention, Na^+ form H^+ form	43 ÷ 48% 47 ÷ 54%
Swelling $Na^+ \rightarrow H^+$ $Ca^{2+} \rightarrow Na^+$	10% max. 5% max.
Shipping Weight, Na^+ form H^+ form	780 ÷ 880 g/l (51 lbs/cu.ft, approx.) 770 ÷ 870 g/l (50 lbs/cu.ft, approx.)
Total Exchange Capacity, Na^+ form H^+ form	2,0 eq/l min. 1,9 eq/l min.
pH Range	0 ÷ 14

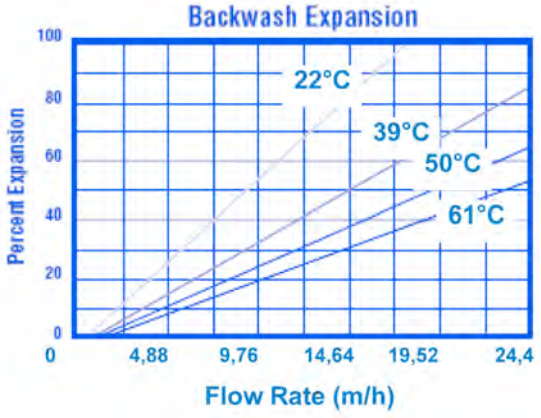
REF.	
RA312	

Pure Resin PC003 UN-NA

Suggested Operating Conditions	
Maximum Temperature Na^+ form H^+ form	 150ºC (300ºF) max. 100ºC (212ºF) max.
Minimum Bed Depth	0,6 m (24 inches)
Backwash Rate	25 ÷ 50% Bed Expansion
Regeneration Sodium Cycle Hydrogen Cycle Flow Rate	 8 ÷ 20% NaCl 5 ÷ 10% HCl, 2-8% H_2SO_4 2 ÷ 7 BV/h (0,25 ÷ 0,90 gpm/cu.ft)
Displacement Rinse Rate	Same as Regenerant Flow Rate
Displacement Rinse Volume	1,4 ÷ 2,0 BV (10 ÷ 15 gallons/cu.ft)
Fast Rinse Rate	Same as Service Flow Rate
Fast Rinse Volume	4 ÷ 8 BV (30 ÷ 60 gallons/cu.ft)
Service Flow Rate	10 ÷ 50 BV/h (1,25 ÷ 6,25 gpm/cu.ft)
Hydraulic Properties	



(*) = m of water / m of bed



Backwash: After each cycle the resin bed should be backwashed at a rate that expands the bed 25 to 50 percent. That will remove any foreign matter and reclassify the bed. The graph above shows the expansion characteristics of Pure PC003UN in the sodium form.

Pure Resin PC003 IND-2

- Gel Strong Acid Cation Exchange Resin, with indicator high purity premium grade bead form, high capacity;
- Conventional gel polystyrene sulphonate cation exchange resin supplied in the hydrogen form;
- It can be well used in multiple and mixed bed demineralizers to inform customer when the resin is exhausted or not;
- Shipped in 25 liter bags.

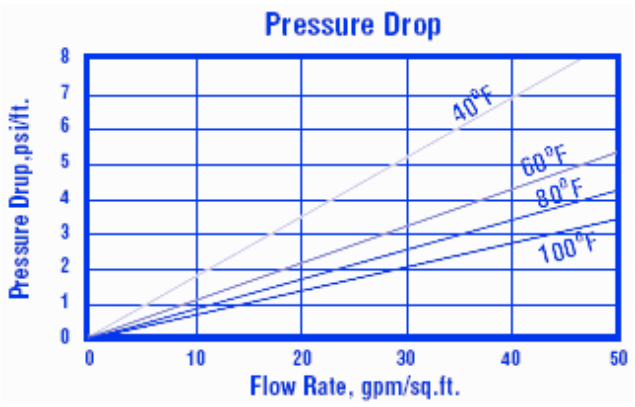
Typical Physical & Chemical Characteristics	
Polymer Matrix Structure	Polystyrene crosslinked with DVB
Functional Group	$R\text{-}(SO_3)^-M^+$ (color : Violet → Yellow)
Ionic Form, as shipped	Na^+ / H^+
Physical Form and Appearance	Clear Spherical Beads
Sphericity	95% min.
Screen Size Range US Standard Screen	16 ÷ 50 mesh, wet
Particle Size Range	+1,2 mm < 5%, - 0,3 mm < 1%
Uniformity Coefficient	1,6 max.
Water Retention, Na^+ form H^+ form	43 ÷ 48% 47 ÷ 54%
Swelling $Na^+ \rightarrow H^+$ $Ca^{2+} \rightarrow Na^+$	10% max. 5% max.
Shipping Weight, Na^+ form H^+ form	780 ÷ 880 g/l (51 lbs/cu.ft, approx.) 770 ÷ 870 g/l (50 lbs/cu.ft, approx.)
Total Exchange Capacity, Na^+ form H^+ form	2,0 eq/l min. 1,9 eq/l min.
pH Range	0 ÷ 14

REF.	
RA316	

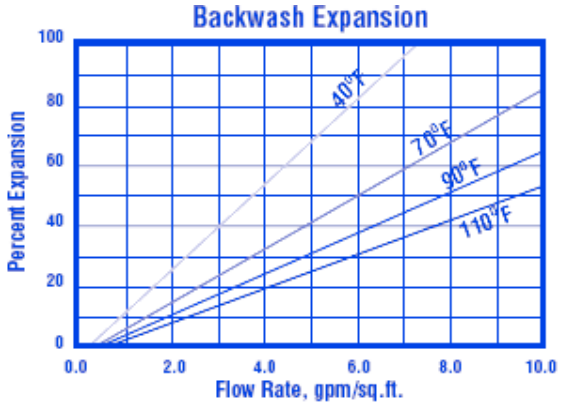
Pure Resin PC003 IND-2

Suggested Operating Conditions	
Maximum Temperature Na^+ form H^+ form	 120ºC (248ºF) max. 100ºC (212ºF) max.
Minimum Bed Depth	0,6 m (24 inches)
Backwash Rate	25 ÷ 50% Bed Expansion
Regeneration Sodium Cycle Hydrogen Cycle Flow Rate	 10 ÷ 15% NaCl 10% HCl, 1-8% H_2SO_4 2 ÷ 7 BV/h (0,25 ÷ 0,90 gpm/cu.ft)
Displacement Rinse Rate	Same as Regenerant Flow Rate
Displacement Rinse Volume	1,4 ÷ 2,0 BV (10 ÷ 15 gallons/cu.ft)
Fast Rinse Rate	8 ÷ 40 BV/h (1 ÷ 5 gpm/cu.ft)
Fast Rinse Volume	3 ÷ 10 BV (22,5 ÷ 75 gallons/cu.ft)
Service Flow Rate	4 ÷ 8 BV/h (0,5 ÷ 1 gpm/cu.ft)

Hydraulic Properties



Pressure Drop: The graph above shows the expected pressure loss per foot of bed depth as a function of flow rate at various Temperatures.



Backwash: After each cycle the resin bed should be backwashed at a rate that expands the bed 25 to 50 percent. That will remove any foreign matter and reclassify the bed. The graph above shows the expansion characteristics of Pure PC003 IND-2.

Pure Resin PC100NA

- Macroporous Strong Acid Cation Exchange Resin;
- Macroporous poly (styrene sulphonate) cation exchange resin with excellent resistance to both osmotic and thermal shock;
- Supplied as spherical beads;
- Used for water softening with high level of DVB;
- Also widely used in mixed bed demineralizers where high hydraulic demands exist and high resistance to mechanical thermal and oxidative stresses are required, such as condensate polishing, chemical processing, hydrometallurgy, sugar treatment;
- D.M. n.174/2004 compliant about materials suitable for contact with water for human consumption;
- Shipped in 25 liter bags.

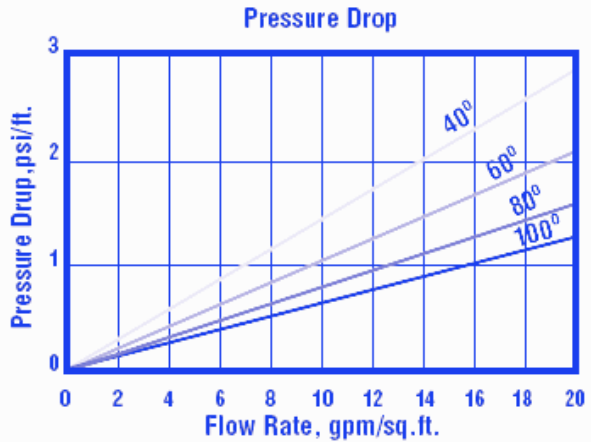
Typical Physical & Chemical Characteristics	
Polymer Matrix Structure	Polystyrene crosslinked with 8% DVB
Functional Group	$R\text{-}(SO_3)^-M^+$
Ionic Form, as shipped	Na^+
Physical Form and Appearance	Clear Spherical Beads
Sphericity	95% min.
Screen Size Range US Standard Screen	16 ÷ 50 mesh, wet
Particle Size Range	+1,2 mm < 5%, - 0,3 mm < 1%
Uniformity Coefficient	1,6 max.
Water Retention	45 ÷ 55%
Swelling $Na^+ \rightarrow H^+$	10% max.
Shipping Weight	760 ÷ 830 g/l (50 lbs/cu.ft, approx.)
Total Exchange Capacity	1,8 eq/l min.
pH Range	0 ÷ 14

REF.	
RA318	

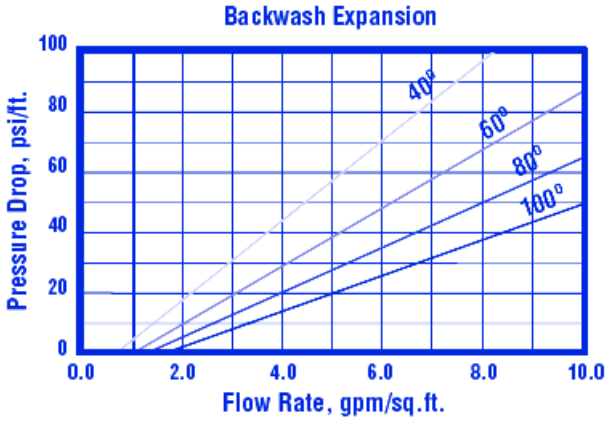
Pure Resin PC100NA

Suggested Operating Conditions	
Maximum Temperature	150ºC (300ºF) max.
Minimum Bed Depth	0,6 m (24 inches)
Backwash Rate	25 ÷ 50% Bed Expansion
Regeneration Flow Rate Contact Time	8 ÷ 20% NaCl 2 ÷ 7 BV/h (0,25 ÷ 0,90 gpm/cu.ft) At least 20 Minutes
Displacement Rinse Rate	Same as Regenerant Flow Rate
Displacement Rinse Volume	1,4 ÷ 2,0 BV (10 ÷ 15 gallons/cu.ft)
Fast Rinse Rate	Same as Service Flow Rate
Fast Rinse Volume	4 ÷ 8 BV (30 ÷ 60 gallons/cu.ft)
Service Flow Rate	10 ÷ 50 BV/h (1,25 ÷ 6,25 gpm/cu.ft)

Hydraulic Properties



Pressure Drop: The graph above shows the expected pressure loss per foot of bed depth as a function of flow rate at various temperatures.



Backwash: After each cycle the resin bed should be backwashed at a rate that expands the bed 25 to 50 percent. That will remove any foreign matter and reclassify the bed. The graph above shows the expansion characteristics of Pure PC100.

Pure Resin PC100H

- Macroporous Strong Acid Cation Exchange Resin;
- Macroporous poly (styrene sulphonate) cation exchange resin with excellent resistance to both osmotic and thermal shock;
- Supplied as spherical beads;
- Used for water softening with high level of DVB;
- Also widely used in mixed bed demineralizers where high hydraulic demands exist and high resistance to mechanical thermal and oxidative stresses are required, such as condensate polishing, chemical processing, hydrometallurgy, sugar treatment;
- Shipped in 25 liter bags.

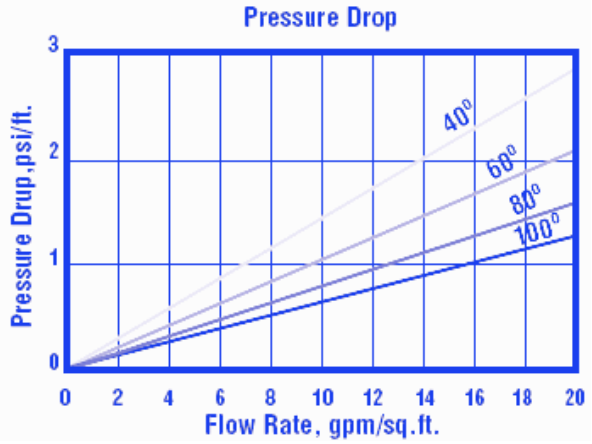
Typical Physical & Chemical Characteristics	
Polymer Matrix Structure	Polystyrene crosslinked with 8% DVB
Functional Group	$R\text{-}(SO_3)^-M^+$
Ionic Form, as shipped	H^+
Physical Form and Appearance	Clear Spherical Beads
Sphericity	95% min.
Screen Size Range US Standard Screen	16 ÷ 50 mesh, wet
Particle Size Range	+1,2 mm < 5%, - 0,3 mm < 1%
Uniformity Coefficient	1,6 max.
Water Retention	50 ÷ 60%
Swelling $Na^+ \rightarrow H^+$	10% max.
Shipping Weight, Na^+ form	760 ÷ 830 g/l (50 lbs/cu.ft, approx.)
Total Exchange Capacity	1,7 eq/l min.
pH Range	0 ÷ 14

REF.	
RA320	

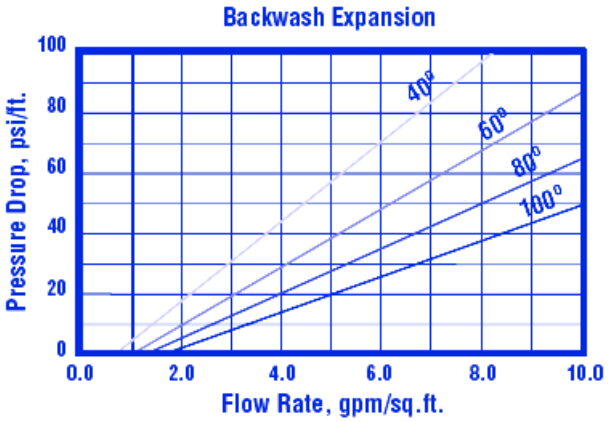
Pure Resin PC100H

Suggested Operating Conditions	
Maximum Temperature	120ºC (248ºF) max.
Minimum Bed Depth	0,6 m (24 inches)
Backwash Rate	25 ÷ 50% Bed Expansion
Regeneration Flow Rate Contact Time	5 ÷ 10% HCl, 2 ÷ 8% H_2SO_4 2 ÷ 7 BV/h (0,25 ÷ 0,90 gpm/cu.ft) At least 20 Minutes
Displacement Rinse Rate	Same as Regenerant Flow Rate
Displacement Rinse Volume	1,4 ÷ 2,0 BV (10 ÷ 15 gallons/cu.ft)
Fast Rinse Rate	Same as Service Flow Rate
Fast Rinse Volume	4 ÷ 8 BV (30 ÷ 60 gallons/cu.ft)
Service Flow Rate	10 ÷ 50 BV/h (1,25 ÷ 6,25 gpm/cu.ft)

Hydraulic Properties



Pressure Drop: The graph above shows the expected pressure loss per foot of bed depth as a function of flow rate at various temperatures.



Backwash: After each cycle the resin bed should be backwashed at a rate that expands the bed 25 to 50 percent. That will remove any foreign matter and reclassify the bed. The graph above shows the expansion characteristics of Pure PC100.

Pure Resin PC200FD

- Macroporous Weak Acid Cation Exchange Resin;
- Macroporous poly-acrylic weak acid cation resin;
- It can be supplied in the hydrogen (H+) form or sodium (Na+) as spherical beads;
- In H cycle is used for dealcalisation, deionization and chemical processing applications;
- Supplied in sodium cycle for use in applications such as softening and heavy metal cations removal. This requires a two stage regeneration process using a strong acid first and then a neutralization rinse to put the resin into the sodium form and is especially effective in high solids softening applications;
- D.M. n.174 dated 06/04/2004 compliant about materials suitable for contact with water for human consumption;
- Shipped in 25 liter bags.

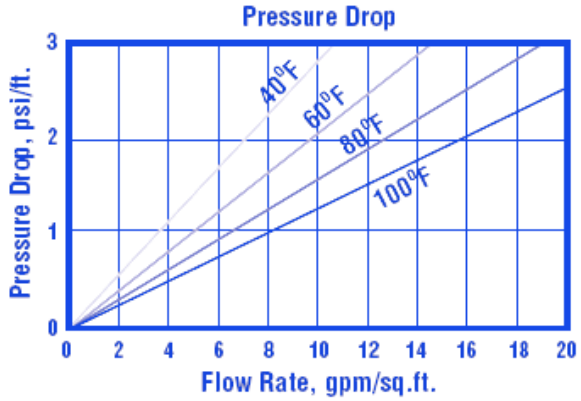
Typical Physical & Chemical Characteristics	
Polymer Matrix Structure	Acrylic-Divinylbenzene
Functional Group	$R\text{-}(COOH)^-$
Ionic Form, as shipped	H^+
Physical Form and Appearance	Clear Spherical Beads
Sphericity	95% min.
Screen Size Range US Standard Screen	16 ÷ 50 mesh, wet
Particle Size Range	+1,2 mm < 5%, - 0,3 mm < 1%
Uniformity Coefficient	1,6 max.
Water Retention, H^+ form	45 ÷ 50%
Swelling $Na^+ \rightarrow H^+$	65% max.
Shipping Weight, H^+ form	720 ÷ 800 g/l (46 lbs/cu.ft, approx.)
Total Exchange Capacity, H^+ form	4 eq/l min.
pH Range	4 ÷ 14

REF.	
RA330	

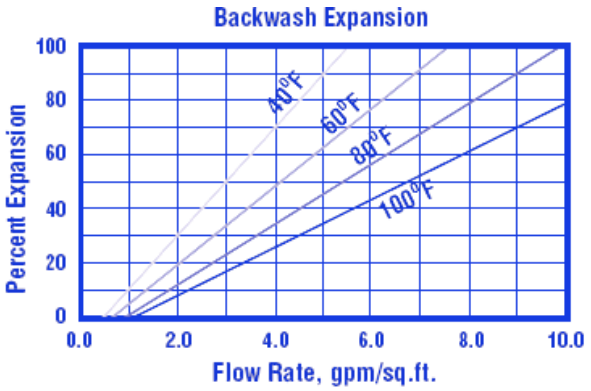
Pure Resin PC200FD

Suggested Operating Conditions	
Maximum Temperature, H^+ form	120ºC (248ºF) max.
Minimum Bed Depth	0,8 m (30 inches)
Backwash Rate	50 ÷ 75% Bed Expansion
Regeneration, Hydrogen Cycle Flow Rate Contact Time	5 ÷ 10% HCl, 0,5 ÷ 1% H_2SO_4 2 ÷ 7 BV/h 8 ÷ 20 BV/h At least 30 Minutes
Displacement Rinse Rate	Same as Regenerant Flow Rate
Displacement Rinse Volume	1,4 ÷ 2 BV (10 ÷ 15 gallons/cu.ft)
Fast Rinse Rate	Same as Service Flow Rate
Fast Rinse Volume	4,5 ÷ 8 BV (35 ÷ 60 gallons/cu.ft)
Service Flow Rate	16 ÷ 40 BV/h (2 ÷ 5 gpm/cu.ft)

Hydraulic Properties



Pressure Drop: The graph above shows the expected pressure loss per foot of bed depth as a function of flow rate at various temperatures.



Backwash: After each cycle the resin bed should be backwashed at a rate that expands the bed 25 to 50 percent. That will remove any foreign matter and reclassify the bed. The graph above shows the expansion characteristics of Pure PC200FD.

Pure Resin PA103OH

- REF. RA340;
- Gel Strong Base Anion Exchange Resin;
- It is a Type II, gel strong-base anion exchange resin, with high capacity and excellent regeneration efficiency;
- Supplied as spherical beads in the hydroxyl form;
- It removes all ions including silica and CO_2, anyway, it operates best on waters having a high percentage of strong acids (FMA);
- Intended for use in all type of dealcalisation, demineralization, deionization and chemical processing applications;
- Shipped in 25 liter bags.

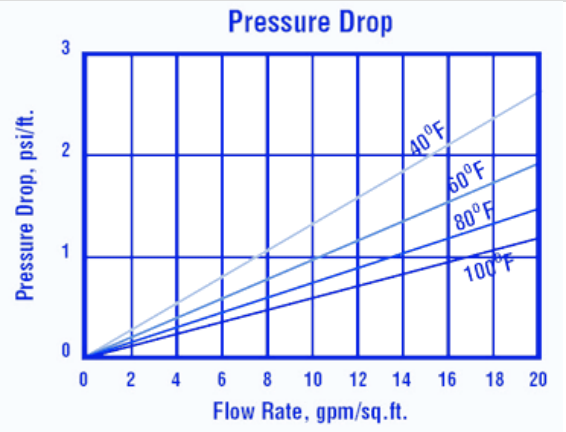
Typical Physical & Chemical Characteristics	
Polymer Matrix Structure	Polystyrene crosslinked with divinylbenzene
Functional Group	$R\text{-}N(CH_3)_2\,(C_2O_4H)^+$
Ionic Form, as shipped	Hydroxyl (OH^-)
Physical Form and Appearance	Clear Spherical Beads
Sphericity	95% min.
Screen Size Range US Standard Screen	16 ÷ 50 mesh, wet
Particle Size Range	+1,2 mm < 5%, - 0,3 mm < 1%
Uniformity Coefficient	1,6 max.
Water Retention, Cl^- form	45 ÷ 51%
Swelling $Cl^- \rightarrow OH^-$	15% max.
Weight, Cl^- form	680 ÷ 760 g/l (44 lbs/cu.ft, approx.)
Total Exchange Capacity, Cl^- form	1,3 eq/l min.
pH Range	0 ÷ 14

REF.	
RA340	

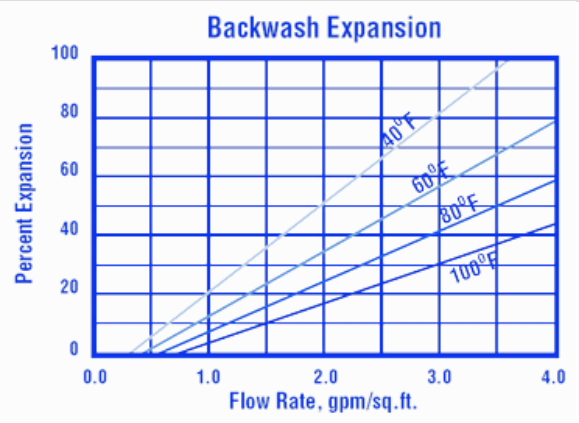
Pure Resin PA103OH

Suggested Operating Conditions	
Maximum Temperature, Cl^- form OH^- form	60ºC (140ºF) max. 40ºC (105ºF) max.
Minimum Bed Depth	0,6 m (24 inches)
Backwash Rate	50 ÷ 75% Bed Expansion
Regeneration, Regenerant Concentration Flow Rate Contact Time	2 ÷ 6% NaOH 2 ÷ 4 BV/h (0,25 ÷ 0,50 gpm/cu.ft) At least 60 Minutes
Displacement Rinse Rate	Same as Regenerant Flow Rate
Displacement Rinse Volume	1,4 ÷ 2 BV (10 ÷ 15 gallons/cu.ft)
Fast Rinse Rate	Same as Service Flow Rate
Fast Rinse Volume	4 ÷ 8 BV (30 ÷ 60 gallons/cu.ft)
Service Flow Rate	10 ÷ 50 BV/h (1,25 ÷ 6,25 gpm/cu.ft)

Hydraulic Properties



Pressure Drop: The graph above shows the expected pressure loss per foot of bed depth as a function of flow rate at various temperatures.



Backwash: After each cycle the resin bed should be backwashed at a rate that expands the bed 50 to 75 percent. That will remove any foreign matter and reclassify the bed. The graph above shows the expansion characteristics of Pure PA103.

Pure Resin PA101 IND-1

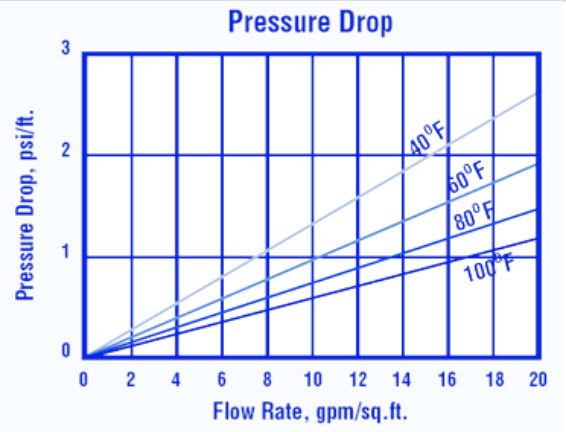
- Gel Strong Base Anion Exchange Resin, with indicator;
- It is a Type I, gel strong-base anion exchange resin with both high operating capacity and the ability to achieve low residual silica levels;
- Supplied as spherical beads in the hydroxyl form;
- It can be well used in multiple and mixed bed demineralizers to inform customer when the resin is exhausted or not;
- Shipped in 25 liter bags.

Typical Physical & Chemical Characteristics	
Polymer Matrix Structure	Polystyrene crosslinked with divinylbenzene
Functional Group	$R\text{-}N(CH_3)_3^+$ (color : Blue → Yellow)
Ionic Form, as shipped	Hydroxyl (OH^-)
Physical Form and Appearance	Clear Spherical Beads
Sphericity	95% min.
Screen Size Range US Standard Screen	16 ÷ 50 mesh, wet
Particle Size Range	+1,2 mm < 5%, - 0,3 mm < 1%
Uniformity Coefficient	1,6 max.
Water Retention, Cl^- form	55 ÷ 65%
Swelling $Cl^- \rightarrow OH^-$	20 ÷ 30%
Weight, Cl^- form	660 ÷ 710 g/l (43 lbs/cu.ft, approx.)
Total Exchange Capacity, Cl^- form	1,0 eq/l min.
pH Range	0 ÷ 14

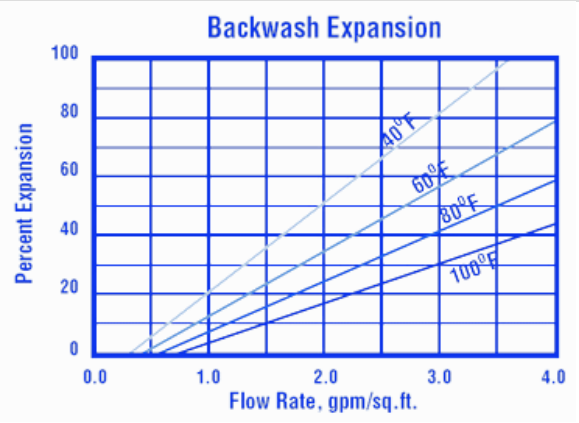
REF.	
RA338	

Pure Resin PA101 IND-1

Suggested Operating Conditions	
Maximum Temperature, Cl^- form OH^- form	100ºC (212ºF) max. 60ºC (140ºF) max.
Minimum Bed Depth	0,6 m (24 inches)
Backwash Rate	50 ÷ 75% Bed Expansion
Regeneration, Regenerant Concentration Flow Rate Contact Time	2 ÷ 6% NaOH 2 ÷ 8 BV/h (0,25 ÷ 1,00 gpm/cu.ft) At least 60 Minutes
Displacement Rinse Rate	Same as Regenerant Flow Rate
Displacement Rinse Volume	1,4 ÷ 2 BV (10 ÷ 15 gallons/cu.ft)
Fast Rinse Rate	Same as Service Flow Rate
Fast Rinse Volume	4,9 ÷ 8 BV (35 ÷ 60 gallons/cu.ft)
Service Flow Rate	4 ÷ 8 BV/h (0,5 ÷ 1,0 gpm/cu.ft)
Hydraulic Properties	



Pressure Drop: The graph above shows the expected pressure loss per foot of bed depth as a function of flow rate at various temperatures.



Backwash: After each cycle the resin bed should be backwashed at a rate that expands the bed 50 to 75 percent. That will remove any foreign matter and reclassify the bed. The graph above shows the expansion characteristics of Pure PA101 IND-1.

Pure Resin PA201(CL)

- Macroporous Strong Base Anion Exchange Resin;
- It is a Type II, gel strong-base anion exchange resin;
- Supplied wet as spherical beads in the chloride form;
- It has a high operating capacity, especially on high-FMA feedwaters, as well as a high reversible sorptive capacity for complex organic materials, such as the fulvic and humic acids which occur in many surface water supplies;
- It is recommended for use in waters with low silica loads. For high silica waters, a type I anion resin such as Pure PA200 is recommended;
- Shipped in 25 liter bags.

Typical Physical & Chemical Characteristics	
Polymer Matrix Structure	Macroporous polystyrene crosslinked with divinylbenzene
Functional Group	$R\text{-}N(CH_3)_2(C_2H_4OH)^+$
Ionic Form, as shipped	Chloride (Cl^-)
Physical Form and Appearance	Opaque light yellowish spherical beads
Sphericity	95% min.
Screen Size Range US Standard Screen	16 ÷ 50 mesh, wet
Particle Size Range	+1,2 mm < 5%, - 0,3 mm < 1%
Uniformity Coefficient	1,6 max.
Water Retention, Cl^- form	47 ÷ 57%
Swelling $Cl^- \rightarrow OH^-$	10% max.
Weight, Cl^- form	660 ÷ 730 g/l (43 lbs/cu.ft, approx.)
Total Exchange Capacity, Cl^- form	1,2 eq/l min.
pH Range	0 ÷ 14

REF.	
RA342	

Pure Resin PA201(CL)

Suggested Operating Conditions	
Maximum Temperature, Cl^- form OH^- form	60ºC (140ºF) max. 40ºC (105ºF) max.
Minimum Bed Depth	0,8 m (2,6 ft)
Backwash Rate	50 ÷ 75% Bed Expansion
Regeneration, Regenerant Concentration	2 ÷ 5% NaOH
Service/fast rinse	5 ÷ 50 m/h (2 ÷ 20 gpm/ft^2)
Co-current regeneration/displacement rinse	1 ÷ 10 m/h (0,4 ÷ 4 gpm/ft^2)
Total rinse requirement	3 ÷ 5 Bed volumes
Temperature	Ambient up to 35°C (95°F) for silica removal

Pure Resin PA200

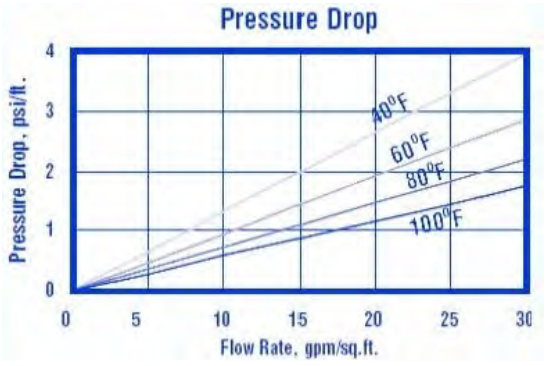
- It is a Type I, Macroporous Strong Base Anion Exchange Resin supplied in chloride or hydroxide and has high capacity, shock resistant with high physical stability;
- It is widely used in multiple and mixed bed demineralizers, wherever complete ion and organic removal are required;
- It is also intended for use in all types of deionization systems, condensate polishing and chemical processing applications;
- Shipped in 25 liter bags.

Typical Physical & Chemical Characteristics	
Polymer Matrix Structure	Macroporous polystyrene crosslinked with divinylbenzene
Functional Group	R-N$(CH_3)_3$ + X
Ionic Form, as shipped	Chloride (Cl^-)
Physical Form and Appearance	Opaque light yellowish spherical beads
Sphericity	95% min.
Screen Size Range US Standard Screen	16 ÷ 50 mesh, wet
Particle Size Range	+1,2 mm < 5%, - 0,3 mm < 1%
Uniformity Coefficient	1,6 max.
Water Retention, Cl^- form	50 ÷ 60%
Swelling $Cl^- \rightarrow OH^-$	20 ÷ 30%
Weight, Cl^- form	660 ÷ 730 g/l (43 lbs/cu.ft, approx.)
Total Exchange Capacity, Cl^- form Total Exchange Capacity, OH^- form	1,15 eq/l min. 0,92 eq/l min.
pH Range	0 ÷ 14

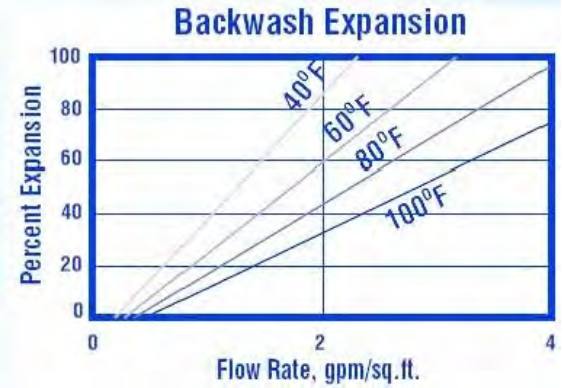
REF.	
RA341	

Pure Resin PA200

Suggested Operating Conditions	
Maximum Temperature, Cl^- form OH^- form	80ºC (170ºF) max. 60ºC (140ºF) max.
Minimum Bed Depth	0,6 m (24”)
Backwash Rate	50 ÷ 75% Bed Expansion
Regeneration, Regenerant Concentration	4 ÷ 6% NaOH
Service/Fast Rinse	2 ÷ 8 BV/h (0,25 ÷ 1,0 gpm/ft^2)
Contact Time	Minimum 60 minutes
Displacement Rinse Rate	Same as Regenerant Flow Rate
Displacement Rinse Volume	1,4 ÷ 2,0 BV (10 ÷ 15 gallons/cu.ft)
Fast Rinse Rate	Same as Service Flow Rate
Fast Rinse Volume	4,6 ÷ 8 BV (35 ÷ 60 gallons/cu.ft)
Service Flow Rate	16 ÷ 32 BV/h (2,0 ÷ 4,0 gpm/cu.ft)
Hydraulic Properties	



Pressure Drop: The graph above shows the expected pressure loss per foot of bed depth as a function of flow rate at various Temperatures.



Backwash: After each cycle the resin bed should be backwashed at a rate that expands the bed 50 to 75 percent. That will remove any foreign matter and reclassify the bed. The graph above shows the expansion characteristics of Pure PA200.

Pure Resin PA300

- Macroporous Weak Base Anion Exchange Resin;
- It is a macroporous polystyrene weak-base anion exchange resin having tertiary amine functionality;
- It has superior kinetics and greater resistance to oxidation and osmotic shock, high chemical and physical stability;
- Intended primarily for use in multiple bed demineralizers;
- It can be used in a two-bed system following a strong acid cation exchanger such as Pure PC003 where weak acid ions (silica and carbon dioxide) do not have to be removed;
- It can also be used in a separate bed, ahead of the strong base exchanger to remove organics and strong acid ions;
- Shipped in 25 liter bags.

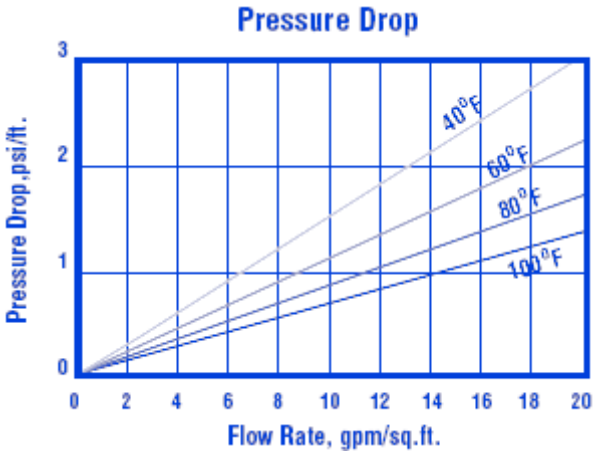
Typical Physical & Chemical Characteristics	
Polymer Matrix Structure	Macroporous Polystyrene with DVB
Functional Group	R-N-$(CH_3)_2^+$
Ionic Form, as shipped	Free Base
Physical Form and Appearance	Spherical Beads
Sphericity	95% min.
Screen Size Range US Standard Screen	16 ÷ 50 mesh, wet
Particle Size Range	+1,2 mm < 5%, - 0,3 mm < 1%
Uniformity Coefficient	1,6 max.
Water Retention, Free Base	50 ÷ 60%
Swelling $Na^+ \rightarrow Cl^-$	25% max.
Shipping Weight	650 ÷ 720 g/l (42 lbs/cu.ft, approx.)
Total Exchange Capacity, Free Base	1,4 eq/l min.
pH Range	0 ÷ 14

REF.	
RA350	

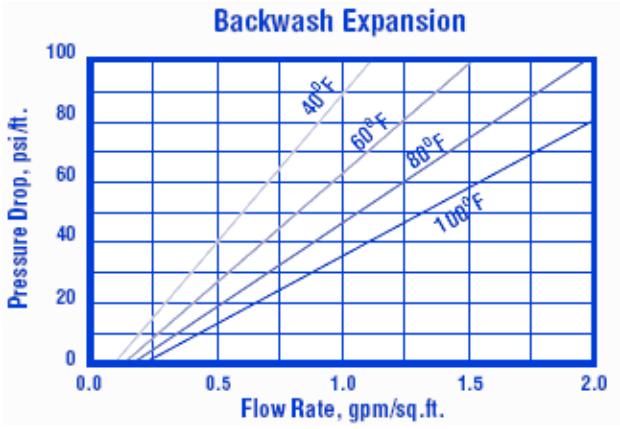
Pure Resin PA300

Suggested Operating Conditions	
Maximum Temperature Free Base	100ºC (212ºF) max.
Minimum Bed Depth	0,6 m (24 inches)
Backwash Expansion	50 ÷ 75%
Regeneration Regenerant Concentration Flow Rate Contact Time	 2 ÷ 6% NaOH 2 ÷ 8 BV/h (0,25 ÷ 1,0 gpm/cu.ft) At least 60 Minutes
Displacement Rinse Rate	Same as Regenerant Flow Rate
Displacement Rinse Volume	1,4 ÷ 2 BV (10 ÷ 15 gallons/cu.ft)
Fast Rinse Rate	Same as Service Flow Rate
Fast Rinse Volume	4,9 ÷ 8 BV (35 ÷ 60 gallons/cu.ft)
Service Flow Rate	16 ÷ 32 BV/h (2,0 ÷ 4,0 gpm/cu.ft)

Hydraulic Properties



Pressure Drop: The graph above shows the expected pressure loss per foot of bed depth as a function of flow rate at various temperatures.



Backwash: After each cycle the resin bed should be backwashed at a rate that expands the bed 50 to 75 percent. That will remove any foreign matter and reclassify the bed. The graph above shows the expansion characteristics of Pure PA300.

Pure Resin PA202

- Nitrate Selective Resin;
- Macroporous strong base anion exchange resin supplied in the chloride form as moist, tough, spherical beads, specially designed for the removal of nitrates from water;
- The macroporous matrix and special ion exchange group functionality imparts ideal nitrate selectivity to Pure PA202 making this resin particularly suitable for nitrate removal even when moderate to high sulphate concentrations are present;
- D.M. n.174 dated 06/04/2004 compliant about materials suitable for contact with water for human consumption;
- Shipped in 25 liter bags.

Typical Physical & Chemical Characteristics	
Polymer Matrix Structure	Macroporous, Styrene with DVB
Functional Group	$R\text{-}N\text{-}R_3^+ Cl^-$
Ionic Form, as shipped	Cl^-
Physical Form and Appearance	Clear Spherical Beads
Sphericity	95% min.
Screen Size Range US Standard Screen	16 ÷ 50 mesh, wet
Particle Size Range	+1,2 mm < 5%, - 0,3 mm < 1%
Uniformity Coefficient	1,6 max.
Water Retention, Cl^- form	52 ÷ 56%
Shipping Weight	680 ÷ 730 g/l (42 ÷ 45,5 lbs/cu.ft, approx.)
Total Exchange Capacity	1,0 eq/l min.
Max Operating Temperature	100°C (212°F) max.
pH Range	0 ÷ 14

REF.	
RA360	

Pure Resin PA202

Suggested Operating Conditions	
Maximum Operating Temperature	100ºC (212ºF) max.
Working Exchange Capacity @ 25°C	≥ 0,3 meq/l (wet)
Concentration of Regenerate Solution	NaCl: 8 ÷ 10%
Consumption of Regenerate	NaCl (8 ÷ 10%) Vol. : Resin Vol. = 2÷3 : 1
Flow Rate of Regenerate Solution	4 ÷ 6 (m/hr)
Regenerate Contact time	30 ÷ 60 (minute)
Rinse Flow Rate	15 ÷ 25 (m/hr)
Rinse Time (minute)	25 (approx.)
Operating Flow Rate	15 ÷ 25(m/hr)

Pure Resin PMB101-2

- Mixed Bed Resin;
- It is a high capacity mixed bed ion exchange resin consisting of a mixture of a gel, Type I strong base anion resin and a gel strong acid cation resin for direct water purification;
- The conductivity is around 0,1 us/cm;
- Suitable for use in regenerable or non-regenerable cartridges, for deionization with high silica removal efficiency and refine water for electrical home applications;
- Shipped in 25 liter bags.

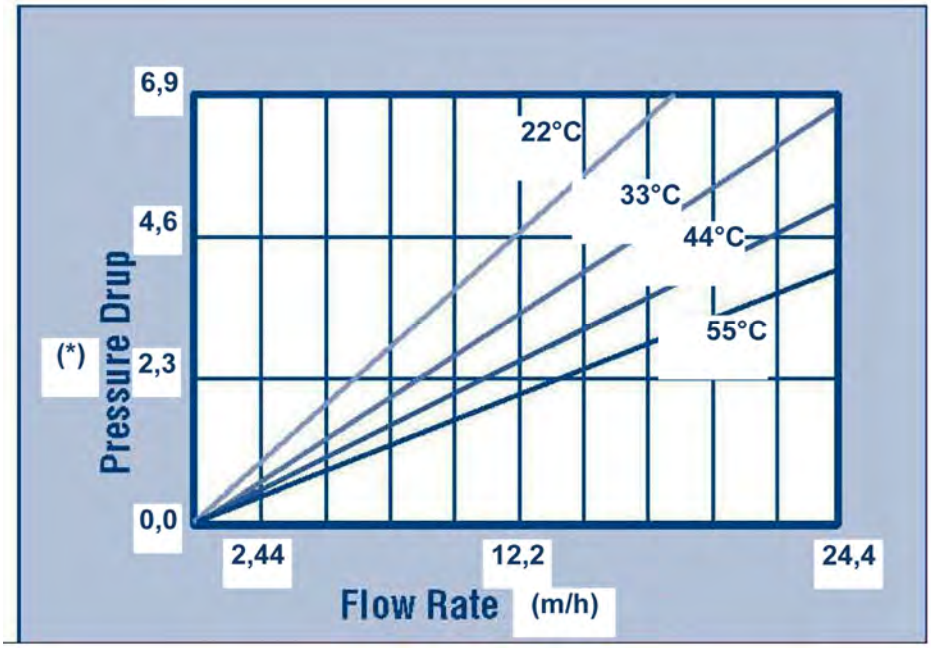
Typical Physical & Chemical Characteristics	
Polymer Matrix Structure	Gel polystyrene crosslinked with DVB
Functional Group: Cation Anion	$R\text{-}SO_3^- H^+$ $R_4\text{-}N\text{-}OH^-$
Ionic Form, as shipped	H^+ / OH^-
Physical Form and Appearance	Spherical Beads
Sphericity	95% min.
Screen Size Range US Standard Screen	16 ÷ 50 mesh, wet
Particle Size Range	+1,2 mm < 5%, - 0,3 mm < 1%
Volume Ratio (as shipped) Cation Anion	 40% PC003H 60% PA101OH
Total Exchange Capacity, Cation (in Na^+ form) Cation (in H^+ form) Anion (in Cl^- form) Anion (in OH^- form)	 2,0 eq/l min. 1,9 eq/l min. 1,3 eq/l min. 1,0 eq/l min.
Water Retention, H^+ form OH^- form	45 ÷ 50% 53 ÷ 60%
Shipping Weight (Approx.)	700 ÷ 740 g/l (44 ÷ 46 lbs/cu.ft, approx.)
Max temperature	60°C (140°F)
pH Range	0 ÷ 14

REF.	
RA370	

Pure Resin PMB101-2

Suggested Operating Conditions	
Minimum Bed Depth	0,6 m (24 inches)
Service Flow Rate	20 ÷ 60 BV/h (2,5 ÷ 7,5 gpm/cu.ft)
Limitations	Extended exposure to strong oxidizers, such as chlorine, hydrogen peroxide and concentrated nitric acid, degrade the structural backbone of the resin and should be avoided

Hydraulic Properties



(*) = m of water / m of bed

Pure Resin PMB102-2

- Mixed Bed Resin;
- It is a high capacity mixed bed ion exchange resin consisting of a mixture of a gel, Type I strong base anion resin and a gel strong acid cation resin for direct water purification;
- The conductivity is around 0,1 us/cm;
- Suitable for use in regenerable or non-regenerable cartridges, for deionization with high silica removal efficiency and applications for treatment of the R.O. permeate;
- Shipped in 25 liter bags.

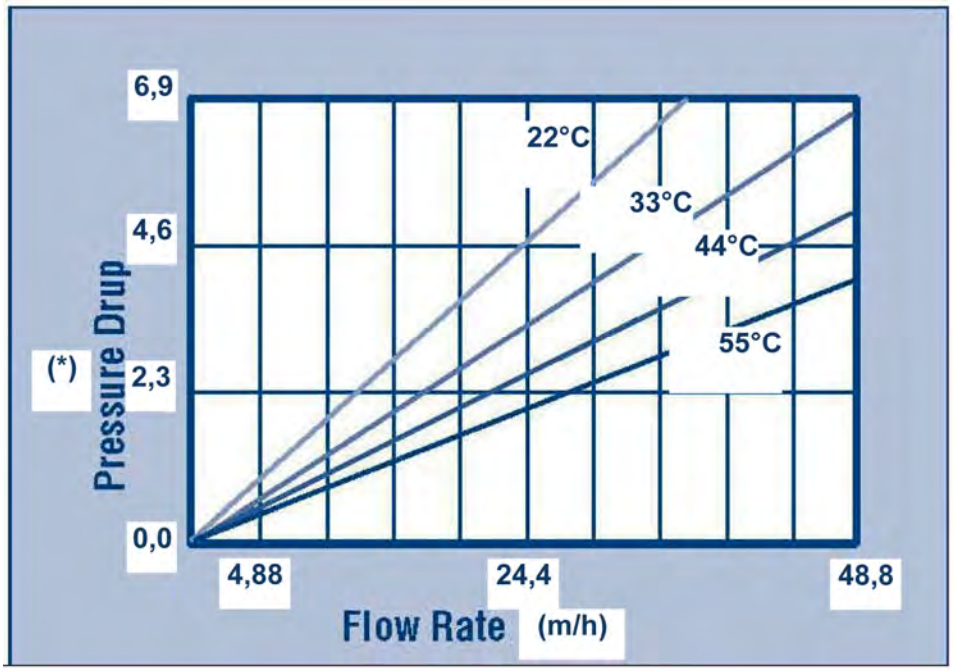
Typical Physical & Chemical Characteristics	
Polymer Matrix Structure	Gel polystyrene crosslinked with DVB
Functional Group: Cation Anion	$R\text{-}SO_3^-\ H^+$ $R_4\text{-}N\text{-}OH^-$
Ionic Form, as shipped	H^+ / OH^-
Physical Form and Appearance	Spherical Beads
Sphericity	95% min.
Screen Size Range US Standard Screen	16 ÷ 50 mesh, wet
Particle Size Range	+1,2 mm < 5%, - 0,3 mm < 1%
Volume Ratio (as shipped) Cation Anion	 40% PC003H 60% PA102OH
Total Exchange Capacity, Cation (in Na^+ form) Cation (in H^+ form) Anion (in Cl^- form) Anion (in OH^- form)	 2,0 eq/l min. 1,9 eq/l min. 1,3 eq/l min. 1,0 eq/l min.
Water Retention, H^+ form OH^- form	45 ÷ 50% 48 ÷ 58%
Shipping Weight (Approx.)	700 ÷ 740 g/l (44 ÷ 46 lbs/cu.ft, approx.)
Max temperature: Non-regenerative bed Regenerative bed	 100°C (212°F) 60°C (140°F)
pH Range	0 ÷ 14

REF.	
RA372	

Pure Resin PMB102-2

Suggested Operating Conditions	
Minimum Bed Depth	0,6 m (24 inches)
Service Flow Rate	20 ÷ 60 BV/h (2,5 ÷ 7,5 gpm/cu.ft)
Limitations	Extended exposure to strong oxidizers, such as chlorine, hydrogen peroxide and concentrated nitric acid, degrade the structural backbone of the resin and should be avoided

Hydraulic Properties



(*) = m of water / m of bed

Pure Resin PMB101-3

- Mixed Bed Resin;
- It is a high capacity mixed bed ion exchange resin consisting of a mixture of a gel, Type I strong base anion resin and a gel strong acid cation resin for direct water purification;
- The conductivity is around 0,06 us/cm;
- Suitable for use in regenerable or non-regenerable cartridges, for deionization with high silica removal efficiency and ultrapure water production applications;
- Shipped in 25 liter bags.

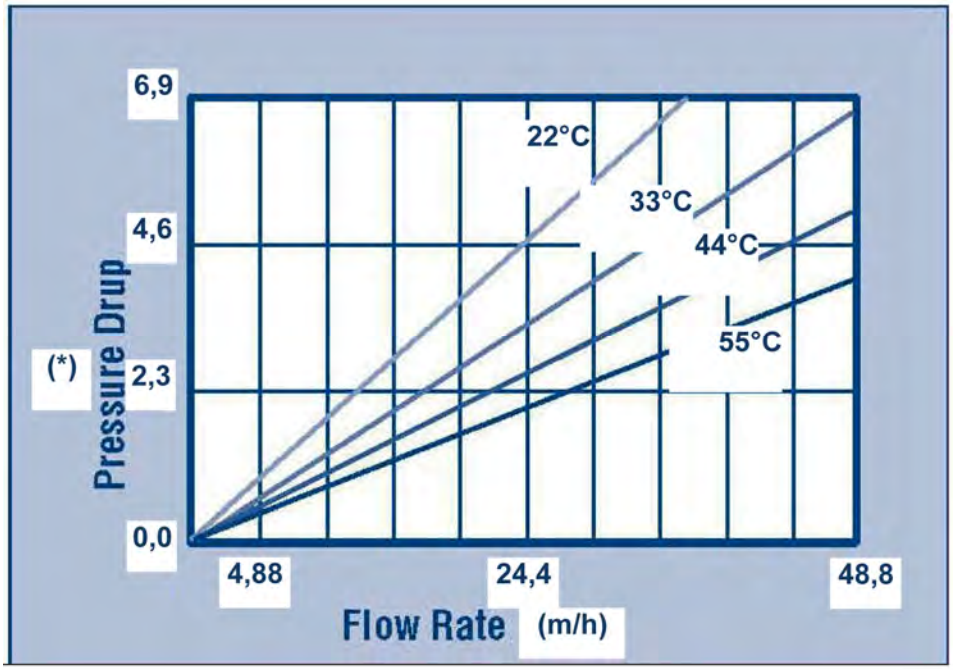
Typical Physical & Chemical Characteristics	
Polymer Matrix Structure	Gel polystyrene crosslinked with DVB
Functional Group: Cation Anion	$R\text{-}SO_3^-\ H^+$ $R_4\text{-}N\text{-}OH^-$
Ionic Form, as shipped	H^+ / OH^-
Physical Form and Appearance	Spherical Beads
Sphericity	95% min.
Screen Size Range US Standard Screen	16 ÷ 50 mesh, wet
Particle Size Range	+1,2 mm < 5%, - 0,3 mm < 1%
Volume Ratio (as shipped) Cation Anion	 40% PC003H 60% PA101OH
Total Exchange Capacity, Cation (in Na^+ form) Cation (in H^+ form) Anion (in Cl^- form) Anion (in OH^- form)	 2,0 eq/l min. 1,9 eq/l min. 1,3 eq/l min. 1,0 eq/l min.
Water Retention, H^+ form OH^- form	45 ÷ 50% 53 ÷ 60%
Shipping Weight (Approx.)	700 ÷ 740 g/l (44 ÷ 46 lbs/cu.ft, approx.)
Max temperature: Non-regenerative bed Regenerative bed	 100°C (212°F) 60°C (140°F)
pH Range	0 ÷ 14

REF.	
RA374	

Pure Resin PMB101-3

Suggested Operating Conditions	
Minimum Bed Depth	0,6 m (24 inches)
Service Flow Rate	20 ÷ 60 BV/h (2,5 ÷ 7,5 gpm/cu.ft)
Limitations	Extended exposure to strong oxidizers, such as chlorine, hydrogen peroxide and concentrated nitric acid degrade the structural backbone of the resin and should be avoided.

Hydraulic Properties



(*) = m of water / m of bed

Pure Resin PMB101 IND-2

- Mixed Bed Resin;
- It is a high capacity indicated mixed bed ion exchange resin consisting of a mixture of a gel, Type I strong base anion resin and a gel strong acid cation resin for direct purification of water;
- The conductivity is 0,1 us/cm max.;
- Suitable for use in regenerable or non-regenerable cartridges, for deionization with high silica removal efficiency and refine water for electrical home applications;
- It changes color from violet to yellow on exhaustion which contains an indicator showing when the resin is exhausted and can no longer treat the water;
- Shipped in 25 liter bags.

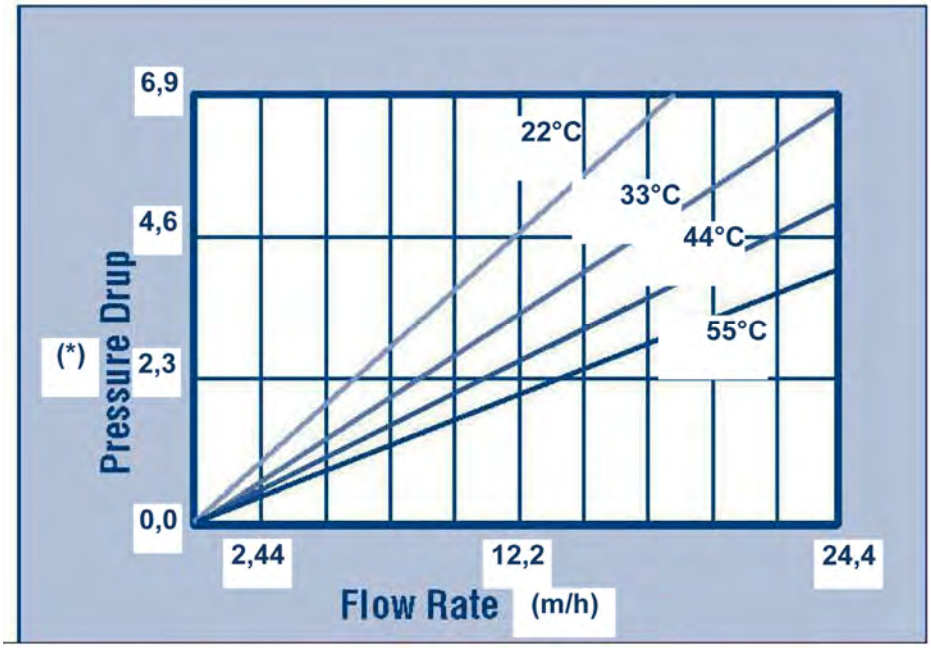
Typical Physical & Chemical Characteristics	
Polymer Matrix Structure	Gel polystyrene crosslinked with DVB
Functional Group: Cation Anion	$R\text{-}SO_3^- H^+$ (color: Violet → Yellow) $R_4 N^+OH^-$
Ionic Form, as shipped	H^+ / OH^-
Physical Form and Appearance	Spherical Beads
Sphericity	95% min.
Screen Size Range US Standard Screen	16 ÷ 50 mesh, wet
Particle Size Range	+1,2 mm < 5%, - 0,3 mm < 1%
Volume Ratio (as shipped) Cation Anion	 40% PC003H 60% PA101OH
Total Exchange Capacity, Cation (in Na^+ form) Anion (in Cl^- form)	 2,0 eq/l min. 1,3 eq/l min.
Water Retention, H^+ form OH^- form	45 ÷ 50% 53 ÷ 60%
Shipping Weight (Approx.)	700 ÷ 740 g/l (44 ÷ 46 lbs/cu.ft, approx.)
Max temperature: Non-regenerative bed Regenerative bed	 100°C (212°F) 60°C (140°F)
pH Range	0 ÷ 14

REF.	
RA378	

Pure Resin PMB101 IND-2

Suggested Operating Conditions	
Minimum Bed Depth	0,6 m (24 inches)
Service Flow Rate	20 ÷ 60 BV/h (2,5 ÷ 7,5 gpm/cu.ft)
Limitations	Extended exposure to strong oxidizers, such as chlorine, hydrogen peroxide and concentrated nitric acid, degrade the structural backbone of the resin and should be avoided

Hydraulic Properties



(*) = m of water / m of bed

Pure Resin PMB101 IND-3

- Mixed Bed Resin;
- It is a high capacity indicated mixed bed ion exchange resin consisting of a mixture of a gel, Type I strong base anion resin and a gel strong acid cation resin for direct purification of water;
- The conductivity is 0,1 us/cm max.;
- Suitable for use in regenerable or non-regenerable cartridges, for deionization with high silica removal efficiency and refine water for electrical home applications;
- It changes color from blue to yellow on exhaustion which contains an indicator showing when the resin is exhausted and can no longer treat the water;
- Shipped in 25 liter bags.

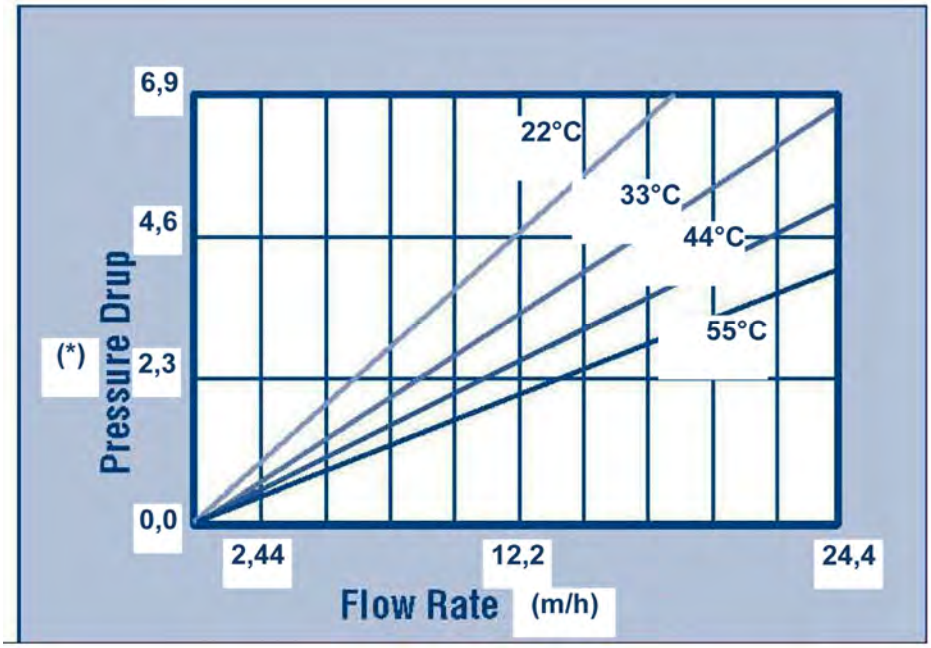
Typical Physical & Chemical Characteristics	
Polymer Matrix Structure	Gel polystyrene crosslinked with DVB
Functional Group: Cation Anion	$R\text{-}SO_3^-\ H^+$ $R_4\ N^+OH^-$ (color: Blue → Yellow)
Ionic Form, as shipped	H^+ / OH^-
Physical Form and Appearance	Spherical Beads
Sphericity	95% min.
Screen Size Range US Standard Screen	16 ÷ 50 mesh, wet
Particle Size Range	+1,2 mm < 5%, - 0,3 mm < 1%
Volume Ratio (as shipped) Cation Anion	 40% PC003H 60% PA101OH
Total Exchange Capacity, Cation (in Na^+ form) Anion (in Cl^- form)	 2,0 eq/l min. 1,3 eq/l min.
Water Retention, H^+ form OH^- form	45 ÷ 50% 53 ÷ 60%
Shipping Weight (Approx.)	700 ÷ 740 g/l (44 ÷ 46 lbs/cu.ft, approx.)
Max temperature: Non-regenerative bed Regenerative bed	 100°C (212°F) 60°C (140°F)
pH Range	0 ÷ 14

REF.	
RA380	

Pure Resin PMB101 IND-3

Suggested Operating Conditions	
Minimum Bed Depth	0,6 m (24 inches)
Service Flow Rate	20 ÷ 60 BV/h (2,5 ÷ 7,5 gpm/cu.ft)
Limitations	Extended exposure to strong oxidizers, such as chlorine, hydrogen peroxide and concentrated nitric acid, degrade the structural backbone of the resin and should be avoided

Hydraulic Properties



(*) = m of water / m of bed

Pure Resin PS400

- Selective removal of polyvalent ions;
- Macroporous Weak Acid Cation Exchange Resin;
- it is based on the iminodiacetatic acid functional group, which has chelating properties for heavy metal ions even against high concentrations of calcium;
- It finds use in processes for extraction and recovery of metals from ores, galvanic plating solutions, picking baths and effluents;
- D.M. n.174 dated 06/04/2004 compliant about materials suitable for contact with water for human consumption;
- Shipped in 25 liter bags.

Typical Physical & Chemical Characteristics	
Polymer Matrix Structure	Macroporous, Styrene / DVB
Functional Group	Iminodiacetatic
Ionic Form, as shipped	Na^+
Physical Form and Appearance	Milky White Spherical Beads
Sphericity	95% min.
Screen Size Range US Standard Screen	16 ÷ 40 mesh, wet
Particle Size Range	0,40 ÷ 1,25 mm ≥ 95
Uniformity Coefficient	1,6 max.
Water Retention, Na^+ form	52 ÷ 58%
Reversible Swelling $H^+ \rightarrow Na^+$	40% max.
Shipping Weight	720 ÷ 780 g/l (45 lbs/cu.ft, approx.)
Total Exchange Capacity, Na^+ form	≥ 1.95 meq/g (Chelated Cu^{2+})
pH Range	3 ÷ 12

REF.	
RA376	

Pure Resin PS400

Suggested Operating Conditions	
Maximum Temperature, H^+ form	100ºC (212ºF) max.
Operating Flow Rate	15 ÷ 45 (m/hr)
Method of Regeneration	pass 1 eq/l HCl 2~4 BV in 1~1,5 hours, rinse with DI water or soft water until pH = 3~4; pass 1 eq/l NaOH 2~4 BV in 1,5~2 hours, rinse with DI water or soft water until pH = 9

Greensand Plus

- filter media used for removing soluble iron, manganese, hydrogen sulphide, arsenic and radium from well water supplies;
- the Manganese Greensand Plus has a manganese dioxide coated surface that acts as a catalyst in the oxidation-reduction of iron and manganese;
- the silica sand core allows to better withstand operating conditions in waters that are low in silica, TDS and hardness;
- a pre-filtration with sand and anthracite is recommended;
- the Manganese Greensand Plus can be used in CR (continuous regeneration) or IR (intermittent regeneration) and requires no changes in backwash rate or times or chemical feeds;
- the removal of iron and manganese can be made by using oxidant as chlorine, even in the presence of manganese;
- not shipped in regenerated form; prior to use it is necessary to regenerate with a solution of potassium permanganate contacting the bed for a minimum of 4 hours. A regeneration level of 4 g of potassium permanganate per liter is recommended. Before placing in service the filter must be rinsed of all remaining traces of potassium permanganate;
- dosage Cl_2 (mg/l) = 1 mg/l Fe + 3 mg/l Mn + 6 mg/l H_2S + 8 mg/l NH_3 for service flow rate continuous;
- available in 14,2 liters bags.

Physical properties		**Operating conditions**	
Colour	black	pH range	6,2 ÷ 8,8
Specific gravity (g/l)	2400	Service flow rate continuous / intermittent ($m^3/h\ m^2$)	12 ÷ 29
Bulk density (g/l)	1410	Backwash flow rate @13°C ($m^3/h\ m^2$)	30
Effective size (mm)	0,30 ÷ 0,35	Backwash bed expansion (%)	35 ÷ 40
Uniform coefficient	1,6	Pressure drop (psi)	10 ÷ 18

Recommended Operating Guidelines	
Intermittently Regeneration (IR)	
Minimum bed depth (mm)	750 single media; 380 each for dual media beds
Backwash Duration	10 minutes (until water is clear)
Regenerant Dosage 6,5% Bleach	65 liters / m^3 diluted in approx. 25 liters of water injected over 30 ÷ 40 minutes
Regenerant Dosage 12% Bleach	25 liters / m^3 diluted in approx. 25 liters of water injected over 30 ÷ 40 minutes

Recommended Operating Guidelines	
Continuous Regeneration (CR)	
Minimum bed depth (mm)	500 Greensand Plus and 380 Anthracite
Backwash Duration	10 minutes (until water is clear)

REF.	
RA074	

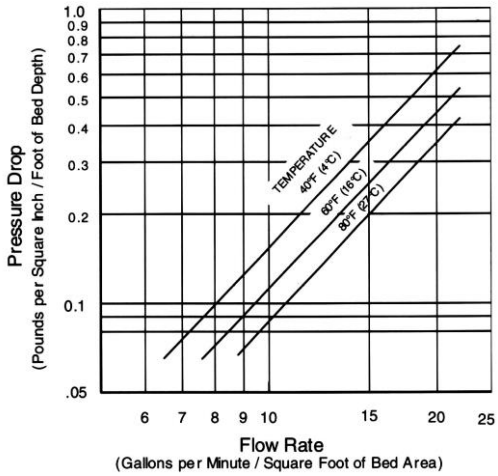
MTM

- MTM consist of a light weight granular core with a coating of manganese dioxide, and is used for reducing iron, manganese and hydrogen sulphide from water. Its active surface coating oxidizes and precipitate soluble iron and manganese, and hydrogen sulphide is oxidized to a sulphur. The precipitates are filtered out in the granular bed and removed by backwashing;
- compared to other iron removal medias, MTM has many advantages: pH level as low as 6,2 can be treated, dissolved oxygen is not essential, the media light weight reduces backwash water requirements;
- chlorine can be beneficial in extending filter run times;
- MTM requires intermittent or continuous regeneration to maintain its oxidizing capacity, with a weak solution of potassium permanganate;
- regeneration $KMnO_4$ solution from 1,5 to 2 g per liter MTM;
- a new bed should be regenerated at the start up;
- CAUTION: operating the filter after its oxidizing capacity is exhausted will reduce its service life and may cause staining;
- influent limitations: none oil and polyphosphates;
- available in 28,3 liters bags.

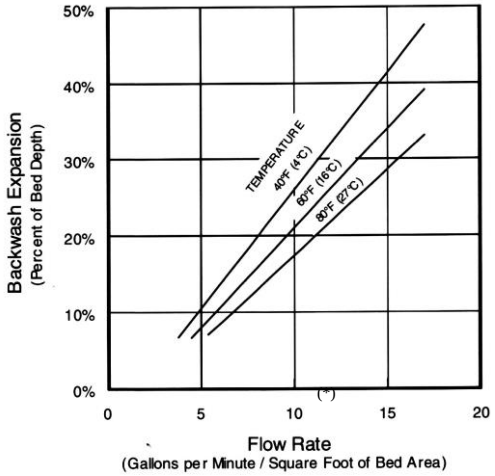
PHYSICAL PROPERTIES		OPERATING CONDITIONS	
Colour	dark brown	Bed depth (mm)	600 ÷ 900
Specific gravity (g/l)	2000	Service flow rate ($m^3/h\ m^2$)	8 ÷ 13
Bulk density (g/l)	715	Backwash flow rate ($m^3/h\ m^2$)	20 ÷ 24
Effective size (mm)	0,45	Backwash bed expansion (%)	20 ÷ 40
		Capacity per liter (g)	1,4 Fe or 0,7 Mn
		pH range	6,2 ÷ 8,5

REF.	
RA071	

SERVICE FLOW – PRESSURE DROP



BACKWASH BED EXPANSION



(*) Note: a “Gallon per Minute / Square Foot of Bed Area” is equal to 2,44448 m/h.

BIRM

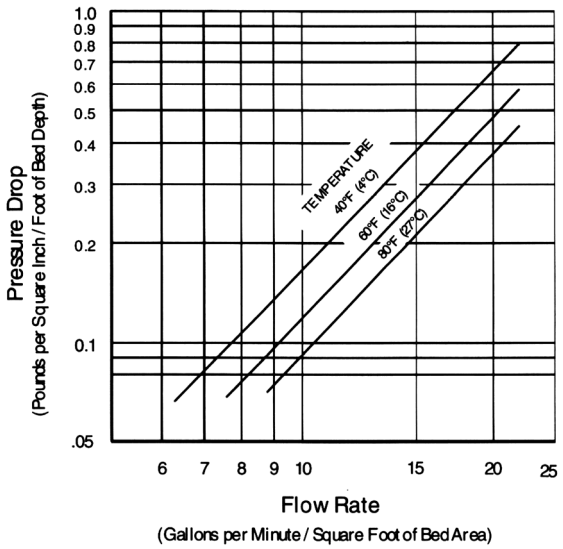
- Granular filter media used for the reduction of iron and manganese dissolved in the water. In ground water the dissolved iron is usually in the ferrous bicarbonate state and is not filterable; BIRM acts as an insoluble catalyst to enhance the reaction between dissolved oxygen and iron compounds, producing ferric hydroxide which precipitates and may be easily filtered;
- the physical characteristics of BIRM provide an excellent filter media which is easily cleaned by backwashing to remove the precipitant;
- BIRM is not consumed in the iron removal operation;
- available in 28,3 liters bags;
- following are the conditions necessary for a good efficiency of the BIRM:
  - no Oil, Hydrogen Sulphide and Polyphosphates in the water;
  - pH 6,8 ÷ 9,0 (if water contains also manganese pH has to be 8,0 ÷ 8,5);
  - dissolved oxygen content must be equal to at least 15% of the iron content and 29% of the manganese content;
  - alkalinity should be greater than two times the combined sulphate and chloride concentration;
  - less than 5 ppm TOC.

CAUTION: chlorination greatly reduces BIRM activity.

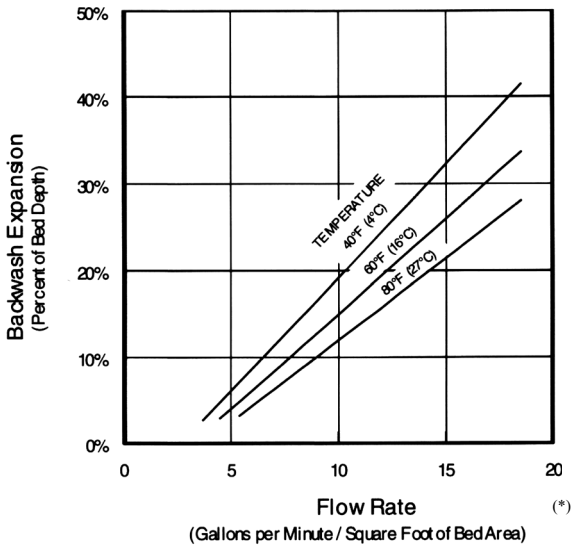
PHYSICAL PROPERTIES		OPERATING CONDITIONS	
Colour	black	Bed depth (mm)	750 ÷ 900
Specific gravity (g/l)	2000	Service flow rate ($m^3/h\ m^2$)	9 ÷ 13
Bulk density (g/l)	560 ÷ 640	Backwash flow rate ($m^3/h\ m^2$)	24 ÷ 30
Mesh Size	12 x 50	Backwash bed expansion (%)	20 ÷ 40
Effective Size (mm)	0,48		
Uniformity Coefficient	2,7		

REF.	
RA072	

SERVICE FLOW – PRESSURE DROP



BACKWASH BED EXPANSION



(*) Note: a “Gallon per Minute / Square Foot of Bed Area” is equal to 2,44448 m/h.

PYROLUSITE

- PYROLUSITE is manganese dioxide (MnO_2) of very good quality and pureness obtained by washing, drying and screening of mineral selected for the specific catalytic activity;
- used as catalyser for the reduction of iron and manganese dissolved in the water, by sand filters, mixed 20÷50 % with sand 0,4÷0,8 / 0,7÷1,2 mm;
- does not require a compulsory regeneration with $KMnO_4$, but you can do a continuous chlorination or a chlorination during the backwash;
- PYROLUSITE complies the standard UNI ISO EN 13752 “Products for potable water treatment”;
- hardness 3° ÷ 5° Mosh;
- available in 25 kg bags.

Physical Properties	
Colour	brown
Bulk density (g/l)	2000
Effective size (mm)	0,3 ÷ 0,8
Mn (%)	80

Operating Conditions	
Composition	Mixed 20÷50 % with sand 0,4÷0,8 / 0,7÷1,2 mm
Suggested filtration speed (m/h)	≤ 10
Max backwash speed ($m^3/h\ m^2$)	25
Min contact time (min)	6

REF.	
RA069	

Activated Carbon

- RA201, RA202, RA206, RA208, RA212, RA212A, RA214 e RA214A activated carbon are suitable for treatment of water intended for human consumption), except RA204;
- In granular form;
- Suitable for Chlorine, chemical oxidants, chlorinated compounds and organic contaminants dissolved in water;
- activated carbon require periodic backwashing to eliminate accumulated suspended matters and to regrade the filter bed;
- a good backwashing of the AC filter bed of the start-up is required.
- Mainly bituminous origin coal activated carbons are carefully selected, with a thermal activation process at strictly controlled temperature to obtain a large surface area and a mesoporous structure allowing the adsorption of high molecular weight organic compounds in particular hydrocarbons, atrazine, surfactants;
- Mainly vegetal (coconut base) activated carbons are suitable for applications that need good resistance to the attrition and mechanical shocks; they have a microporous structure allowing the adsorption of low molecular weight organic compounds in particular trichloroethylene, tetrachloroethylene.

REF.	TYPE	ORIGIN	SIZE (mm)	BULK DENSITY (g/l)	BET (m^2/g)	IODINE NUMBER (mg/g)	ASH CONTENT (%)	WEIGHT (kg)	VOLUME (liters)	PACKAGING	
RA204	SC45 cylindrical	Mineral	4	530	700	750	12	25	47	bag	
RA201	GAC 8x30	Mineral	0,6 ÷ 2,4	480	1100	1000	12	25	52	bag	
RA202	GAC 12x40	Mineral	0,4 ÷ 1,7	480	1100	1000	12	25	52	bag	
RA212 (*)	Norit GAC 8x30	Mineral	0,6 ÷ 2,4	500	1100	950	12	25	50	bag	
RA212A (*)	Norit GAC 8x30	Mineral	0,6 ÷ 2,4	500	1100	950	12	500	1000	Big bag	
RA214 (*)	Norit GAC 12x40	Mineral	0,4 ÷ 1,7	500	1100	950	12	25	50	bag	
RA214A (*)	Norit GAC 12x40	Mineral	0,4 ÷ 1,7	500	1100	950	12	500	1000	Big bag	
RA206	GAC 8x30	Vegetal	0,6 ÷ 2,4	500	1250	1100	3	25	50	bag	
RA208	GAC 12x40	Vegetal	0,4 ÷ 1,7	500	1250	1100	3	25	50	bag	

Operating conditions	
Bed depth (mm) (dechlorination)	650 ÷ 750
Service flow rate (m^3/h m^2) (dechlorination)	12 ÷ 15
Backwash flow rate (m^3/h m^2)	24 ÷ 30
Backwash bed expansion (%)	30 ÷ 40

(*) not available in stock.

Acid Washed Activated Carbon

- High quality granular activated carbon produced by physical activation of selected raw material of mineral origin;
- It is further washed with acid in order to reduce the ash content;
- Particularly effective for the removal of organic pollutants, dyes, pesticides, chlorinated and aromatic solvents, phenols, tannins, chlorine derivatives and compounds that cause bad smells and tastes in drinking water;
- Suitable for different applications such as the purification of water intended for human consumption, the purification of wastewater, of process and condensates. It is also used in the purification and discoloration processes of intermediates chemical and food products;
- It is in conformity with the rule UNI ISO EN 12915 “Chemicals used for treatment of water intended for human consumption”;
- It can be thermally reactivated once its adsorbing capacity is exhaust;
- Available in 25 kg bags.

GENERAL PROPERTIES			
Iodine number	Astm D 4607	mg / g	1.000
Moisture as packed	Astm D 2867	%	2
Size	Astm D 2862	Mesh	12 x 30
Size distribution	12 Mesh 30 Mesh	%	5 5
Methylene blue index	Cefic Dab VI	ml	18
CCl_4 adsorption	Astm D 3467	%	60
Surface area (B.E.T.)	Astm D 3663	m^2/g	1.100
Bulk density	Astm D 2854	kg/m^3	460
Density after back-washing and draining		kg/m^3	420
Iron (acid extraction)		ppm	300
Hardness	Astm D 3802	%	95
Ash content	Astm D 2866	%	8
pH	Astm D 3838	-	neutral

REF.	
RA222 (*)	

(*) not available in stock.

Filter Sand and Gravel

- REF. RA049, RA050, RA051, RA052 and RA053;
- filter sand and gravel shape of alluvium origin, uncrushed;
- high contents of silica, selected for specific use in water filtration for potable and industrial application;
- hardness 7° Mosh.

REF.	SIZE (mm)	BAG WEIGHT (kg)	
RA049	0,4 ÷ 0,8	25	
RA050	0,8 ÷ 1,2	25	
RA051	1,0 ÷ 2,0	25	
RA053	2,0 ÷ 3,0	25	
RA052	3,0 ÷ 5,0	25	

Physical properties	
Colour	white
Specific gravity (g/l)	2650
Bulk density (g/l)	1500
SiO_2 content	> 96 %
Humidity	0,3 % max
Melting point	1700 g/c
pH	8

Operating conditions	
Bed depth (mm) (sand filter)	450 ÷ 750
Service flow rate ($m^3/h\ m^2$)	8 ÷ 12
Backwash flow rate ($m^3/h\ m^2$)	30 ÷ 42
Backwash bed expansion (%)	5 ÷ 10

Anthracite

- granular anthracite selected per gradation, hardness and purity for specific use in potable and industrial water filtration;
- the high filtering efficiency of anthracite is due to its angular shape, that allows high filtering speed, longer filter runs and less head loss;
- excellent media with density lower than sand, the anthracite is usually used in multimedia filters;
- the ANTHRACITE complies the standard UNI ISO EN 12909 “Products used for treatment of water intended for human consumption”;
- minimum carbon contents 90%, low silica, hardness 3° Mosh average.

REF.	SIZE (mm)	WEIGHT (kg)	PACKAGE	
RA060	0,6 ÷ 1,0	25	Bag	
RA061	2,0 ÷ 3,0	25	Bag	
RA061A	2,0 ÷ 3,0	1000	Big bag	

Physical properties	
Bulk density (g/l)	950
Absolute density (g/ml)	1400
Humidity packaging	2 % max
Ashes	4 % (±2)
Substances volatiles	3 % (±1)
Sulphur	0,5 % max
pH	8 ÷ 10

Operating conditions:

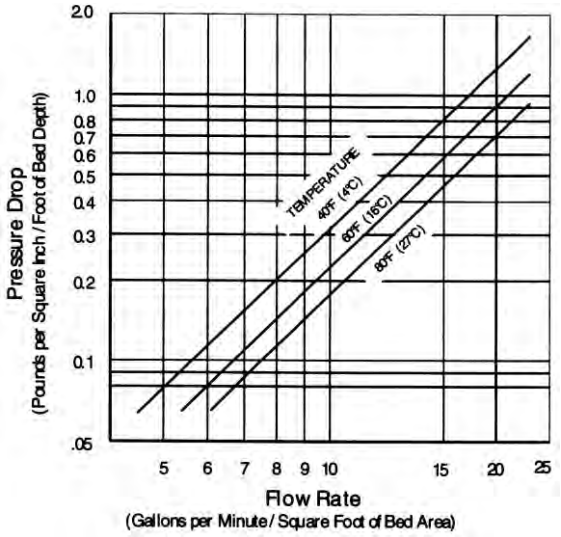
- monolayer bed depth 600 ÷ 900 mm;
- top bed depth in multilayer beds 250 ÷ 450 mm;
- service flow rate following specific conditions;
- backwash flow rate 28 ÷ 35 $m^3/h\ m^2$;
- bed expansion 20 ÷ 30%.

Calcite

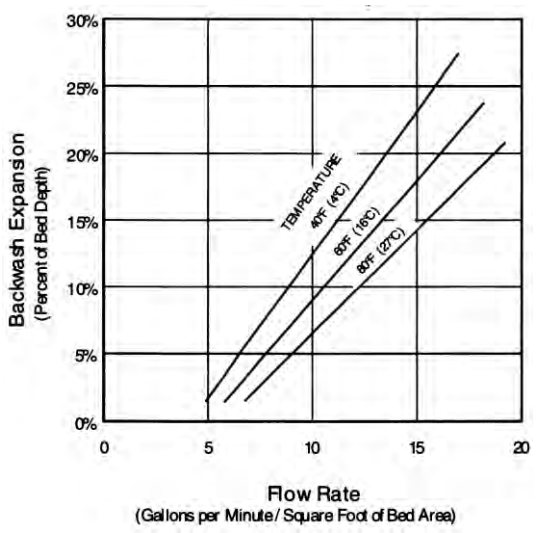
- CALCITE is a natural crushed and screened calcium carbonate media which is used to neutralize low pH waters;
- acidic water slowly dissolves the calcium carbonate to raise the pH which reduces the potential leaching of copper, lead and other metals found in typical plumbing systems;
- one of the advantages of CALCITE is its self-limiting property, that corrects pH only enough to reach a non corrosive equilibrium;
- of course CALCITE will increase the hardness of the water;
- periodic backwashing of the bed is necessary to keep in working order the system;
- the CALCITE bed will have to be periodically replenished as the CALCITE is depleted;
- gravel support bed is recommended;
- available in 15,6 liters bags.

Physical properties		**Operating conditions**	
Colour	white	Bed depth (mm)	600 ÷ 750
Specific gravity (g/l)	2700	Service flow rate ($m^3/h\ m^2$)	7 ÷ 15
Bulk density (g/l)	1450	Backwash flow rate ($m^3/h\ m^2$)	20 ÷ 30
Effective size (mm)	0,4 ÷ 1,1	Backwash bed expansion (%)	≥ 50
Composition	$CaCO_3$ 95% min. $MgCO_3$ 3% max.	pH range	5,0 ÷ 7,0

REF.	
RA073	



Service flow – pressure drop



Backwash bed expansion

(*) Note: a “Gallon per Minute / Square Foot of Bed Area” is equal to 2,44448 m/h .

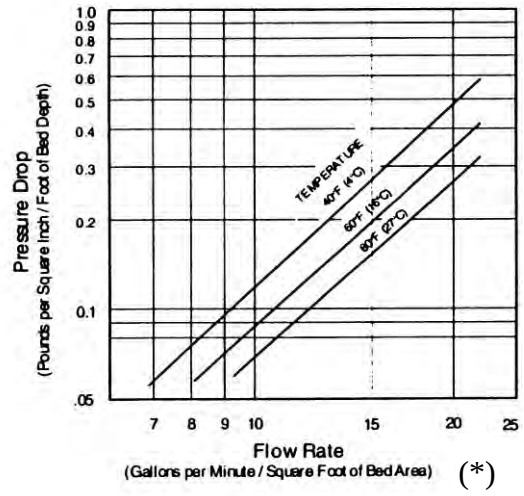
Filter AG

- Filter-Ag is a non-hydrous silicon dioxide media which can be used as highly efficient filter media for the reduction of suspended matter. Its fractured edges and irregular surface provides an high surface area and complex flow path for efficient filtration;
- less pressure loss through a bed of Filter-Ag than through most other filter medias;
- light weight requires lower backwash rates than other filter medias;
- upon installation allow bed to soak overnight before backwashing;
- available in 28,3 liters bags.

Physical properties		Operating conditions	
Colour	light grey	Bed depth (mm)	600 ÷ 900
Specific gravity (g/l)	2250	Service flow rate ($m^3/h\ m^2$)	12 ÷ 13
Bulk density (g/l)	380 ÷ 420	Backwash flow rate ($m^3/h\ m^2$)	20 ÷ 24
Effective size (mm)	0,5 ÷ 2,0	Backwash bed expansion (%) of bed depth	20 ÷ 40
		Freeboard of bed depth (%)	≥ 50

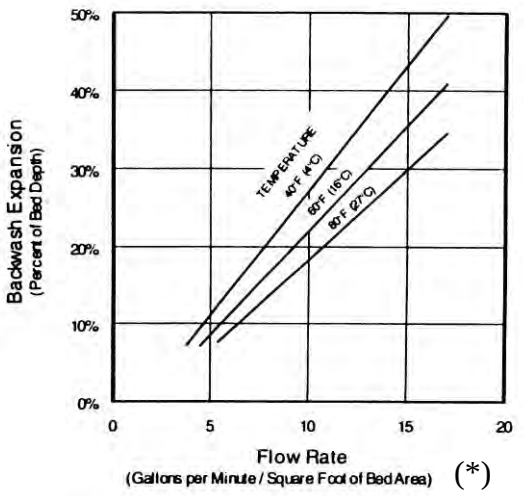
REF.	
RA059	

Service flow – pressure drop



(*)

Backwash bed expansion



(*)

(*) Note: a “Gallon per Minute / Square Foot of Bed Area” is equal to 2,44448 m/h .

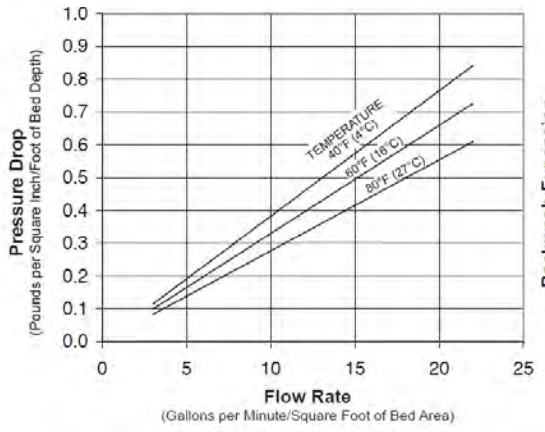
Filter AG Plus

- Filter-Ag Plus is a clinoptilolite natural media with a large surface area and microporous structure which can be used as highly efficient filter media for the reduction of suspended matter. Its irregular surface and 3 micron void spaces provides a surface area over 100 times greater than silica sand;
- its low pressure drop, high service flow rates and high bed loadings combined with lower backwash frequency allow economy in equipment downsizing and reduced pumping requirements;
- utilizing deep bed filtration can tipically reduce suspended solids down to 5 micron or less range;
- Filter Ag Plus can be applied to systems designed for either pressure or gravity flow;
- available in 28,3 liters bags.

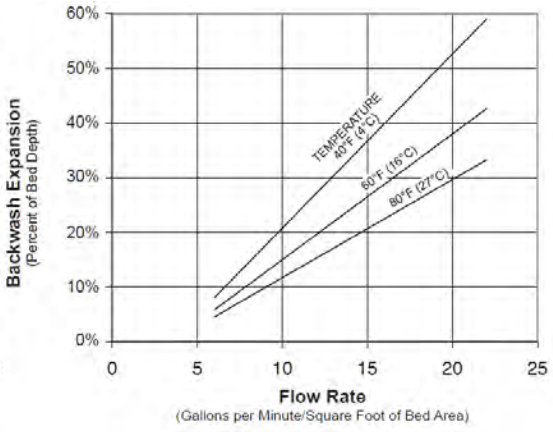
Physical properties		Operating conditions	
Colour	White to off white	Bed depth (mm)	600 ÷ 1200 (900 for optimal filtration)
Specific gravity (g/l)	2200	Service flow rate ($m^3/h\ m^2$)	30 ÷ 50
Bulk density (g/l)	800	Backwash flow rate ($m^3/h\ m^2$)	35 ÷ 45
Effective size (mm)	0,55	Backwash bed expansion (%) of bed depth	30 ÷ 40
		Freeboard of bed depth (%)	≥ 50

REF.	
RA058	

Service flow – pressure drop



Backwash bed expansion



(*) Note: a “Gallon per Minute / Square Foot of Bed Area” is equal to 2,44448 m/h .

GFH (Granular Ferric Hydroxide)

- Granular ferric hydroxide GFH is an adsorbent for selective removal of arsenic (both arsenite and arsenate), phosphate, vanadium, antimony, lead, uranium, molybdenum and other heavy metals from natural water;
- Preoxidation is not required for arsenic removal applications;
- Once the media has exhausted its adsorption capacity, it is removed from the vessel and replaced with new media;
- The simplicity of this process is very attractive for small installations and wellhead applications;
- Active substance $Fe(OH)_3$ + β-FeOOH;
- Dry solids content 58% (± 10%);
- Conform with the rule EN 15029;
- NSF/ANSI 61 certified.

Requirements for raw water

- Free of turbidity
- Positive redox potential
- No calcium precipittion

REF.	WEIGHT (kg)	PACKAGING	
RA068	30	Drum	
RA068B	800	Big bag	

Physical properties (with water content 45%):	
Density of grains (g/l)	1590
Bulk density (g/l) backwashed	1150 (± 10%)
Particle size range (mm)	0,2 ÷ 2,0
Specific surface (m^2/g) (BET method)	approx 300
Porosity of grains (%)	72 ÷ 77
Bulk porosity (%)	22 ÷ 28
Iron content, relative to dry solids	600g / Kg (± 10%)

Operating conditions	
Bed depth (m)	0,6 ÷ 1,6
Specific flow rate ($m^3/h\ m^2$)	5 ÷ 20
Contact time (minutes)	3 ÷ 6
Backwash flow rate ($m^3/h\ m^2$)	26
Expansion free volume (%) of bed depth	50
Pressure loss max (bar)	0,5
Operation temperature max (°C)	60
AsO_4^{3-} Arsenic adsorption density in the drinking water processing (g/kg)	1 ÷ 5 (**)

(**) the adsorption density depends on pH and water chemistry.

Ecomix

- ECOMIX is a granular filtering media, suitable for remove natural organic matter, hardness, iron, manganese and ammonia in a wide pH range and without any oxidant products dosage;
- ECOMIX is a homogeneous mixture of five high quality ion-exchange and adsorption materials of natural and synthetic origin;
- you can use ECOMIX as a ion-exchange resin and regenerate it with sodium chloride (NaCl);
- wide range of raw water as indicated in the “Limit Concentration Table” below;
- ECOMIX can treat water with high concentration of Fe and Mn, and with max TDS = 4000 mg/l;
- to calculate filter capacity, one should only consider water hardness and ion-exchange capacity (don’t consider Fe and Mn data);
- NSF/ANSI 44, 61 & 372 certified;
- shipping weight 0,75 kg / liter;
- available in 12,0 liters bags.

REF.	TYPE	ION EXCHANGE CAPACITY (eq/l)	ION EXCHANGE CAPACITY (g $CaCO_3$/l)	DOSE OF REGENERANT (g NaCl 100% per liter)	
RA080	Ecomix - A	0,75	35	100	
RA081	Ecomix - C	0,65	30	100	

- ECOMIX A is preferred when the contaminants to be removed are mainly hardness and iron;
- ECOMIX C is preferred when the contaminants to be removed are mainly organic matter.

WARNING: if you use only a part of the product contained in a bag, you have make sure that all the contents are mixed, in order to homogenize the product before spilling. ECOMIX is a mixture of five materials with different specific weight and different particle size, which if not well mixed tends to stratify.

Ecomix

Limit Concentration Tables

RA080	Hardness (ppm CaC O_3)	Fe (mg/l) (ppm)	Mn (mg/l) (ppm)	COD (ppm O_2)	Ammonia (mg/l) (ppm)	TDS (ppm)
Raw water concentration limits	< 750	< 15	< 3	< 20	< 4	< 4000
Quality of purified water	≤ 20	< 0,3	< 0,1	< 10	< 0,5	No changes

RA081	Hardness (ppm CaC O_3)	Fe (mg/l) (ppm)	Mn (mg/l) (ppm)	COD (ppm O_2)	Ammonia (mg/l) (ppm)	TDS (ppm)
Raw water concentration limits	< 750	< 10	< 3	< 20	< 4	< 4000
Quality of purified water	≤ 20	< 0,3	< 0,1	< 4	< 0,5	No changes

OPERATING CONDITIONS		UNIT OF MEASUREMENT
Maximum operating temperature	40	°C
pH range	5 ÷ 9	
Minimum bed depth	500	mm
Optimum bed depth	800	mm
Service flow rate	20 ÷ 25	$m^3/h\ m^2$
Backwash flow rate (15÷20 min)	10 ÷ 15	$m^3/h\ m^2$
Regeneration flow rate (45÷65 min)	3 ÷ 5	$m^3/h\ m^2$
Active chlorine	< 1	mg/l (ppm)
Free bed volume	≥ 40	%

COMMONLY USED PRESSURE VESSELS:

(*) for Ecomix A

	8x35	8x44	10x35	10x54	12x52	13x54	14x65	16x65	21x60
Volume of Ecomix (liters)	16	20	24	36	48	60	72	96	144
Flow Capacity (m^3/h)	0,8	0,8	1,2	1,2	1,6	2,0	2,5	3,0	5,5
IX Capacity (kg $CaCO_3$) (*)	0,56	0,7	0,8	1,3	1,7	2,1	2,5	3,3	5,0
Salt Requirement (kg)	1,6	2,0	2,4	3,6	4,8	6,0	7,2	9,6	14,4
Backwash Flow Rate (m^3/h)	0,4	0,4	0,6	0,6	0,9	1,1	1,2	1,6	2,7

Corosex

- Corosex is designed for use in filters to neutralize acidity by increasing the pH value;
- By neutralizing the free carbon dioxide in water, Corosex can correct acidic water conditions and render it less corrosive. Corosex, being a highly reactive magnesium oxide, is used most effectively where pH correction is substantial or high flow conditions are in use. pH correction and media consumption are affected by a number of water chemical variables. Being soluble to acidity, Corosex will slowly dissolve and will need to be replenished periodically;
- On a per weight basis, magnesium oxide can neutralize five times more acidity than can calcium carbonate. This results in greatly reduced chemical usage for the same pH correction. Please note; under certain low flow conditions, Corosex may overcorrect and create a highly basic (high pH) condition;
- Under certain hardness conditions, pH correction can cause hardness minerals to precipitate out of solution, resulting in cementing or solidification of the Corosex mineral bed. Upflow service is generally recommended with hardness exceeding 9 °F. Always use an in-line filter ahead of an upflow system to prevent plugging of the lower distribution screen;
- As Corosex's magnesium oxide neutralizes the water, it will increase hardness and a softener may become necessary after the neutralizing filter;
- Corosex can be effectively combined with Calcite to combine the high flow neutralization properties of Corosex, along with the slower reacting low flow properties of Calcite, reducing potentially high basic properties due to overcorrection;
- High degree of activity and speed of correction allowing high flow;
- High capacity...less chemical usage;
- NSF/ANSI 60 certified;
- Available in 18,7 liters bags.

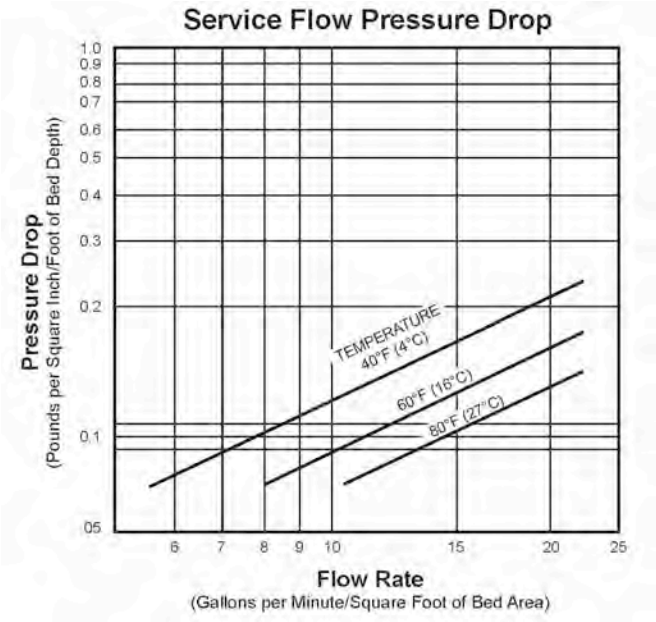
REF.	
RA075	

Corosex

Physical properties	
Colour	Brownish white
Specific gravity (g/l)	3600
Bulk density (g/l)	1200
Effective size (mm)	1,4
Uniformity coefficient	1,7
Composition	MgO 97% min.
Mesh size	6 x 16

Operating conditions	
Bed depth (mm)	600 ÷ 750
Service flow rate ($m^3/h\ m^2$)	12 ÷ 15
Backwash flow rate ($m^3/h\ m^2$)	25 ÷ 30
Backwash bed expansion (%)	≥ 50
pH range	4,5 ÷ 6,0

- Downflow service is generally satisfactory on waters with a hardness of less than 9 °F or where it's combined with Calcite at least 50-50. Upflow service is generally recommended with hardness exceeding 9 °F to prevent cementing of the Corosex bed;
- Use distributors designed for upflow applications;
- A gravel support bed is recommended;
- Backwash frequently to prevent possible cementing;
- Max usage 100 mg/l.



Backwash Bed Expansion

Due to Corosex's high density and large particle size, a new bed is difficult to expand, but it is still imperative to backwash in order to keep the bed clean. Over time, as the media is consumed, the particle size will decrease and backwash bed expansion will begin to occur.

(*) Note: a "Gallon per Minute / Square Foot of Bed Area" is equal to 2,44448 m/h .