Йотова, Цветелина Т.

From: Митева, Емилия Г.
Sent: 13 юли 2020 г. 08:48
To: Йотова, Цветелина Т.
Subject: FW: Индикативно предложение 43889
Attachments: AMBERLITE™ IRN78 OH.PDF; AMBERLITE™ IRN77 H.PDF; AMBERLITE™ IRC120Na.pdf; RAVAGO CHEMICALS BULGARIA, LTD.pdf; Letter to Ravago.24.01.2019.pdf; AMBERLITE IRA96.pdf; Индикативно предложение 43889.pdf

From: Богоева, Юлия К.
Sent: Tuesday, July 7, 2020 8:13 AM
To: Митева, Емилия Г.
Cc: Александров, Пламен Г.; Маринова, Милена Т.
Subject: FW: Индикативно предложение 43889

Ф-3900 / 07.07.2020г

From: Jivko Sashov [mailto:Jivko.Sashov@ravagochemicals.com]
Sent: Monday, July 6, 2020 10:54 PM
To: commercial
Cc: Borislava Dineva
Subject: Индикативно предложение 43889

Здравейте,

Прикачени ще намерите:

1. Индикативно предложение 43889,
2. TDS AMBERLITE™ IRN78 OH,
3. TDS AMBERLITE™ IRN77 H,
4. TDS AMBERLITE IRA96,
5. TDS AMBERLITE™ IRC120Na
6. ISO 9001:2015 RAVAGO CHEMICALS BULGARIA, LTD,
7. Документ за представителство на производителя -Letter to Ravago,

Поздрави,

Jivko Sashov
Country Manager
M. + 359 888 288 447

RAVAGO CHEMICALS BULGARIA EOOD
12 Obelsko Shosse Blvd 1360 Sofia - Bulgaria
www.ravagochemicals.com

Индикативно предложение по проведена пазарна консултация № 43889
с предмет "Доставка на йонообменни смоли Amberlite":

от

Раваго Кемикълс България ЕООД ЕИК202304452
jivko.sashov@ravagochemicals.com, Живко Сашов, Управител

№ по ред	ID	Описание и технически характеристики на предлаганото изделие	К-во	М.ед.	Ед.цена без ДДС	Обща ст-ст
1		Йонообменна смола Amberlite IRN 77 H	10 000	л	**8,99**	**89 900**
2		Йонообменна смола Amberlite IRN 78 OH	5 000	л	**17,20**	**86 000**
3		Йонообменна смола Amberlite IRA 96	5 000	л	**11,60**	**58 000**
4		Йонообменна смола Amberlite IR 120 Na /ново име Ambelite IRC 120Na/	4 000	л	**4,80**	**19 200**

Срок на доставка
Amberlite IRN77 H - 10 седмици от заявка
Amberlite IRN78 OH - 16 седмици от заявка
Amberlite IRA96 - 10 седмици от заявка
Amberlite IRC120 Na - 9 седмици от заявка
Условие на доставка DDP Козлодуй
Срок на годност: 3 години, след което е нужна реактивация
Производител: DuPont (ex DOW)
Съпроводителна документация при доставка: TDS, SDS, CaA

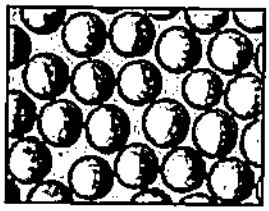
DUPONT

Product Data Sheet

AMBERLITE™ IRN78 OH Ion Exchange Resin

Nuclear-grade, Uniform Particle Size, Gel, Strong Base Anion Exchange Resin for Water Treatment Applications in the Nuclear Power Industry

Description



AMBERLITE™ IRN78 OH Ion Exchange Resin is designed specifically for use in nuclear loops where highest resin purity and stability are required, and where the "as supplied" resin must have a minimum of ionic and non-ionic contamination. These high standards of resin purity enable plants to achieve reliable and safe production whilst reducing the need for equipment maintenance and minimizing the impact of unscheduled outages.

AMBERLITE™ IRN78 OH is recognized as the premier anion resin in nuclear power applications due to its exceptional total exchange capacity and purity. It contains a minimum of 95% of the exchange sites in the hydroxide form and a maximum of 0.05% in the chloride form, and is further processed to minimize total chloride content to help prevent transient chloride levels when new resin is placed into service in both BWR and PWR systems.

The very high total anion exchange capacity can produce a 10 – 15% increase in operating throughput in the intended applications. Since the nuclear-grade resins from these applications are generally disposed of as rad waste, high capacity and long resin bed life are critical to minimizing rad waste disposal cost and volume. For most users, rad waste disposal cost will often exceed resin purchase cost, so high resin capacity directly translates into savings in these non-regenerable nuclear applications. Furthermore, longer bed life means fewer bed change-outs, less work, less resin handling, and less chance for radiation exposure.

The uniform particle size and the absence of fine resin beads result in a lower pressure drop compared to conventional resins. The particle size of AMBERLITE™ IRN78 OH is specifically designed to give an optimized balance of pressure drop, exchange kinetics, and resistance to separation from the cation exchange resins, AMBERLITE™ IRN99 H Ion Exchange Resin and AMBERLITE™ IRN97 H Ion Exchange Resin, when used in a mixed bed.

Applications

- Primary water treatment:
  - Primary coolant purification
  - Treatment of primary coolant blowdown
  - Control of reactor coolant chemistry by removing boron
- Fuel pool purification in single bed VVER systems
- Rad waste treatment and decontamination:
  - Removal of anionic radioactive material
- PWR steam generation blowdown (APG)
- BWR condensate polishing

Form No. 177-03752, Rev. 2
June 2019

Purity

AMBERLITE™ IRN Ion Exchange Resins are manufactured as nuclear-grade using specific procedures throughout the manufacturing process to keep the inorganic impurities at the lowest possible level. Special treatment procedures are also utilized to remove traces of soluble organic compounds to meet the rigorous demands of the nuclear industry. These high standards of resin purity will help keep nuclear systems free of contaminants and deposits, and prevent increases in radioactivity levels due to activation of impurities in the reactor core. IRN resins are recommended in both non-regenerable and regenerable single bed or mixed bed applications where reliable production of the highest quality water is required and where the "as supplied" resin must have an absolute minimum of ionic and non-ionic contamination.

Historical Reference

AMBERLITE™ IRN78 OH Ion Exchange Resin has previously been sold as AMBERLITE™ IRN78 Ion Exchange Resin.

Typical Properties

Physical Properties	
Copolymer	Styrene-divinylbenzene
Matrix	Gel
Type	Strong base anion
Functional Group	Trimethylammonium
Physical Form	Amber, translucent, spherical beads
Chemical Properties	
Ionic Form as Shipped	OH^-
Total Exchange Capacity	≥ 1.20 eq/L (OH^- form)
Water Retention Capacity	54.0 – 60.0% (OH^- form)
Ionic Conversion	
OH^-	≥ 95%
CO_3^{2-}	≤ 5%
Cl^-	≤ 0.05%
SO_4^{2-}	≤ 0.1%
Particle Size [§]	
Particle Diameter	630 ± 50 µm
Uniformity Coefficient	≤ 1.10
< 300 µm	≤ 0.2%
< 425 µm	≤ 0.5%
> 1180 µm	≤ 2.0%
Purity	
Metals, dry basis:	
Na	≤ 20 mg/kg
K	≤ 20 mg/kg
Fe	≤ 20 mg/kg
Cu	≤ 5 mg/kg
Co	≤ 5 mg/kg
Ca	≤ 10 mg/kg
Mg	≤ 10 mg/kg
Al	≤ 10 mg/kg
Hg	≤ 20 mg/kg
Heavy Metals (as Pb)	≤ 10 mg/kg
Other, dry basis:	
Cl	≤ 250 mg/kg
SiO_2	≤ 10 mg/kg
Stability	
Whole Uncracked Beads	≥ 95%
Friability:	
Average	≥ 600 g/bead
> 200 g/bead	≥ 95%
Solubility in Water	≤ 0.10%
Density	
Shipping Weight	690 g/L

[§] For additional particle size information, please refer to the Particle Size Distribution Cross Reference Chart (Form No. 177-01775).

Form No. 177-03752, Rev. 2
June 2019

Suggested Operating Conditions

Temperature Range (OH^- form) ‡	5–100°C (41–212°F)
pH Range (Stable)	0–14

‡ Operating at elevated temperatures, for example above 60–70°C (140–158°F), may impact the purity of the loop and resin life. Contact our technical representative for details.

For additional information regarding recommended minimum bed depth, operating conditions, and regeneration conditions for mixed beds (Form No. 177-03705) or separate beds (Form No. 177-03729) in water treatment, please refer to our Tech Facts.

Hydraulic Characteristics

Estimated bed expansion of AMBERLITE™ IRN78 OH Ion Exchange Resin as a function of backwash flowrate and temperature is shown in Figure 1.

Estimated pressure drop for AMBERLITE™ IRN78 OH as a function of service flowrate and temperature is shown in Figure 2. These pressure drop expectations are valid at the start of the service run with clean water.

Figure 1: Backwash Expansion
Temperature = 10–60°C (50–140°F)

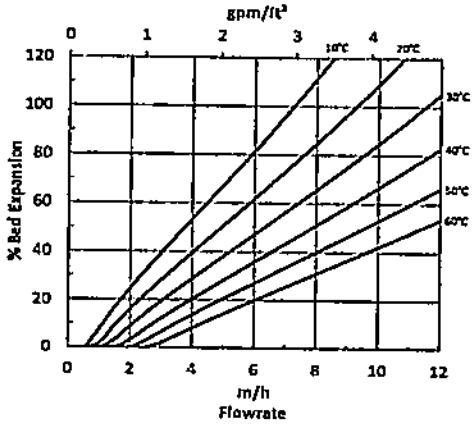
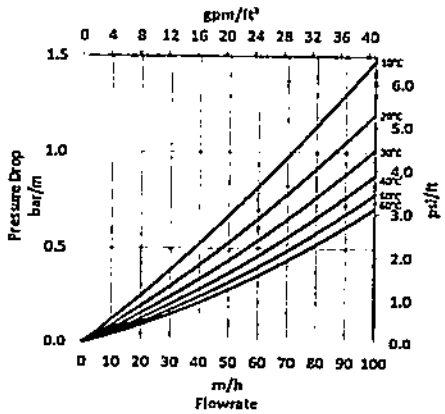


Figure 2: Pressure Drop
Temperature = 10–60°C (50–140°F)



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Customer Notice

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Please be aware of the following:

- **WARNING:** Oxidizing agents such as nitric acid attack organic ion exchange resins under certain conditions. This could lead to anything from slight resin degradation to a violent exothermic reaction (explosion). Before using strong oxidizing agents, consult sources knowledgeable in handling such materials.

Have a question? Contact us at:

www.dupont.com/water/contact-us

Form No. 177-03752, Rev. 2
June 2019

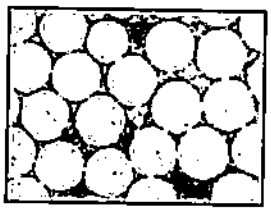
DUPONT

Product Data Sheet

AMBERLITE™ IRA96 Ion Exchange Resin

Gaussian, Macroporous, Weak Base Anion Exchange Resin for Industrial Demineralization Applications

Description



AMBERLITE™ IRA96 Ion Exchange Resin is a general-purpose demineralization resin with a long-established track record of reliable performance in the industry. This durable resin offers a good balance of capacity and strength resulting in long lifetime for co-flow regenerated systems in industrial water treatment.

Weak base anion resins are well-suited for use with strong base anion resins to improve overall efficiency and throughput of a demineralization system. It effectively removes mineral acids and organics, reducing the ionic load on the strong base anion resin and also protecting it from organic fouling. The weak base anion resin increases a system's overall capacity to remove organics.

AMBERLITE™ IRA96 has excellent physical and thermal stability. The macroporous structure allows for easy release of natural organic molecules providing high organic fouling resistance.

Applications

- Demineralization, ideally when treating water with:
  - High organic fouling potential
  - High percentage of mineral acidity (FMA)
- Partial demineralization when weak acid removal is not required

System Designs

- Co-current

Form No. 177-03806, Rev. 1
June 2019

Typical Properties

Physical Properties	
Copolymer	Styrene-divinylbenzene
Matrix	Macroporous
Type	Weak base anion
Functional Group	Tertiary amine
Physical Form	White to tan, opaque, spherical beads
Chemical Properties	
Ionic Form as Shipped	Free base (FB)
Total Exchange Capacity	≥ 1.3 eq/L (FB form)
Water Retention Capacity	59.0 – 65.0% (FB form)
Particle Size [5]	
Particle Diameter	550 – 750 µm
Uniformity Coefficient	≤ 1.6
< 300 µm	≤ 1.0%
> 1180 µm	≤ 1.0%
Stability	
Whole Uncracked Beads	≥ 95%
Swelling	FB → HCl: 15%
Density	
Particle Density	1.05 g/mL
Shipping Weight	670 g/L

[5] For additional particle size information, please refer to the Particle Size Distribution Cross Reference Chart (Form No. 177-01775).

Suggested Operating Conditions

Temperature Range (FB form)	5 – 60°C (41 – 140°F)
pH Range	
Service Cycle	0 – 6
Stable	0 – 14

For additional information regarding recommended minimum bed depth, operating conditions, and regeneration conditions for separate beds (Form No. 177-03729) in water treatment, please refer to our Tech Fact.

Form No. 177-03806, Rev. 1
June 2019

Hydraulic Characteristics

Estimated bed expansion of AMBERLITE™ IRA96 Ion Exchange Resin as a function of backwash flowrate and temperature is shown in Figure 1.

Estimated pressure drop for AMBERLITE™ IRA96 as a function of service flowrate and temperature is shown in Figure 2. These pressure drop expectations are valid at the start of the service run with clean water and a well-classified bed.

Figure 1: Backwash Expansion
Temperature = 10–60°C (50–140°F)

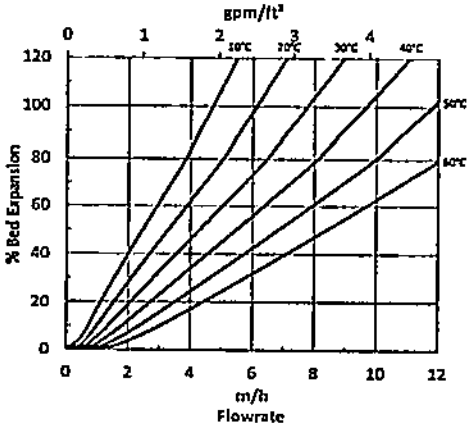
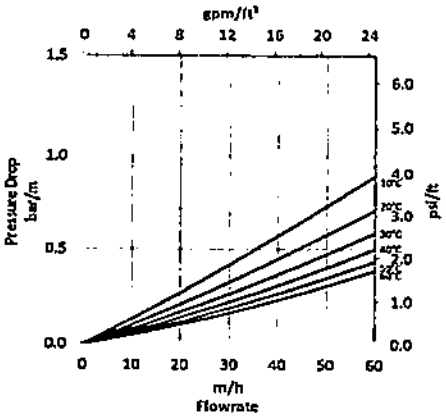


Figure 2: Pressure Drop
Temperature = 10–60°C (50–140°F)



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Please be aware of the following:

- **WARNING:** Oxidizing agents such as nitric acid attack organic ion exchange resins under certain conditions. This could lead to anything from slight resin degradation to a violent exothermic reaction (explosion). Before using strong oxidizing agents, consult sources knowledgeable in handling such materials.

Form No. 177-03806, Rev. 1
June 2019

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www.dupont.com/water/contact-us

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Form No. 177-03806, Rev. 1
June 2019

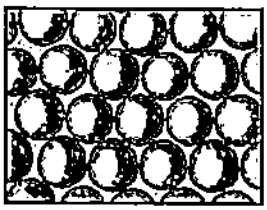
DUPONT

Product Data Sheet

AMBERLITE™ IRN77 H Ion Exchange Resin

Nuclear-grade, Uniform Particle Size, Gel, Strong Acid Cation Exchange Resin for Water Treatment Applications in the Nuclear Power Industry

Description



AMBERLITE™ IRN77 H Ion Exchange Resin is designed specifically for use in nuclear loops where highest resin purity and stability are required, and where the "as supplied" resin must have a minimum of ionic and non-ionic contamination. These high standards of resin purity enable plants to achieve reliable and safe production whilst reducing the need for equipment maintenance and minimizing the impact of unscheduled outages.

AMBERLITE™ IRN77 H is a high capacity, 8% DVB cation resin used to remove cations for purification and pH control in primary water treatment. It contains a minimum of 99% of its exchange sites in the hydrogen form. The uniform particle size and the absence of fine resin beads result in a lower pressure drop compared to conventional resins.

Applications

- Primary water treatment:
  - Primary coolant purification
  - Treatment of primary coolant blowdown
  - Control of reactor coolant chemistry by removing excess ^{7}Li, potassium, or ammonium
- Fuel pool purification in single bed VVER systems
- Rad waste treatment and decontamination:
  - Removal of radioactive cations such as ^{137}Cs and cobalt isotopes
- PWR steam generation blowdown (APG)

Purity

AMBERLITE™ IRN Ion Exchange Resins are manufactured as nuclear-grade using specific procedures throughout the manufacturing process to keep the inorganic impurities at the lowest possible level. Special treatment procedures are also utilized to remove traces of soluble organic compounds to meet the rigorous demands of the nuclear industry. These high standards of resin purity will help keep nuclear systems free of contaminants and deposits, and prevent increases in radioactivity levels due to activation of impurities in the reactor core. IRN resins are recommended in both non-regenerable and regenerable single bed or mixed bed applications where reliable production of the highest quality water is required and where the "as supplied" resin must have an absolute minimum of ionic and non-ionic contamination.

Historical Reference

AMBERLITE™ IRN77 H Ion Exchange Resin has previously been sold as AMBERLITE™ IRN77 Ion Exchange Resin.

Form No. 177-03749, Rev. 1
June 2019

Typical Properties

Physical Properties	
Copolymer	Styrene-divinylbenzene
Matrix	Gel
Type	Strong acid cation
Functional Group	Sulfonic acid
Physical Form	Amber, translucent, spherical beads
Chemical Properties	
Ionic Form as Shipped	H^+
Total Exchange Capacity	≥ 1.90 eq/L (H^+ form)
Water Retention Capacity	49.0–55.0% (H^+ form)
Ionic Conversion	
H^+	≥ 99%
Particle Size [5]	
Particle Diameter	650 ± 50 µm
Uniformity Coefficient	≤ 1.20
<300 µm	≤ 0.2%
<425 µm	≤ 5.0%
>1180 µm	≤ 2.0%
Purity	
Metals, dry basis:	
Na	≤ 20 mg/kg
K	≤ 20 mg/kg
Fe	≤ 20 mg/kg
Cu	≤ 5 mg/kg
Co	≤ 5 mg/kg
Ca	≤ 10 mg/kg
Mg	≤ 10 mg/kg
Al	≤ 10 mg/kg
Hg	≤ 20 mg/kg
Heavy Metals (as Pb)	≤ 10 mg/kg
Stability	
Whole Uncracked Beads	≥ 95%
Friability:	
Average	≥ 400 g/bead
>200 g/bead	≥ 95%
Solubility in Water	≤ 0.10%
Density	
Shipping Weight	800 g/L

[5] For additional particle size information, please refer to the Particle Size Distribution Cross Reference Chart (Form No. 177-01775).

Suggested Operating Conditions

Temperature Range (H^+ form)	5–150°C (41–302°F)
pH Range (Stable)	0–14

For additional information regarding recommended minimum bed depth, operating conditions, and regeneration conditions for mixed beds (Form No. 177-03705) or separate beds (Form No. 177-03729) in water treatment, please refer to our Tech Facts.

Form No. 177-03749, Rev. 1
June 2019

Hydraulic Characteristics

Estimated bed expansion of AMBERLITE™ IRN77 H Ion Exchange Resin as a function of backwash flowrate and temperature is shown in Figure 1.

Estimated pressure drop for AMBERLITE™ IRN77 H as a function of service flowrate and temperature is shown in Figure 2. These pressure drop expectations are valid at the start of the service run with clean water.

Figure 1: Backwash Expansion
Temperature = 10–60°C (50–140°F)

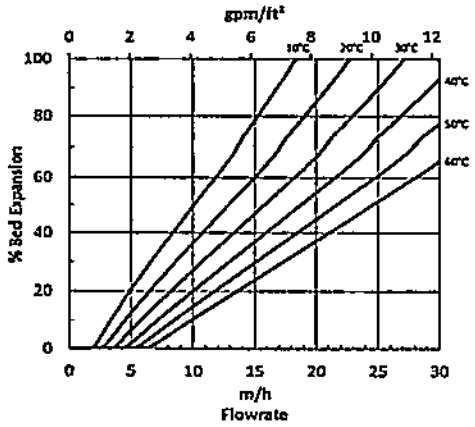
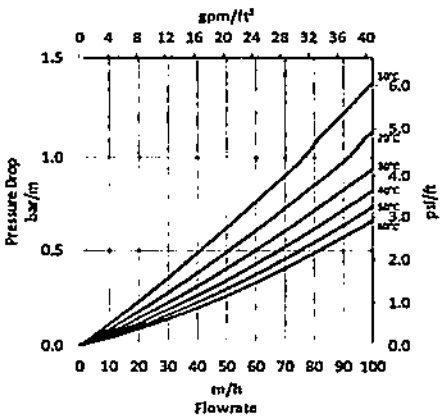


Figure 2: Pressure Drop
Temperature = 10–60°C (50–140°F)



Product Stewardship

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Form No. 177-03749, Rev. 1
June 2019

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www.dupont.com/water/contact-us

DUPONT™

Form No. 177-03749, Rev. 1
June 2019

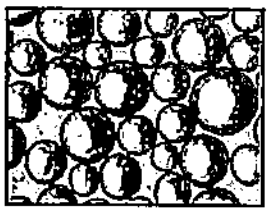
DUPONT

Product Data Sheet

AMBERLITE™ IRC120 Na Ion Exchange Resin

Gaussian, Gel, Strong Acid Cation Exchange Resin for Industrial Softening Applications

Description



AMBERLITE™ IRC120 Na Ion Exchange Resin is a general-purpose softening resin with a long-established track record of reliable performance in the industry. This durable resin offers a good balance of capacity and strength resulting in long lifetime for co-flow regenerated systems in industrial water treatment.

AMBERLITE™ IRC120 Na is available for demineralization applications when the sodium-form is preferred by the user.

Applications

- Industrial softening
- Demineralization (when the sodium-form is preferred by the user)

System Designs

- Co-current

Historical Reference

AMBERLITE™ IRC120 Na Ion Exchange Resin has previously been sold as AMBERLITE™ IR120 Na Ion Exchange Resin.

Typical Properties

Physical Properties	
Copolymer	Styrene-divinylbenzene
Matrix	Gel
Type	Strong acid cation
Functional Group	Sulfonic acid
Physical Form	Amber, translucent, spherical beads
Chemical Properties	
Ionic Form as Shipped	Na^+
Total Exchange Capacity	≥ 2.0 eq/L (Na^+ form)
Water Retention Capacity	42.0 – 49.0% (Na^+ form)
Particle Size [§]	
< 300 µm	≤ 2.0%
> 1180 µm	≤ 4.0%
Stability	
Swelling	$Na^+ \rightarrow H^+$ ≤ 11%
Density	
Particle Density	1.27 g/mL
Shipping Weight	820 g/L

[§] For additional particle size information, please refer to the Particle Size Distribution Cross Reference Chart (Form No. 177-01775).

Form No. 177-03802, Rev. 2
June 2019

Suggested Operating Conditions

Temperature Range (Na^+ form)	5 – 150°C (41 – 302°F)
pH Range	
Service Cycle	1 – 14
Stable	0 – 14

For additional information regarding recommended minimum bed depth, operating conditions, and regeneration conditions for separate beds (Form No. 177-03729) in water treatment, please refer to our Tech Fact.

Hydraulic Characteristics

Estimated bed expansion of AMBERLITE™ IRC120 Na Ion Exchange Resin as a function of backwash flowrate and temperature is shown in Figure 1.

Estimated pressure drop for AMBERLITE™ IRC120 Na as a function of service flowrate and temperature is shown in Figure 2. These pressure drop expectations are valid at the start of the service run with clean water and a well-classified bed.

Figure 1: Backwash Expansion
Temperature = 10 – 60°C (50 – 140°F)

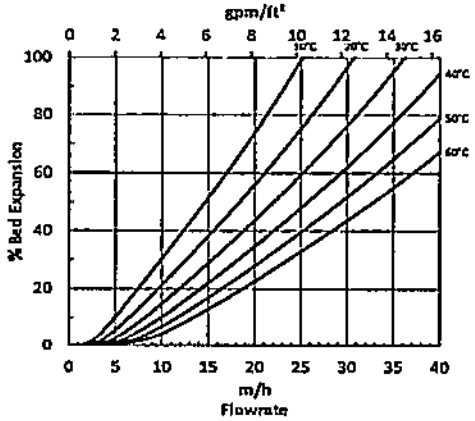
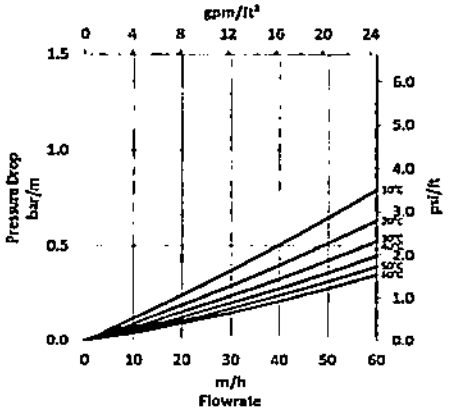


Figure 2: Pressure Drop
Temperature = 10 – 60°C (50 – 140°F)



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Product Stewardship

DuPont has a fundamental concern for all who make, distribute, and use its products, and for the environment in which we live. This concern is the basis for our product stewardship philosophy by which we assess the safety, health, and environmental information on our products and then take appropriate steps to protect employee and public health and our environment. The success of our product stewardship program rests with each and every individual involved with DuPont products— from the initial concept and research, to manufacture, use, sale, disposal, and recycle of each product.

Customer Notice

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Please be aware of the following:

- **WARNING:** Oxidizing agents such as nitric acid attack organic ion exchange resins under certain conditions. This could lead to anything from slight resin degradation to a violent exothermic reaction (explosion). Before using strong oxidizing agents, consult sources knowledgeable in handling such materials.

Have a question? Contact us at:

www.dupont.com/water/contact-us

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Certificate ES18/81987.05

RAVAGO CHEMICALS BULGARIA, LTD

12 Obelsko Shosse, Blvd. Floor 2, District Lulin
1360 Sofia (Bulgaria)

has been assessed as part of the management system of GRUPO RAVAGO CHEMICALS certified organization as meeting the requirements of

ISO 9001:2015

For the following activities

Sale, marketing and distribution of speciality chemicals,feed and food ingredients.

In / from the following sites

12 Obelsko Shosse, Blvd. Floor 2, District Lulin - 1360 Sofia (Bulgaria)

Valid from
25 October 2018 until 13 September 2021.
Issue 1.

This document is part of Certificate ES18/81987.
The validity of this document is subject to the certificate.

Authorized by

Certification Management

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