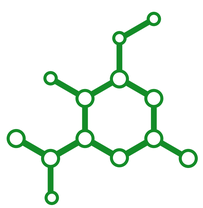
GEYSER

water filters

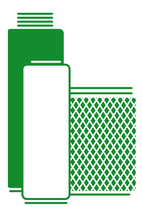
GEYSER
water filters

ARAGON

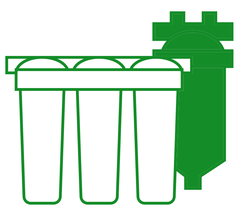
TECHNOLOGIES



MODIFICATIONS



APPLICATION



ADVANTAGES

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TECHNOLOGIES

FILTRATION MATERIAL

QUASI-SOFTENING

TREATMENT METHODS

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water filters

FILTRATION MATERIAL

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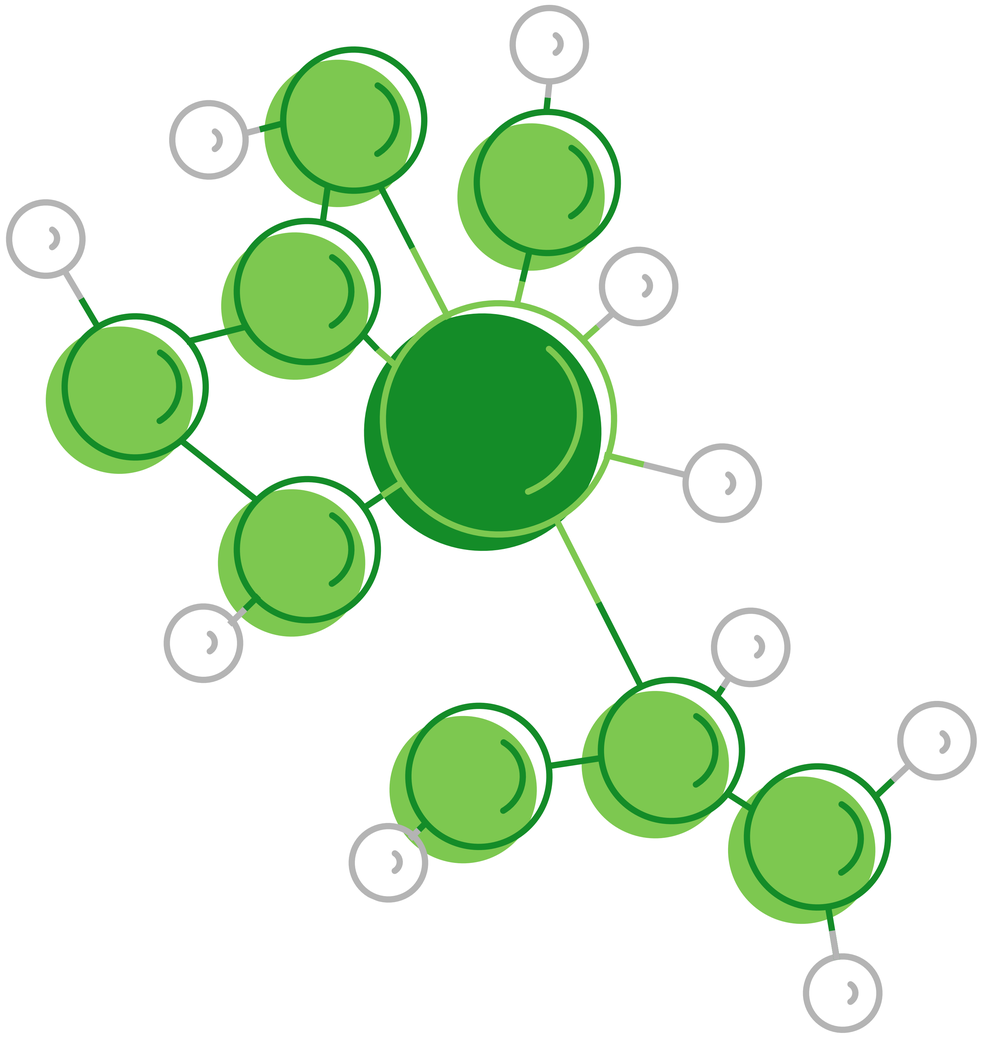
water filters



SGS

SGS – POLYMERS
(SPACE-GLOBULAR- STRUCTURE)

High molecular compounds with cation –
and anion-exchange properties.

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water filters

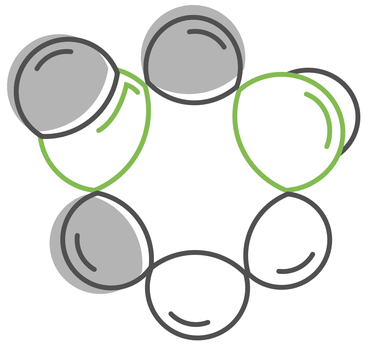
$C_6H_6O_2$
Formula

110,1 g/mol
Molar mass

110 °C
Melting point

1,28 g/cm³
Density

277 °C
Boiling point

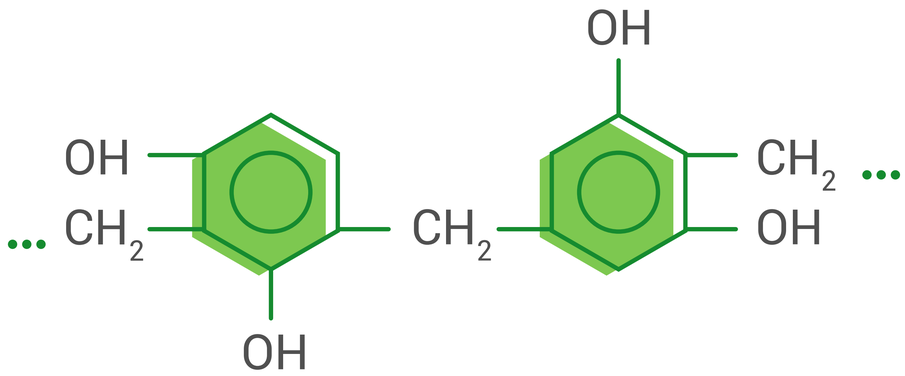


ARAGON

The composite polymeric material structured as a single block combined with silver as a bacteriostatic agent.

Invention Patent:
№ 2286354
№ 2287356
№ 2297270
№ 2299087

Resorcin— m-Dihydroxybenzene



The resorcin-based polymer shows the best results in removing contaminants from water.

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water filters

ARAGON'S STRUCTURE IS FORMED BY MICROGLOBULES

The active ion exchange centers are located on the surface of globules,
which makes filtering by Aragon much faster than by standard ion exchange materials.

1-7 µm

MICROGLOBULE

<

500-700 µm

ION EXCHANGE MATERIAL
standard grain size

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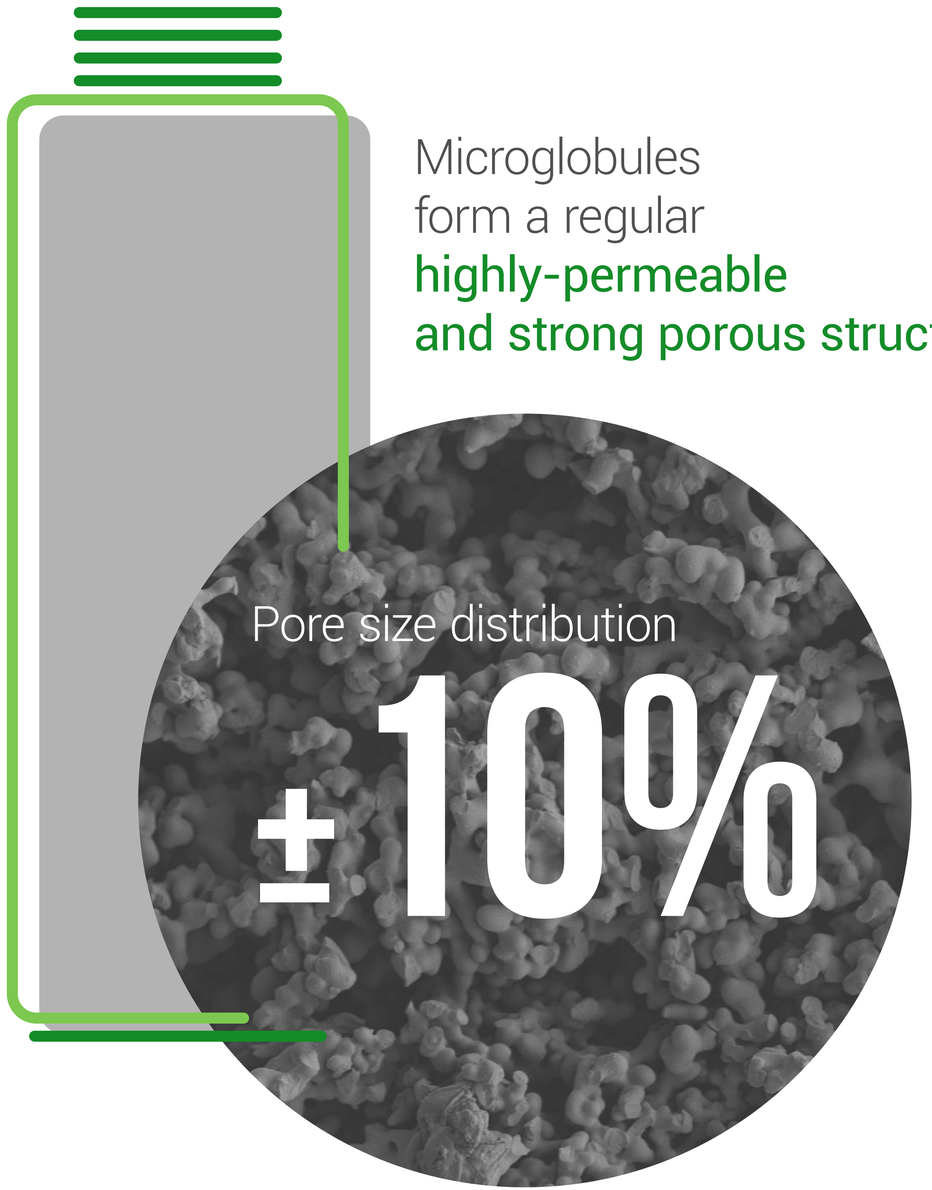
water filters



Microglobules
form a regular
highly-permeable
and strong porous structure.

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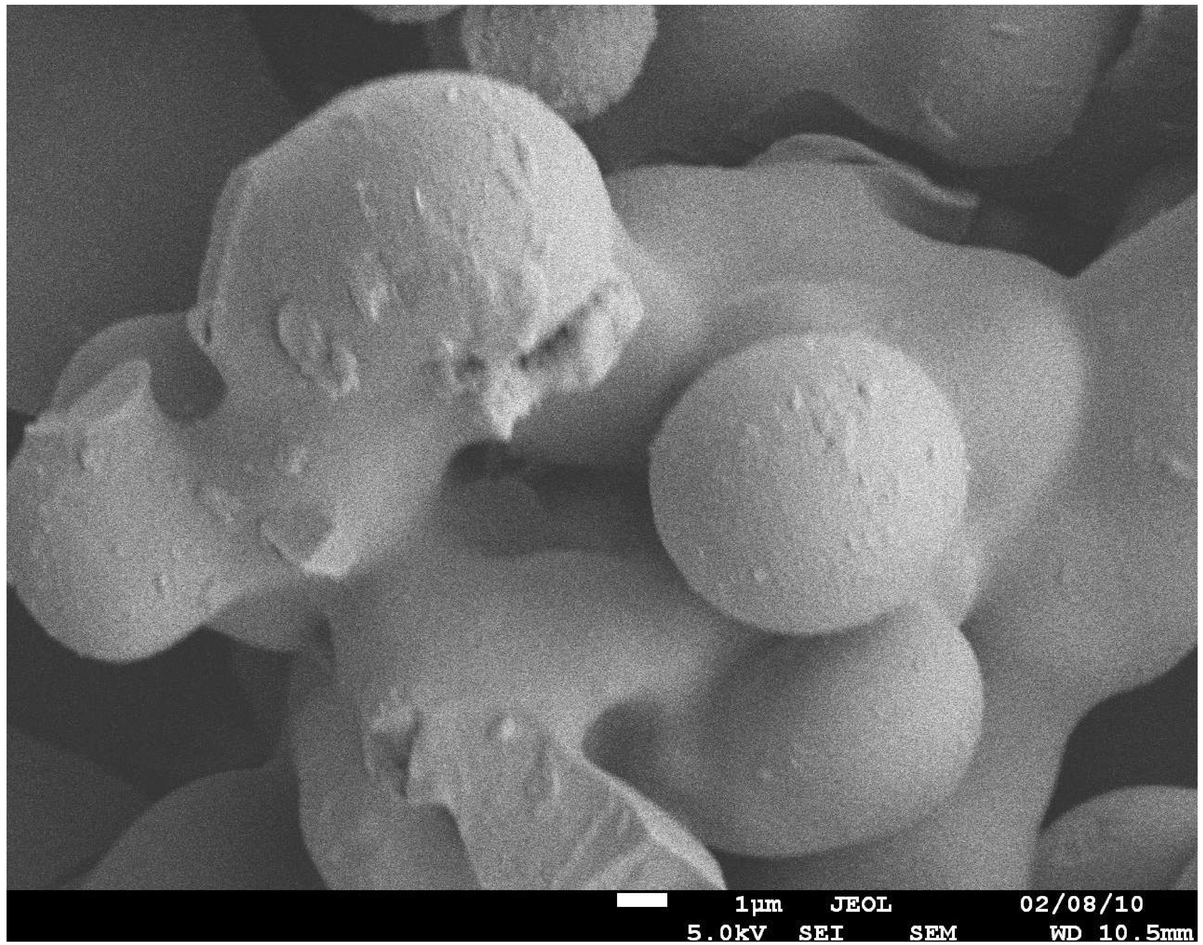
water filters

1 µm



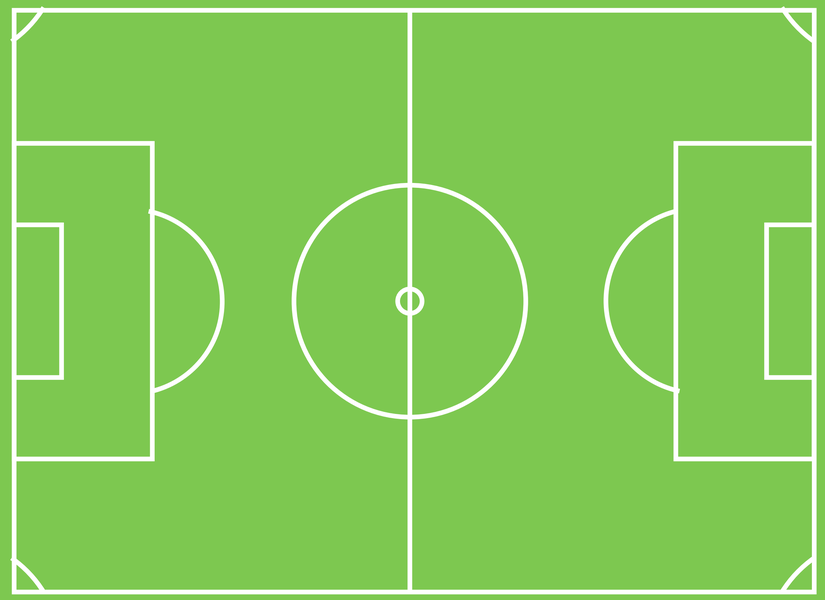
There are active ion-exchange groups on the globules' surface.

MICROGLOBULES

long polymer chains, when connected together, form a mechanically strong structure with a large internal surface area

up to

= 20 m2/g



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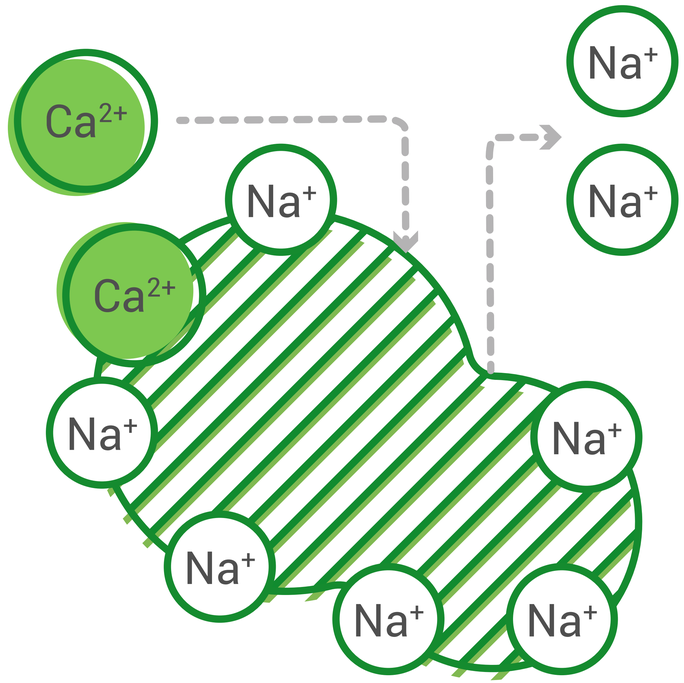
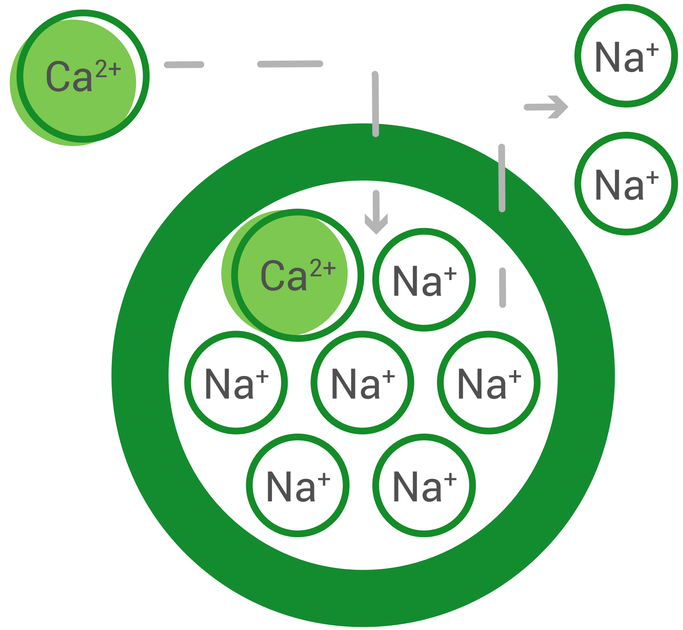
ARAGON



ION-EXCHANGE RESIN



ION EXCHANGE IN ARAGON

occurs on the globules' surface, which is much faster than in regular ion-exchange materials, because there is no diffusion through the grains' protective cover.

SPEED OF ION EXCHANGE IN ARAGON

grows with the speed of the source water flow, because due to the fast replenishment of solution in micropores the ion exhcange process becomes more efficient.

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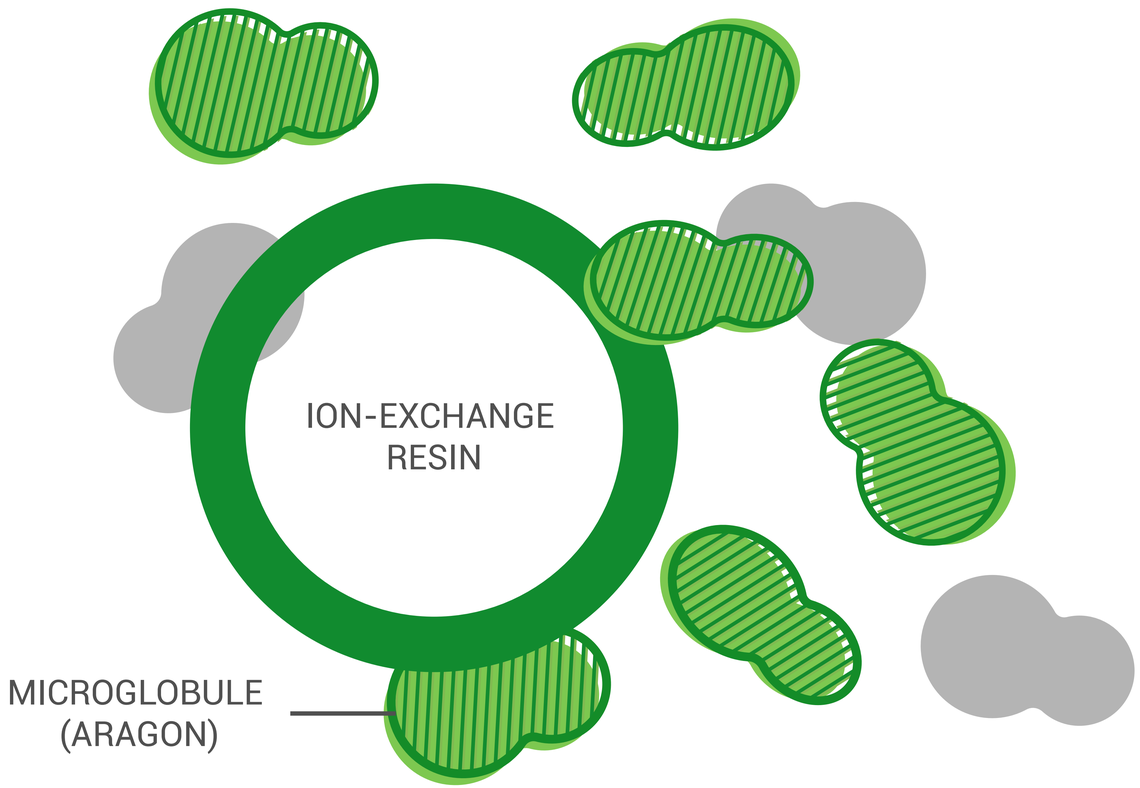
water filters

ARAGON 2



Invention Patent:
№ 57142

Aragon with the increased

by **12-15** times

ion-exchange capacity.
In the process of synthesis the granules of ion-exchange resin are embedded in the polymer.

The resin's particles are held by mechanical and electrokinetic bonds.

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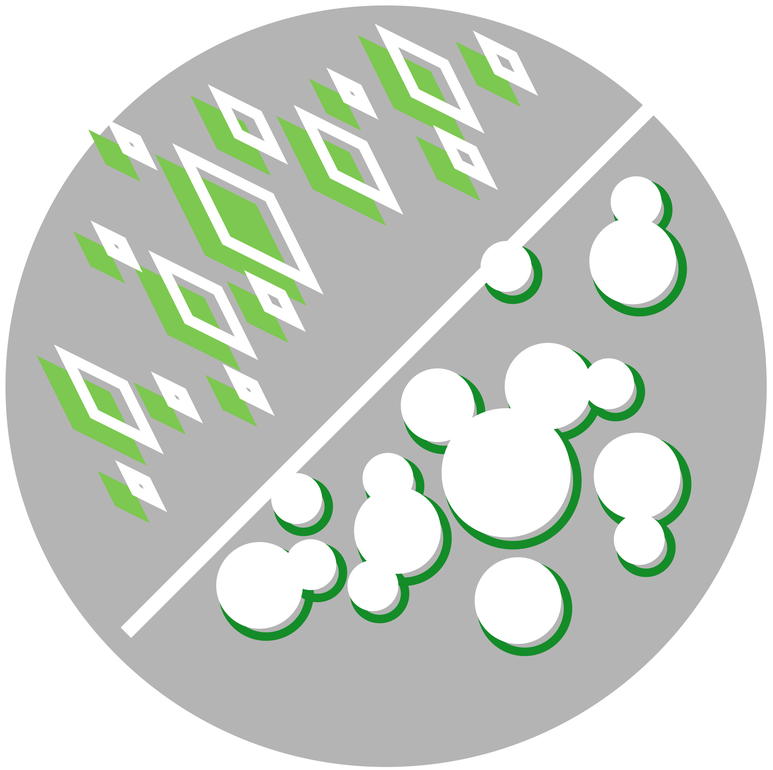
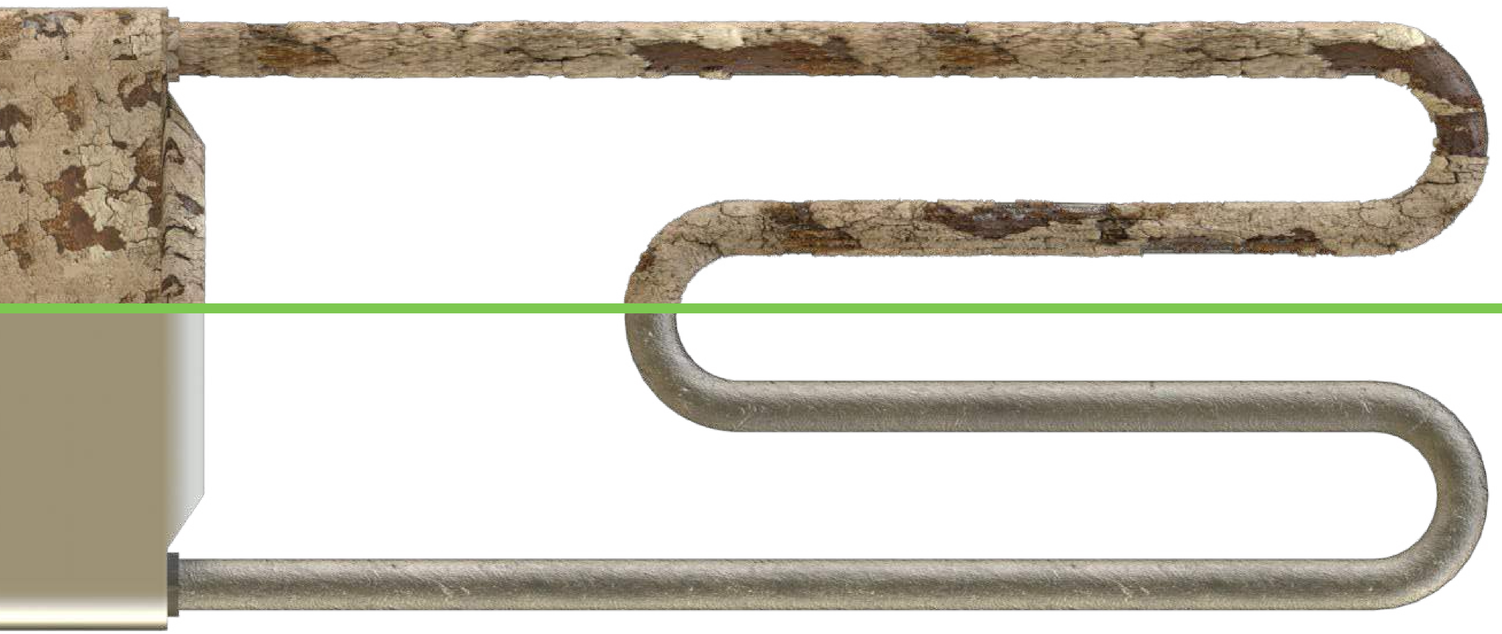
water filters

QUASI-SOFTENING



GEYSER
water filters



NO SCALE BUILD-UP
and even removes the
old limescale.

The experience of long -term use of filters with

ARAGON

for filtering hard water in different Russian regions showed that even when the ion-exchange capacity of the filter is used up, the filtered water causes

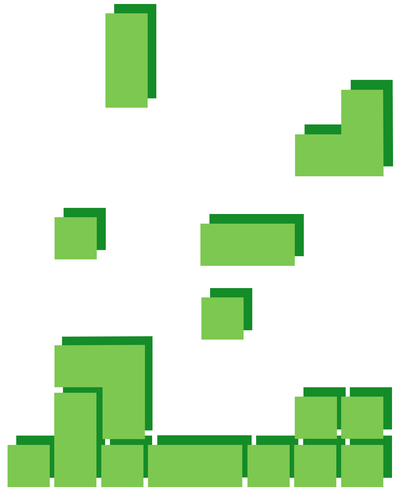
NO SCALE BUILD-UP

and even removes the old limescale.

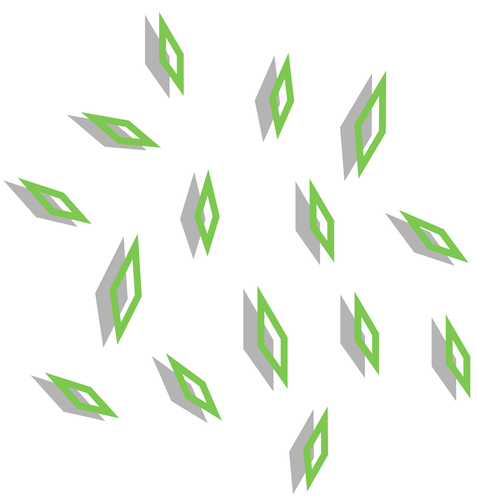
GEYSER
water filters

QUASI-SOFTENING

Invention Patent:
№ 2261843
№ 2286953



Calcite



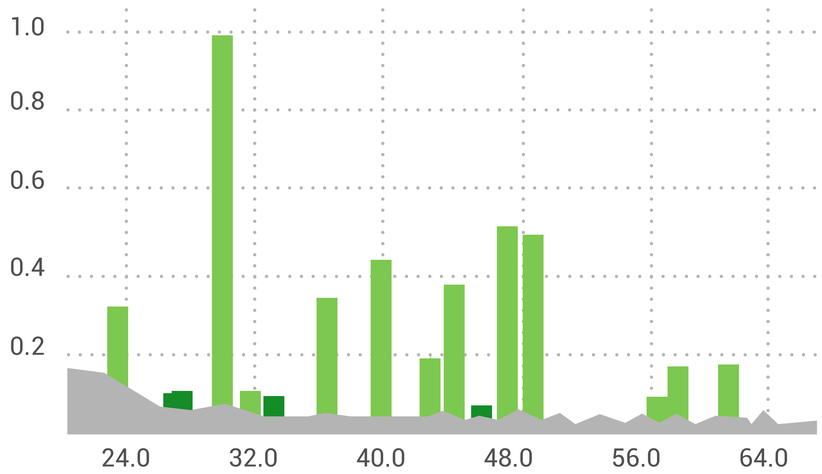
Aragonite

As clusters move in channels between microglobules, the pressure increases and causes a shift of chemical balance resulting in dissolution of carbon dioxide contained in water. This is how conditions for clusters recrystallization from CALCITE to ARAGONITE are created.
The hardness salts exist in water as metastable structures (clusters). At the moment of leaving filter material the pressure grows and then drops rapidly. Carbon dioxide gets released, pH increases, and the chemical balance shifts towards formation of calcium carbonate in the form of aragonite.

GEYSER
water filters

CHANGE OF COMPOSITION OF CARBONATES DISSOLVED IN WATER

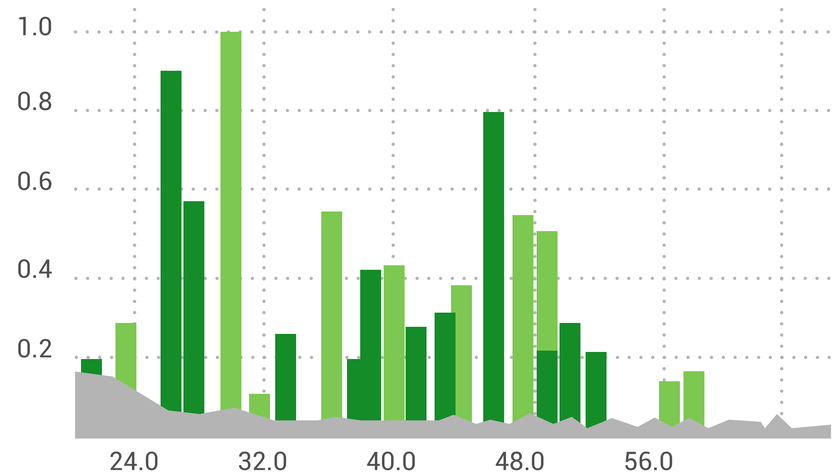
(X-RAY SPECTRAL ANALYSIS RESULTS)



Ordinary hard water:

5% ARAGONITE

95% CALCITE



Filtered water:

40% ARAGONITE

60% CALCITE

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ARAGON FOR PREVENTION OF KIDNEY STONE DISEASE

According to the results of the researches conducted at the Saint Petersburg Military Medical Academy, drinking of hard water filtered with ARAGON leads to reduction of crystals causing stone formation in size and quantity (2). Moreover, the aragonite form of hardness salts contributes to the better calcium absorption, thus facilitating kidneys' work.

1
HARD WATER

2
WATER FILTERED
WITH ARAGON CARTRIDGE

Kirov Military
Medical Academy

GEYSER
water filters

FILTRATION METHODS

4 IN 1

MECHANI CAL FILTRATION

Insoluble impurities

ION EXCHANGE

Hardness salts heavy metals, dissolved contaminants, colloidal iron

SORPTION

Chlorine, organic contaminants, color, taste, odor

DISINFECTION

Removal of bacteria and viruses

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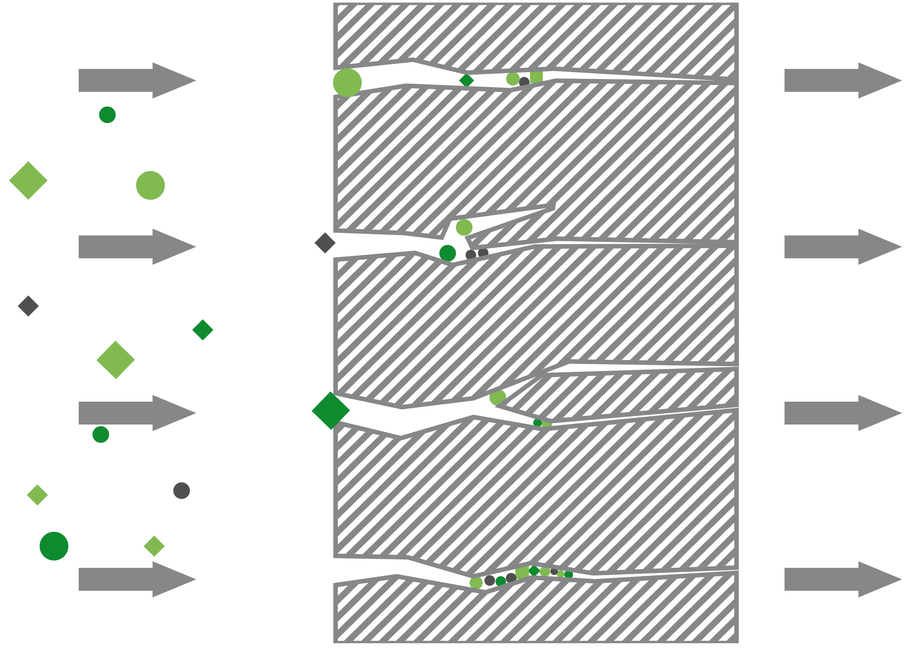
water filters

MECHANI CAL FILTRATION



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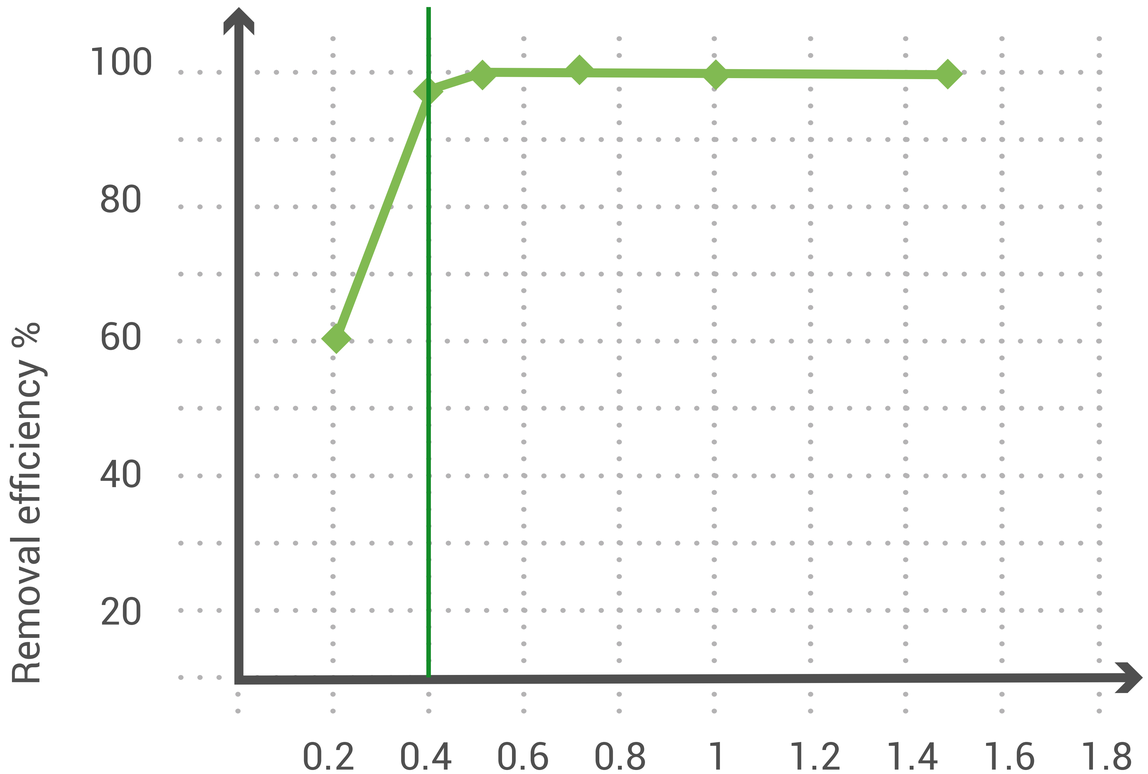
SUSPENDED SOLIDS REMOVAL EFFICIENCY



Effective removal of suspended solids of the target particles' size.

IFTS (International Filter Testing Services), France

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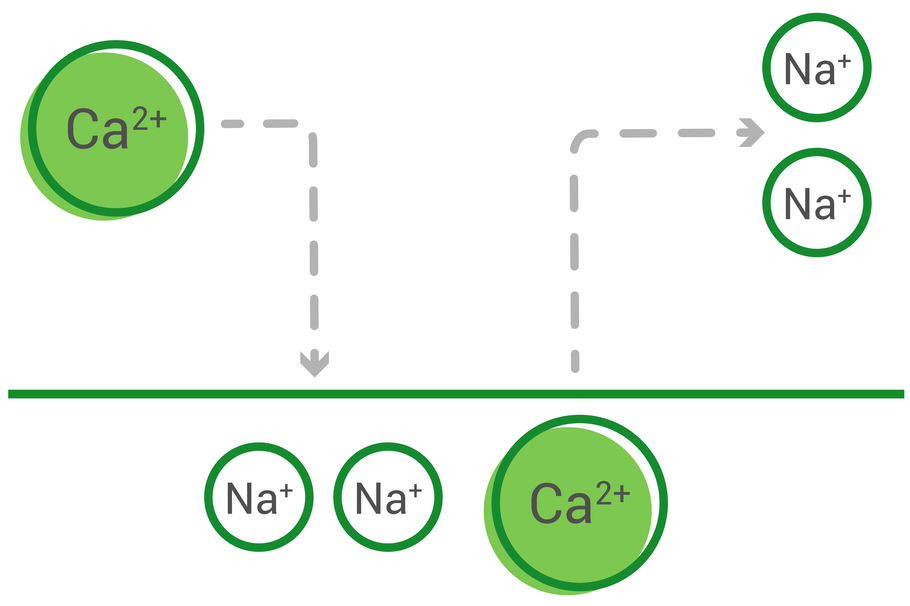
ION EXCHANGE



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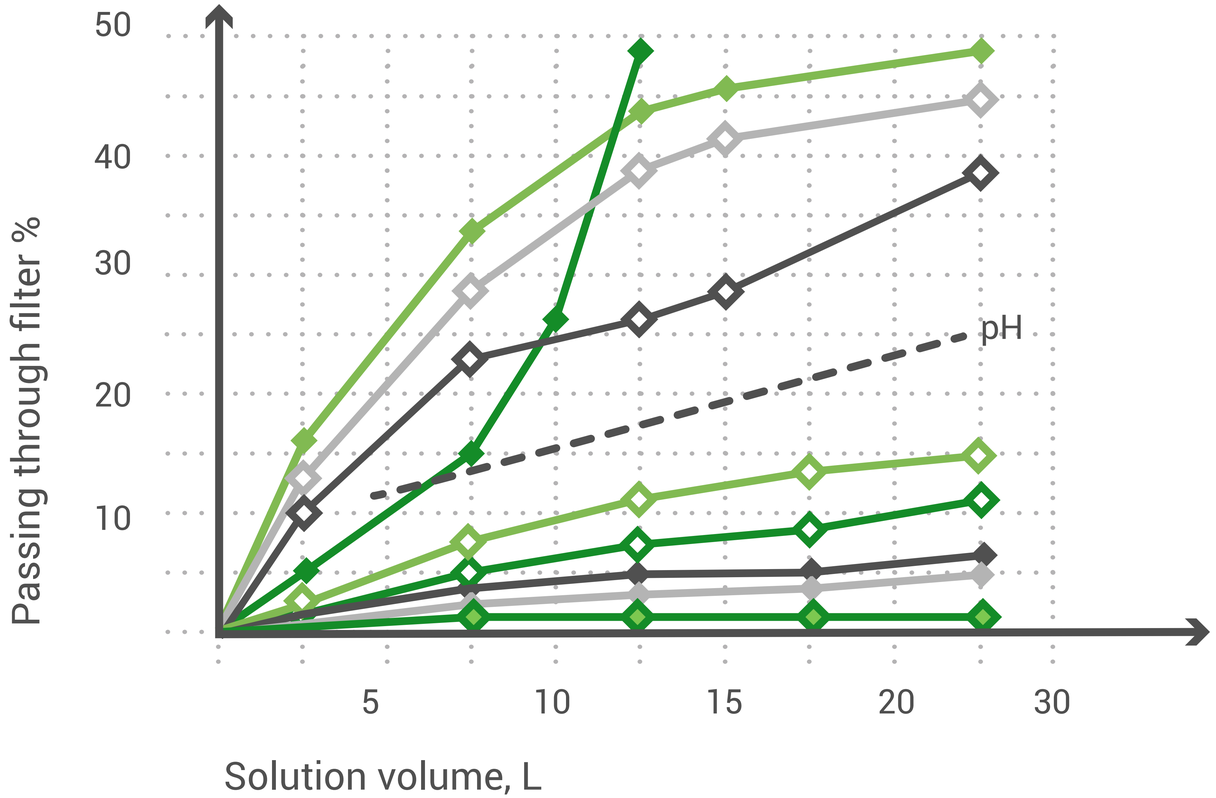
METALS (INCL. RADIOACTIVE) REMOVAL EFFICIENCY



CONCENTRATION OF ELEMENTS IN TEST SOLUTION, MG/L

Ca	Cd	Ni	Mg	V	Fe	Cu	Mo	Al	Pb	Cr	Zn
4.7	0.2	0.6	3.3	0.5	2.7	0.2	2.8	1.4	0.9	0.1	0.3
-	-	10 MAC	3 MAC	10 MAC	30 MAC	10 MAC	6 MAC	MAC	200 MAC	MAC	MAC

V.G. Khlopin
Radium Institute, Russia

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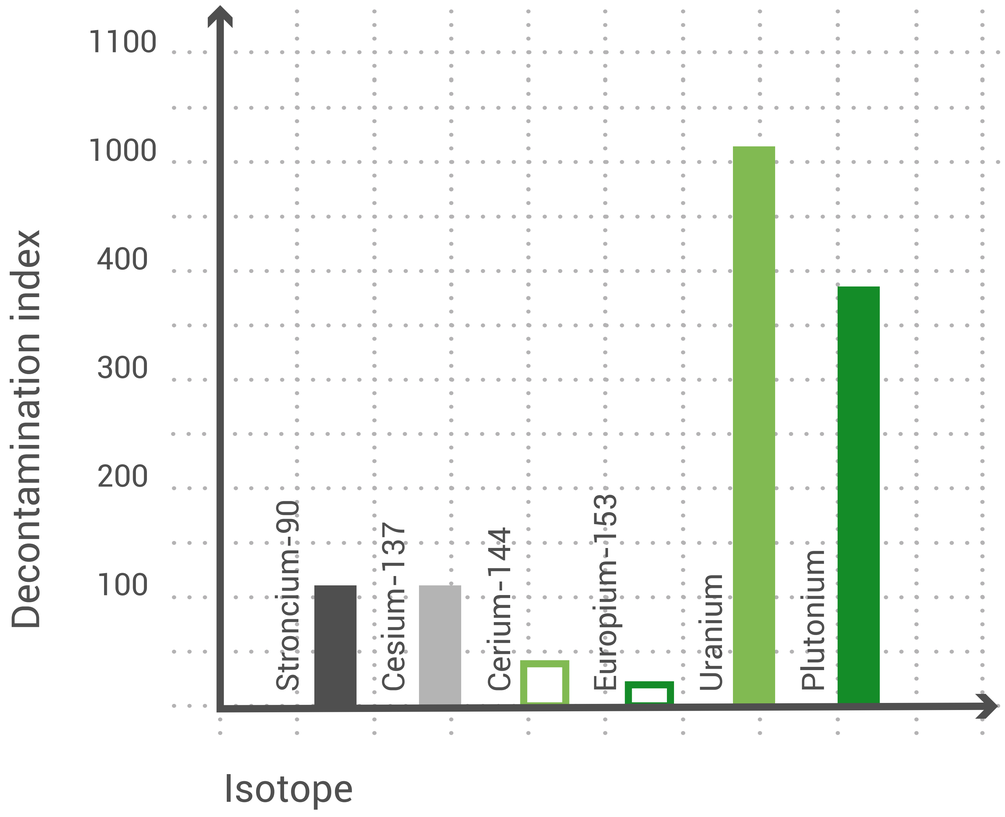
water filters

EFFICIENCY OF TREATMENT OF WATER CONTAMINATED WITH RADIOACTIVE ELEMENTS



V.G. Khlopin
Radium Institute, Russia

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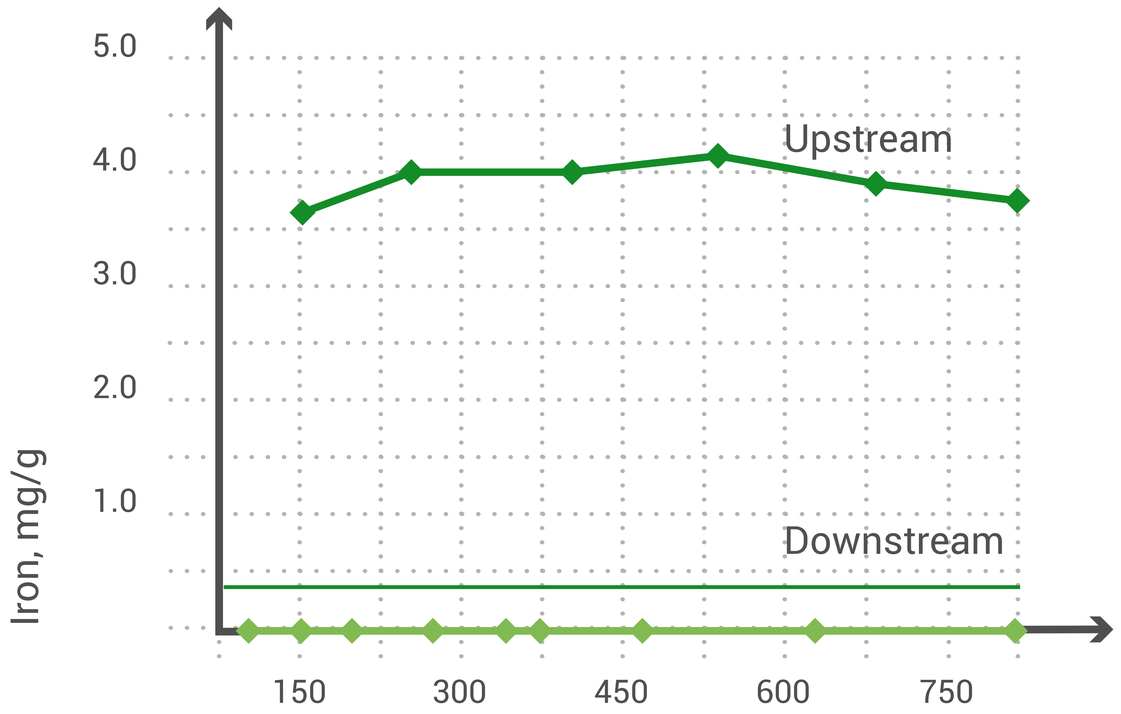
IRON
REMOVAL EFFICIENCY



IFTS (International
Filter Testing Services), France

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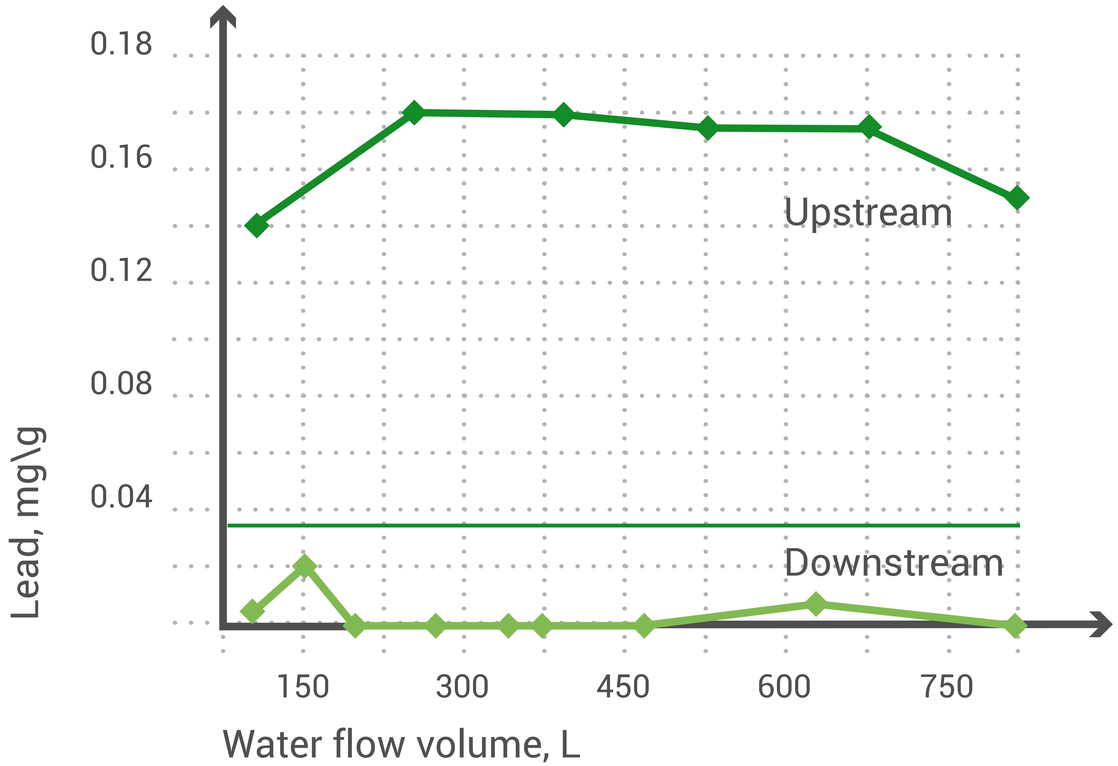
LEAD
REMOVAL EFFICIENCY



IFTS (International
Filter Testing Services), France

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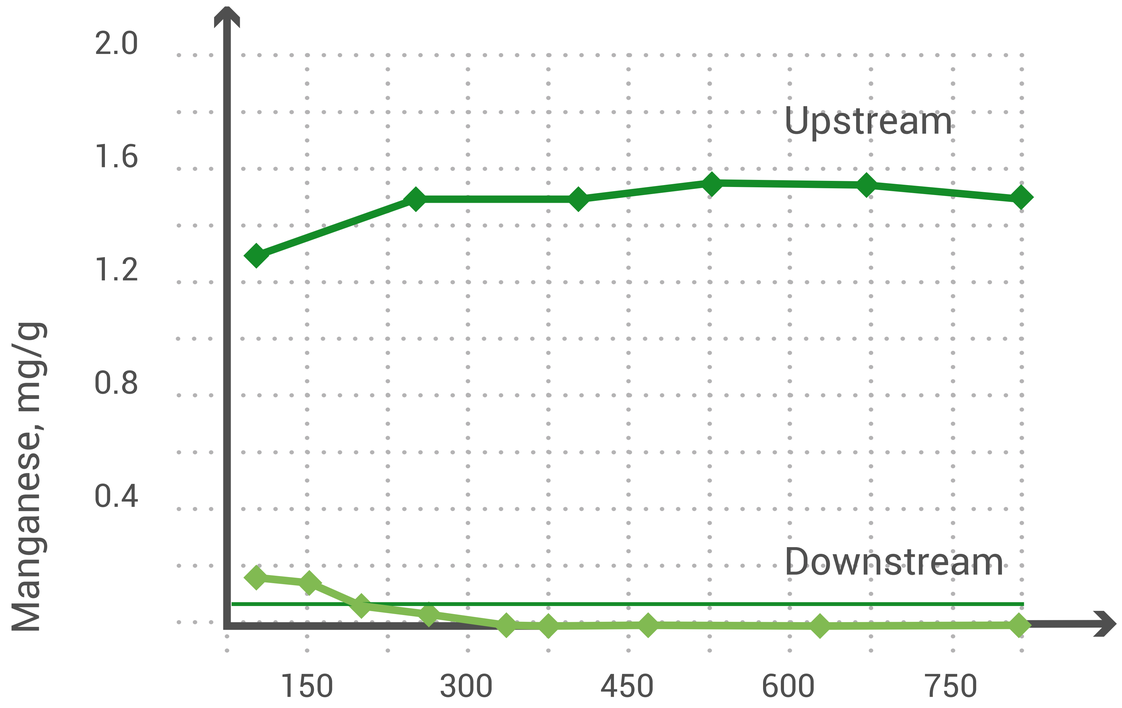
MANGANESE REMOVAL EFFICIENCY



IFTS (International
Filter Testing Services), France

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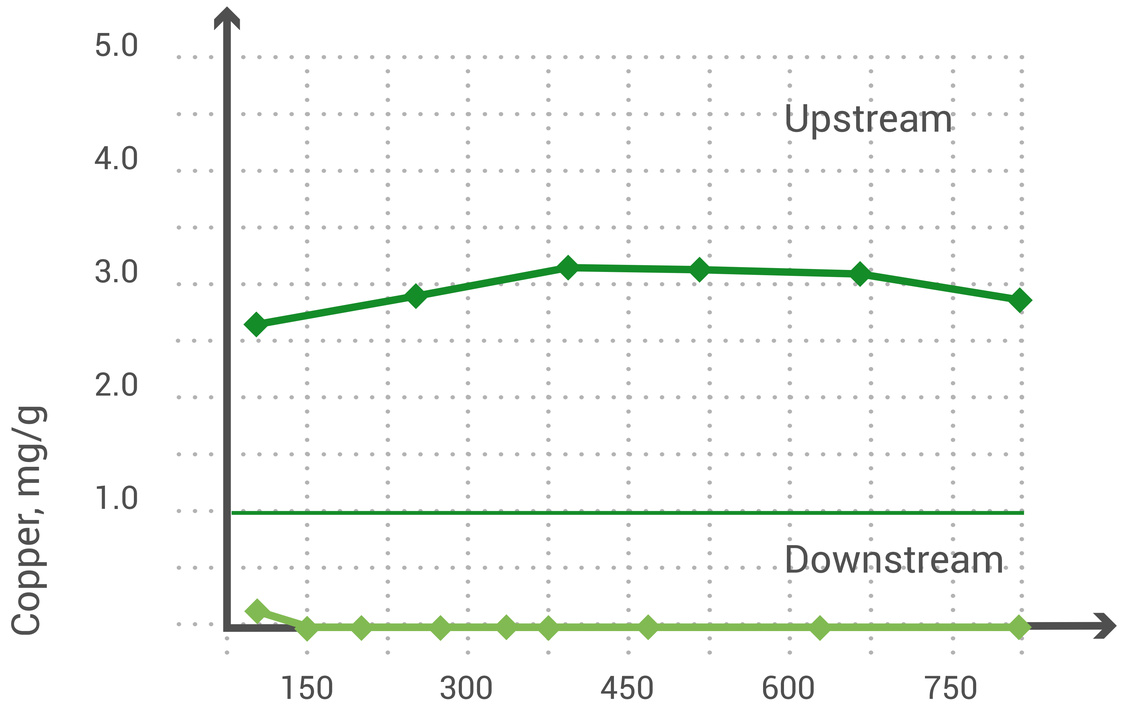
COPPER
REMOVAL EFFICIENCY



IFTS (International
Filter Testing Services), France

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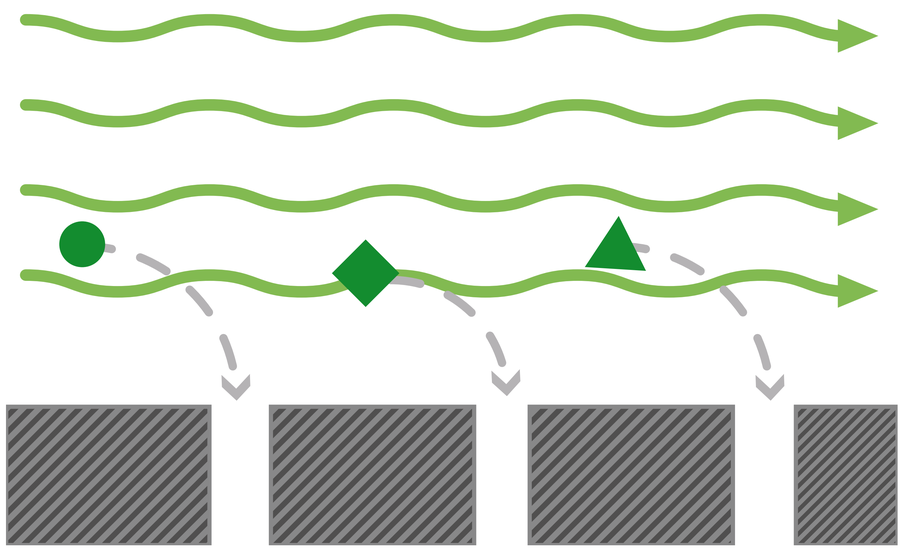
SORPTION

SORPTION PROPERTIES OF ARAGON



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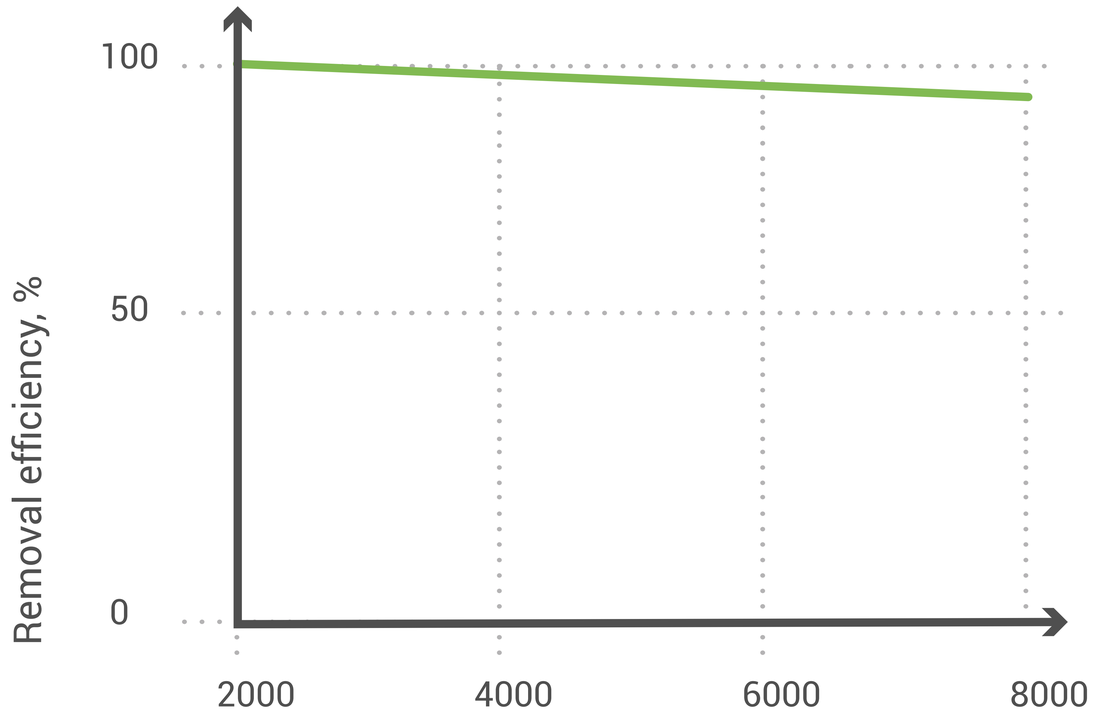
FREE
CHLORINE REMOVAL



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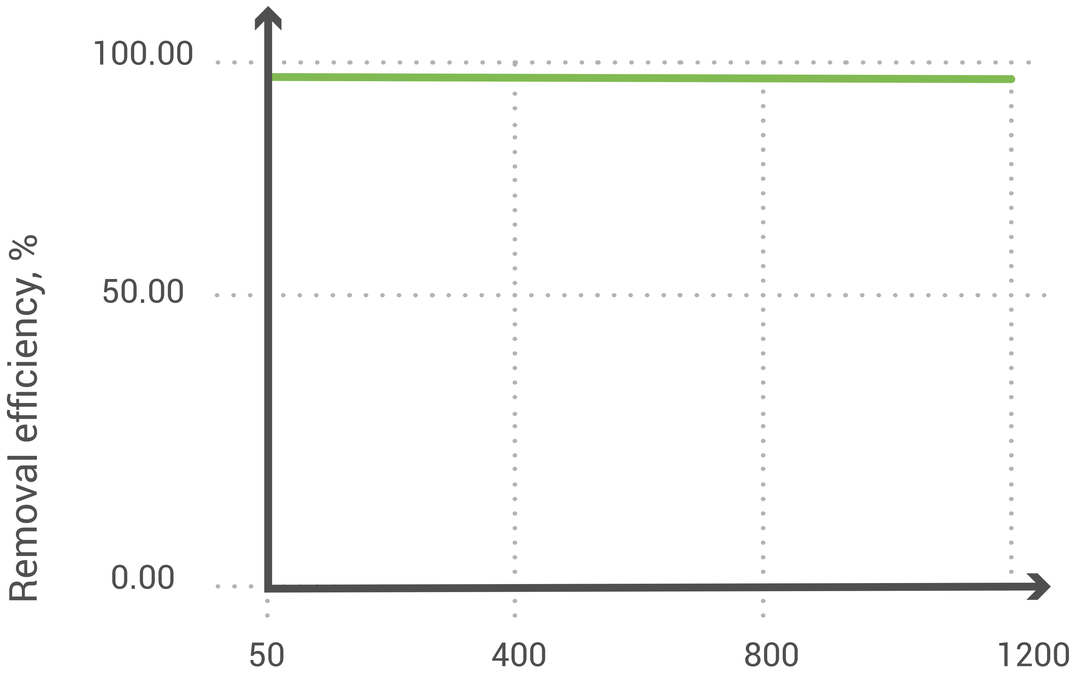
PESTICIDES REMOVAL EFFICIENCY

(FOR SIMAZINE)



FILTERE D WATER VOLUME, L	UPSTREAM CONCENTRATION, MG/L	DOWNSTREAM CONCENTRATION, MG/L	REMOVAL EFFICIENCY, %
50	1.1	0.01	97.62
400	1.0	0.015	98.50
800	1.2	0.02	98.33
1200	1.0	0.02	98.00

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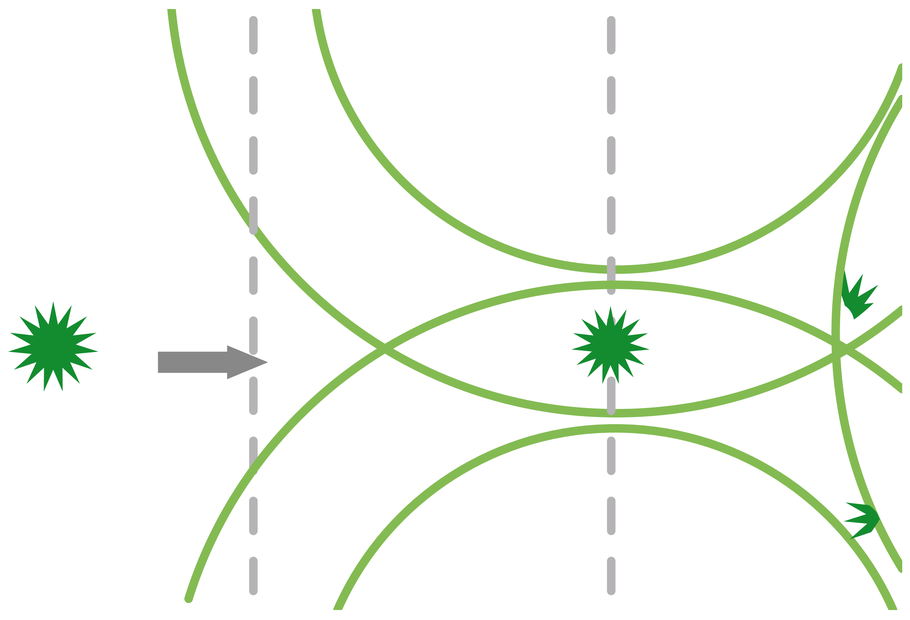
DISINFECTION

REMOVAL OF VIRUSES AND BACTERIA



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water filters

There are only two companies in the world that can produce cartridges which completely remove all viruses and bacteria from water. These are Geyser GC (Russia) and AHLSTROM (USA).

GEYSER
water filters

Based on polymer Aragon

AHLSTROM

Based on nano alumina fiber

GEYSER
water filters


РОССИЙСКАЯ ФЕДЕРАЦИЯ

ПАТЕНТ

НА ИЗОБРЕТЕНИЕ

№ 2506232

СПОСОБ ИНАКТИВАЦИИ ВИРУСОВ В ВОДНЫХ СРЕДАХ

Патентообладатель(ли): **ОБЩЕСТВО С ОГРАНИЧЕННОЙ ОТВЕТСТВЕННОСТЬЮ "АКВАТОРИЯ" (RU)**

Автор(ы): **Фридкин Александр Михайлович (RU), Гребенщиков Николай Романович (RU), Сафин Валерий Мансурович (RU)**

Заявка № **2012117611**

Приоритет изобретения **23 апреля 2012 г.**

Зарегистрировано в Государственном реестре изобретений Российской Федерации **10 февраля 2014 г.**

Срок действия патента истекает **23 апреля 2032 г.**

Руководитель Федеральной службы по интеллектуальной собственности Б.П. Симонов

INVENTION PATENT

GEYSER
water filters

VIRUSES CLASSIFICATION

VIRUS CLASS	SIZE (NM)	PERCENTAGE (%)	DISEASES
Hepatitis A	27 – 32	3	Hepatitis
Norovirus	27 - 40	82	Intestinal influenza and acute enteric infection
Rotavirus	60 - 70	5	Rotavirus infection
Entero- and astroviruses	27 - 30	5	Poliomyelitis, etc.
Adenoviruses	70 - 90	5	Catarrh of the upper respiratory tract , conjunctivitis, atypical pneumonia, etc.

Aragon passed laboratory testing in Russian and international testing institutions.

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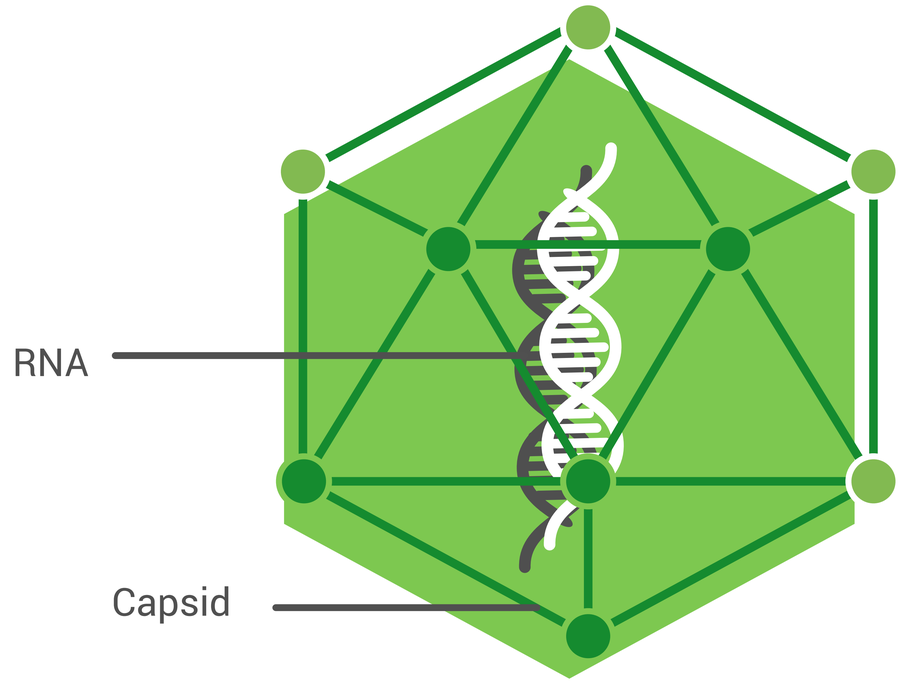
MECHANISM OF VIRUSES REMOVAL BY ARAGON



A virus is not able to replicate independently. It is searching for a life form inside which it would start replicating.

Most viruses have a protein coat (capsid) which protects RNA. To neutralize a virus it is enough to destroy the capsid or to damage its RNA.

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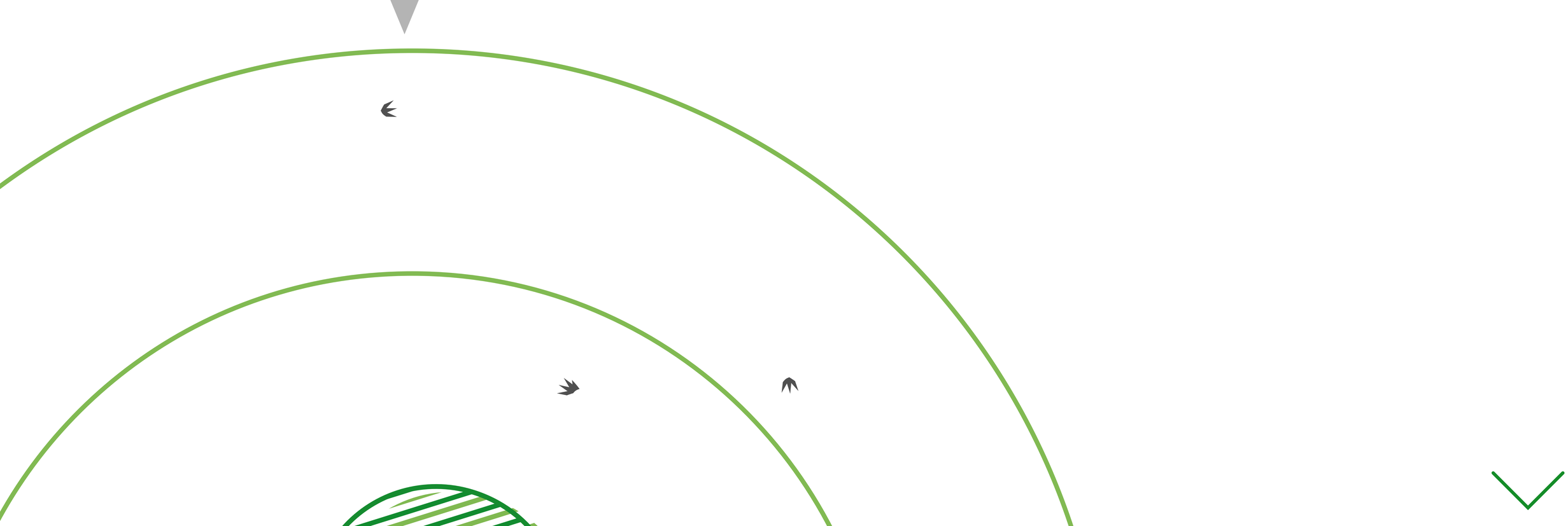
water filters

ARAGON ‘S PORES HAVE A STRONG SURFACE

charge which is opposite to the charge of viruses.
Therefore, when water with viruses passes through the filtration material, an electric interaction occurs between the material and viruses similar to an electric force between two opposite charges.



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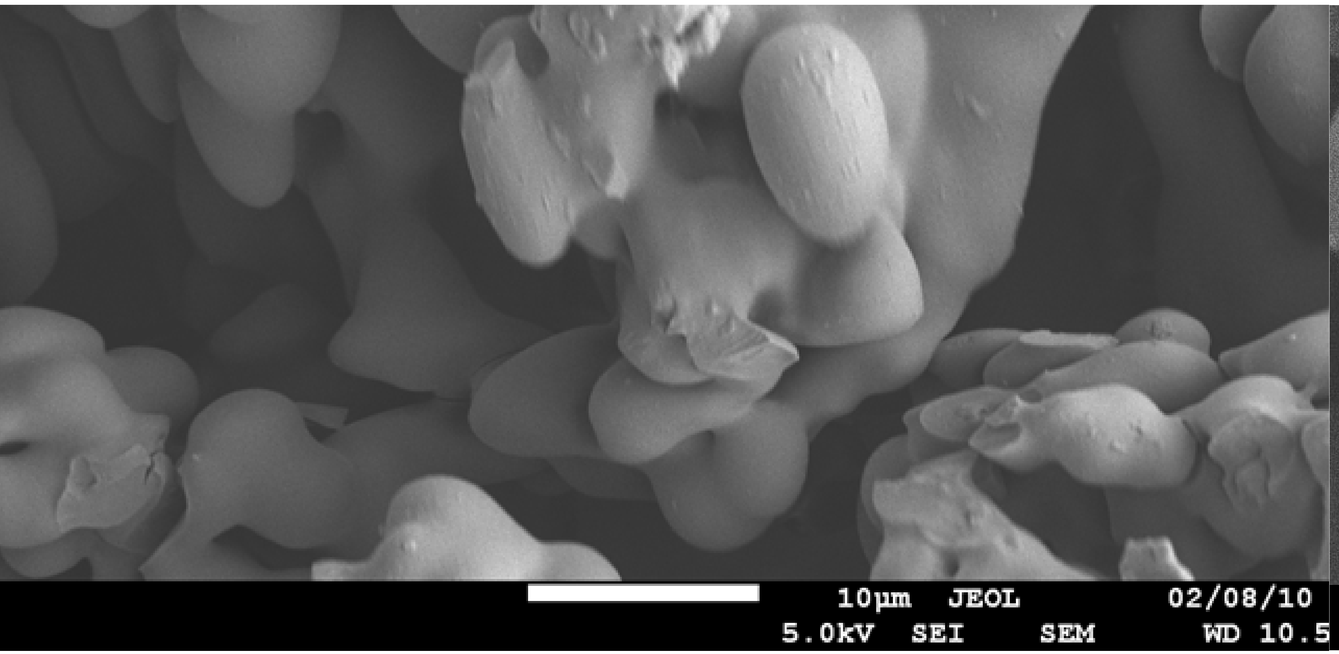
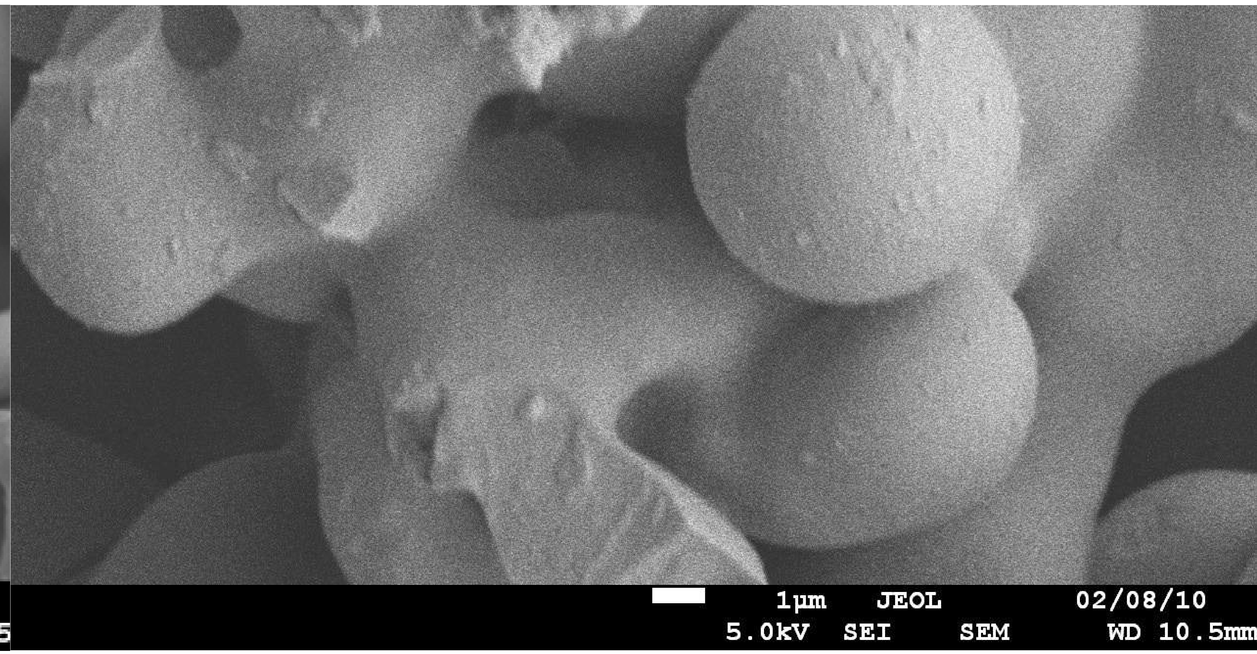
water filters

IMAGES OF ARAGON PRODUCED BY ELECTRON MICROSCOPE





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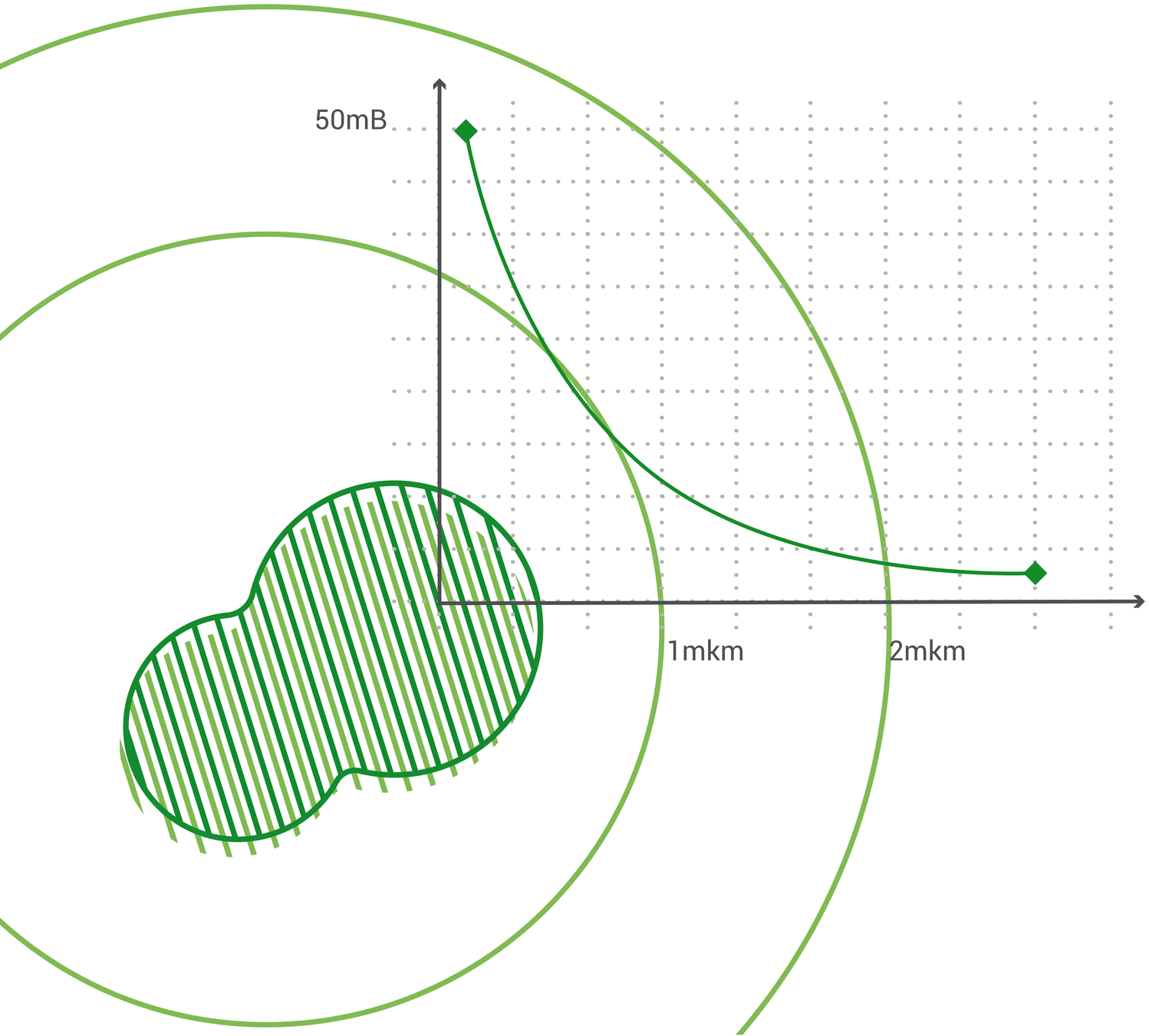

ELECTRIC FIELD OF A GLOBULE

A globule's surface is negatively charged and creates a strong electric field covering the entire pore.

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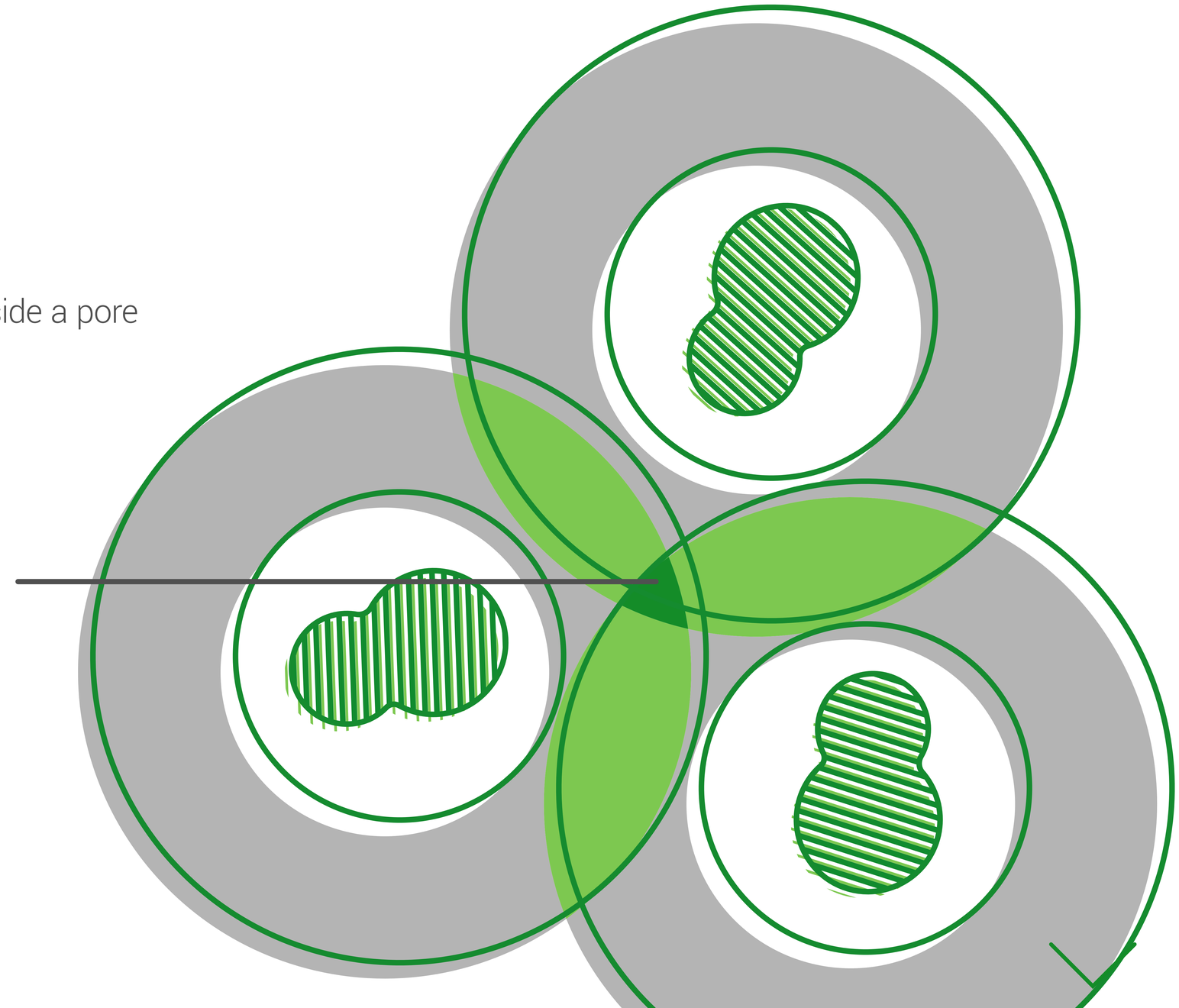
ELECTRIC FIELD INSIDE PORE

Overlapping of individual globules' fields forms
a highly gradient electric field of high intensity inside a pore



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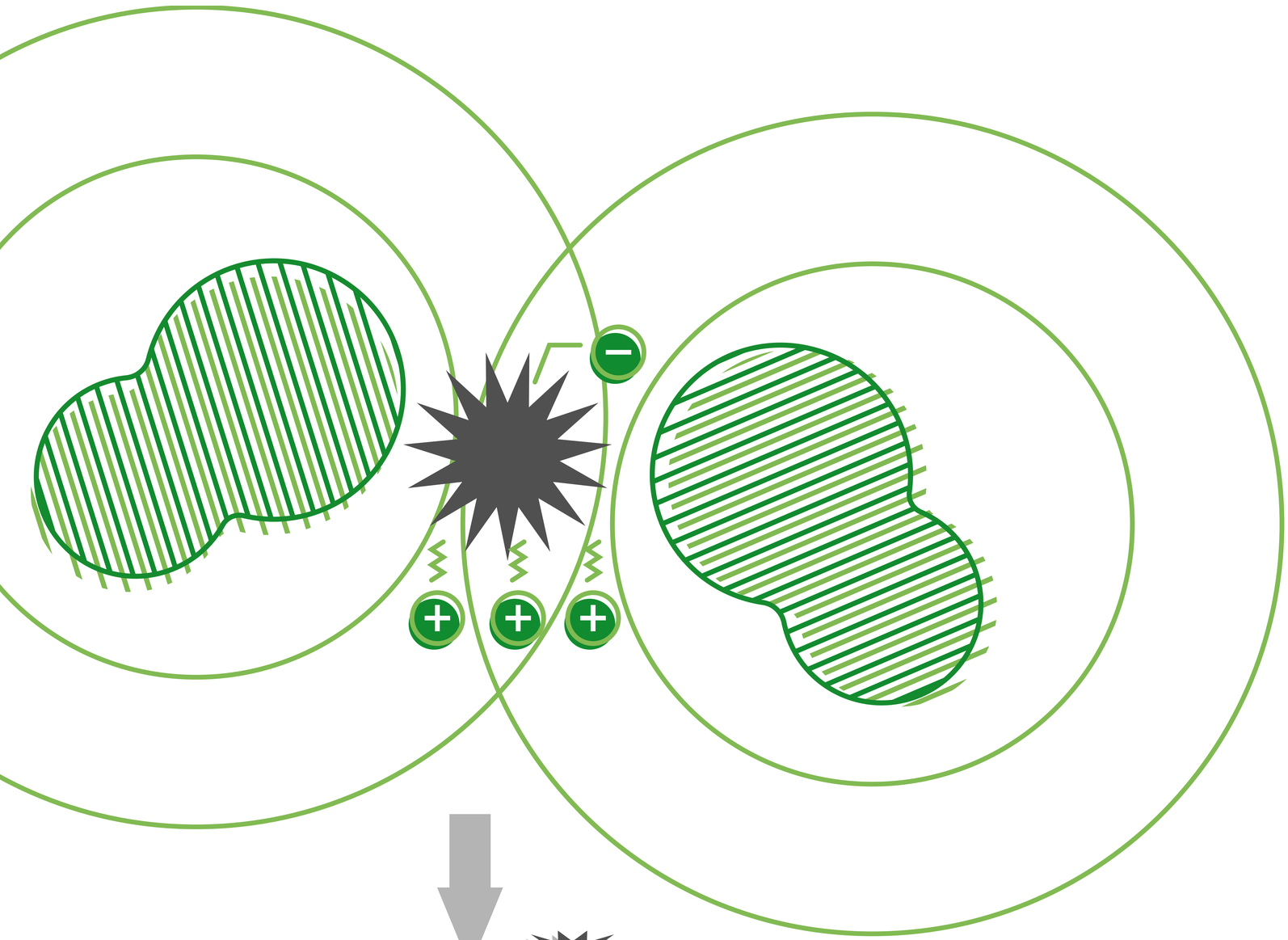
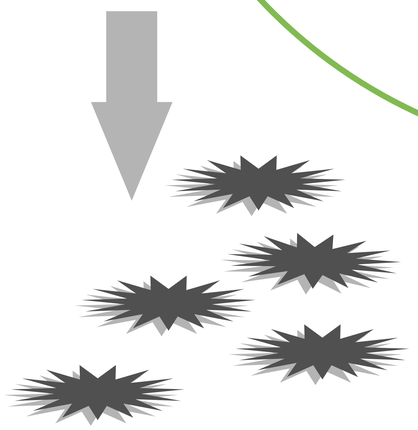
ELECTROKINETIC IMPACT ON VIRUSES



Electric field causes destruction of the viruse's protection cover.



And without its protection the virus dies soon.

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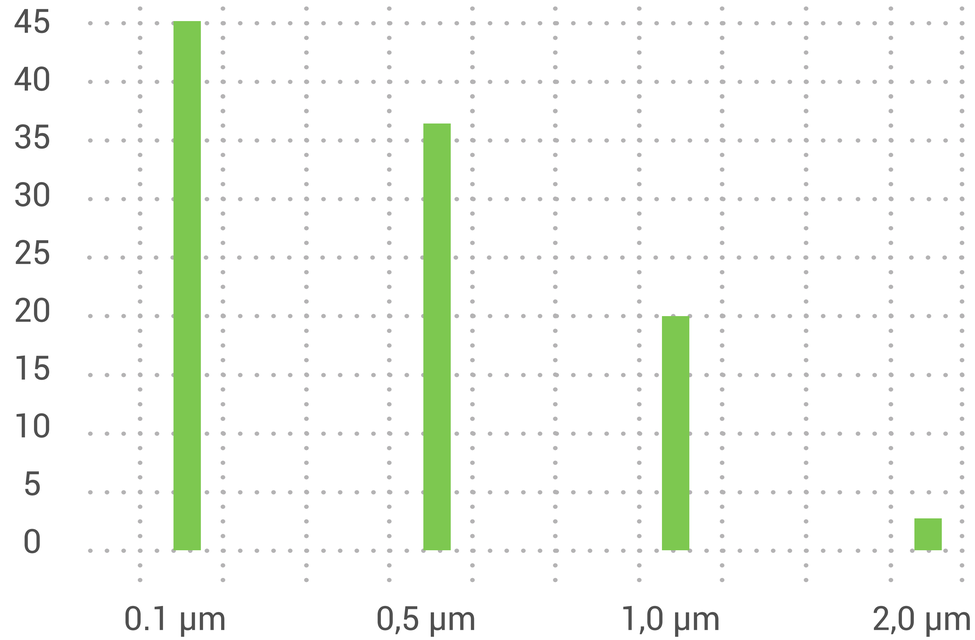
FILTRATION MATERIALS

ζ – POTENTIAL

MEASUREMENT RESULTS



ζ-potential decreases with increasing pore size (from 0,5 to 2 µm).
Hence, by varying the globules' position and size we can enable the polymer to be effective in removing bacteria and viruses.

GEYSER
water filters

THE PROPERTY OF ARAGON BIO TO CAPTURE VIRUSES AND BACTERIA WAS

TESTED AND PROVEN

Pasteur Institute of Epidemiology and Microbiology,
2007 – 2010

Kirov Military Medical Academy,
2008

A.N. Sysin research institute of human ecology and environment hygiene,
2011

Influenza Research Institute,
2011

Università di Ferrara,
2012

Institut Pasteur de Lille,
2014

GEYSER
water filters

МИНИСТЕРСТВО ЗДРАВООХРАНЕНИЯ
И СОЦИАЛЬНОГО РАЗВИТИЯ РОССИЙСКОЙ ФЕДЕРАЦИИ

ФЕДЕРАЛЬНОЕ ГОСУДАРСТВЕННОЕ БЮДЖЕТНОЕ УЧРЕЖДЕНИЕ
«НАУЧНО-ИССЛЕДОВАТЕЛЬСКИЙ ИНСТИТУТ ЭКОЛОГИИ ЧЕЛОВЕКА
И ГИГИЕНЫ ОКРУЖАЮЩЕЙ СРЕДЫ ИМ. А.Н.СЫСИНА»

Исх. №_____ от _____
на №_____

Российская Федерация, 119992, Москва, Погодинская ул. 10/15, стр.1
Телефон: 8 (499) 246 58 24, Факс: 8 (499) 245 0314, E-mail: sysin@comcor.ru

УТВЕРЖДАЮ
Директор ФГБУ «НИИ ЭЧ и ГОС им. А.Н.Сысина»
Минздравсоцразвития России
_____ Ю.А. Рахманин
«___» _____ 2011 г.

ЗАКЛЮЧЕНИЕ

по результатам гигиенической оценки эффективности очистки воды от химических и микробных загрязнений воды ионообменными картриджами АРАГОН-БИО производства ООО «Акватория»

Гигиеническая оценка эффективности работы ионообменных фильтров АРАГОН-БИО выполнена в комплексных исследованиях, проведенных на базе ФГБУ НИИ Экологии человека и гигиены окружающей среды им. А.Н.Сысина Минздравсоцразвития России и ФГУН «Санкт-Петербургский НИИ Эпидемиологии и микробиологии им. Пастера» Роспотребнадзора в соответствии с требованиями ГОСТА Р 51871 «Устройства водоочистные. Общие требования к эффективности и методы ее определения».

На основании проведенных исследований были сделаны следующие выводы:

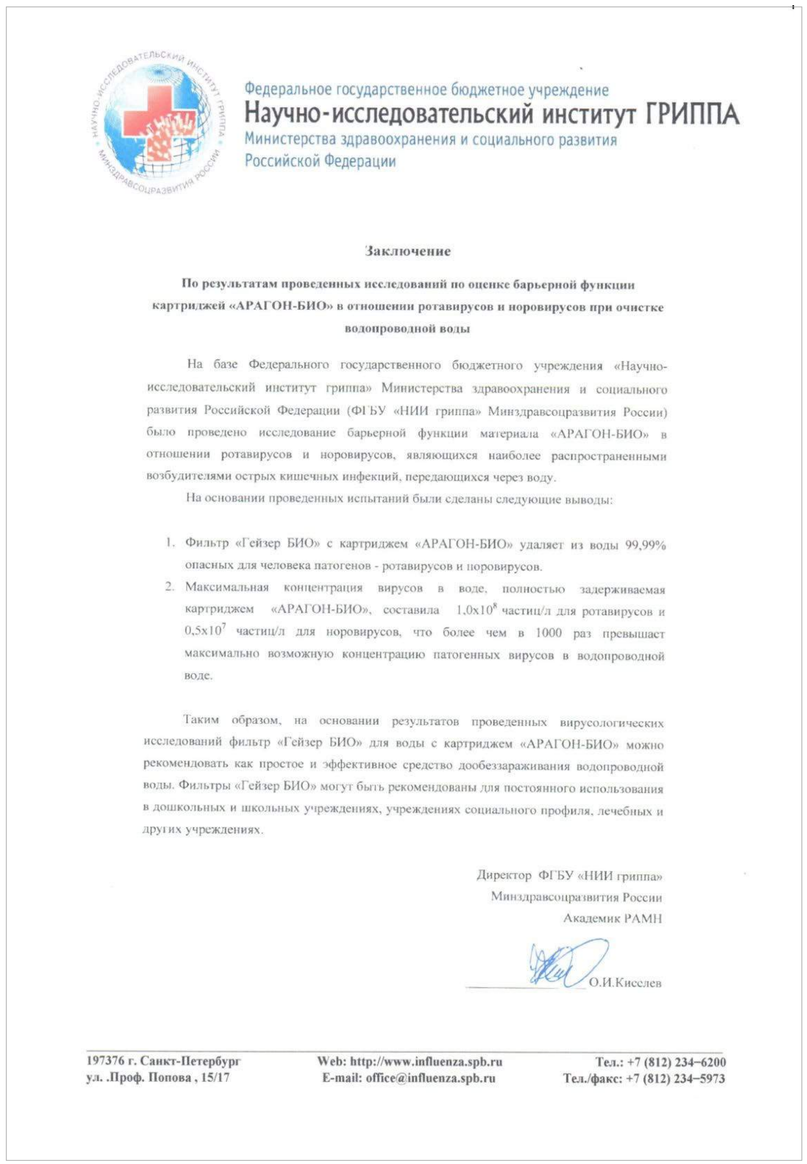
1. Испытанные ионообменные картриджи АРАГОН-БИО показали 100% эффективность очистки воды от вирусного загрязенения, проведенного на модельных водах с исходной концентрацией норовирусов и гепатита А до $1x10^9$ ТЦД/мл и ротавирусов - до $1x10^{10}$ ТЦД/мл.
2. В ресурсных испытаниях картриджей АРАГОН-БИО получен 100% вирулицидный эффект в отношении ротавирусов при их концентрации $1x10^8$ ТЦД/мл на протяжении всего ресурса (50 л, 200 л, 1000 л, 2000 л и 5000 л).
3. Оценка эффективности очистки воды в аварийных ситуациях от бактериального загрязнения, проведенное на водопроводной воде, контаминированной канализационными стоками с исходной концентрацией E.coli $2,2x10^5$ КОЕ/мл показало, что картриджи АРАГОН-БИО обеспечивают 100% эффективность задержки E.coli и соответствие очищенной воды требованиям, предъявляемым к питьевой воде.
4. Оценка эффективности очистки воды от различных химических загрязнений, в частности, металлов при их начальной концентрации 2ПДК показало, что ионообменные картриджи АРАГОН-БИО обеспечивают эффективную очистку от свинца (75%) , алюминия (96%), железа (98%), меди (92%).
5. На основании данных физико-химических и микробиологических исследований фильтры с ионообменными картриджами АРАГОН-БИО рекомендованы для дообеззараживания (E.Coli, гепатит А, ротавирусы, норовирусы) и доочистки водопроводной воды от химических загрязнений (свинец, алюминий, железо, медь) и улучшения органолептических показателей. Фильтры с картриджем АРАГОН-БИО могут быть рекомендованы для использования в дошкольных и школьных учреждениях, учреждениях социального профиля, лечебных и других учреждениях.

Зав лаборатории гигиены питьевого
водоснабжения и санитарной охраны водоемов,
д.м.н., профессор — Михайлова Р.И.

TESTING REPORT OF A.N. SYSIN RESEARCH INSTITUTE OF HUMAN ECOLOGY AND ENVIRONMENT HYGIENE (RUSSIA)

"The testing of ARAGON cartridges showed 100% efficiency in purifying water from viral contamination, conducted on test water samples with initial concentration of noroviruses and Hepatitis A up to $1x10^9$ TCID/ml and rotaviruses up to $1x10^{10}$ TCID/ml."

GEYSER
water filters



Федеральное государственное бюджетное учреждение
Научно-исследовательский институт ГРИППА
Министерства здравоохранения и социального развития
Российской Федерации

Заключение

По результатам проведенных исследований по оценке барьерной функции картриджей «АРАГОН-БИО» в отношении ротавирусов и норовирусов при очистке водопроводной воды

На базе Федерального государственного бюджетного учреждения «Научно-исследовательский институт гриппа» Министерства здравоохранения и социального развития Российской Федерации (ФГБУ «НИИ гриппа» Минздравсоцразвития России) было проведено исследование барьерной функции материала «АРАГОН-БИО» в отношении ротавирусов и норовирусов, являющихся наиболее распространенными возбудителями острых кишечных инфекций, передающихся через воду.

На основании проведенных испытаний были сделаны следующие выводы:

1. Фильтр «Гейзер БИО» с картриджем «АРАГОН-БИО» удаляет из воды 99,99% опасных для человека патогенов - ротавирусов и норовирусов.
2. Максимальная концентрация вирусов в воде, полностью задерживаемая картриджем «АРАГОН-БИО», составила $1{,}0x10^8$ частиц/л для ротавирусов и $0{,}5x10^7$ частиц/л для норовирусов, что более чем в 1000 раз превышает максимально возможную концентрацию патогенных вирусов в водопроводной воде.

Таким образом, на основании результатов проведенных вирусологических исследований фильтр «Гейзер БИО» для воды с картриджем «АРАГОН-БИО» можно рекомендовать как простое и эффективное средство дообеззараживания водопроводной воды. Фильтры «Гейзер БИО» могут быть рекомендованы для постоянного использования в дошкольных и школьных учреждениях, учреждениях социального профиля, лечебных и других учреждениях.

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Минздравсоцразвития России
Академик РАМН
О.И.Киселев

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ул. .Проф. Попова , 15/17
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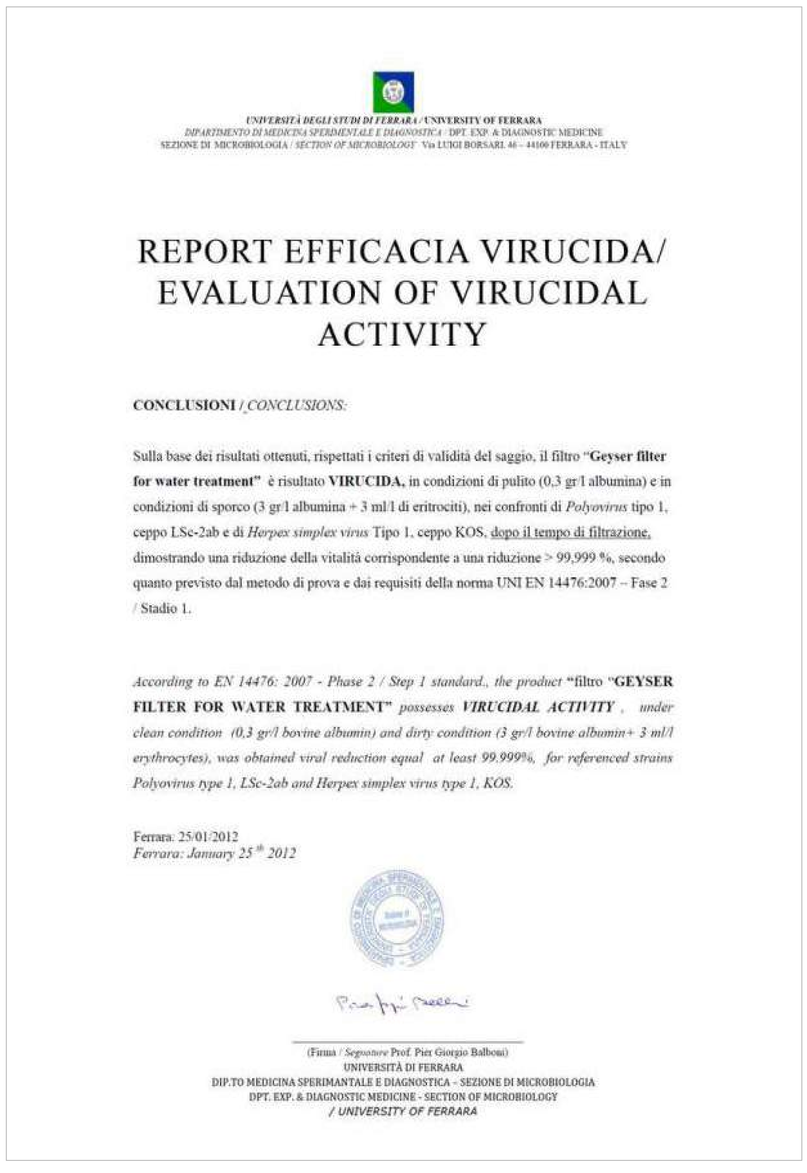
Тел.: +7 (812) 234–6200
Тел./факс: +7 (812) 234–5973

TESTING REPORT INFLUENZA RESEARCH INSTITUTE

"ARAGON BIO filter removes from water 99.99% of human pathogens - rotaviruses and noroviruses. The maximum concentration of viruses in water, completely captured by the filter, was $1.0x10^8$ U/L for rotaviruses and $0.5x10^7$ U/L for noroviruses, which exceeds the maximum permissible concentration of pathogenic viruses in tap water by nearly 1000 times".

GEYSER
water filters



UNIVERSITÀ DEGLI STUDI DI FERRARA / UNIVERSITY OF FERRARA
DIPARTIMENTO DI MEDICINA SPERIMENTALE E DIAGNOSTICA / DPT. EXP. & DIAGNOSTIC MEDICINE
SEZIONE DI MICROBIOLOGIA / SECTION OF MICROBIOLOGY - Via LUIGI BORSARI 46 – 44100 FERRARA - ITALY

REPORT EFFICACIA VIRUCIDA/
EVALUATION OF VIRUCIDAL
ACTIVITY

CONCLUSIONI / *CONCLUSIONS:*

Sulla base dei risultati ottenuti, rispettati i criteri di validità del saggio, il filtro **"Geyser filter for water treatment"** è risultato **VIRUCIDA,** in condizioni di pulito (0,3 gr/l albumina) e in condizioni di sporco (3 gr/l albumina + 3 ml/l di eritrociti), nei confronti di *Polyovirus* tipo 1, ceppo LSc-2ab e di *Herpex simplex virus* Tipo 1, ceppo KOS, dopo il tempo di filtrazione, dimostrando una riduzione della vitalità corrispondente a una riduzione > 99,999 %, secondo quanto previsto dal metodo di prova e dai requisiti della norma UNI EN 14476:2007 – Fase 2 / Stadio 1.

According to EN 14476: 2007 - Phase 2 / Step 1 standard., the product "filtro **"GEYSER FILTER FOR WATER TREATMENT"** *possesses* ***VIRUCIDAL ACTIVITY*** *, under clean condition (0,3 gr/l bovine albumin) and dirty condition (3 gr/l bovine albumin+ 3 ml/l erythrocytes), was obtained viral reduction equal at least 99.999%, for referenced strains Polyovirus type 1, LSc-2ab and Herpex simplex virus type 1, KOS.*

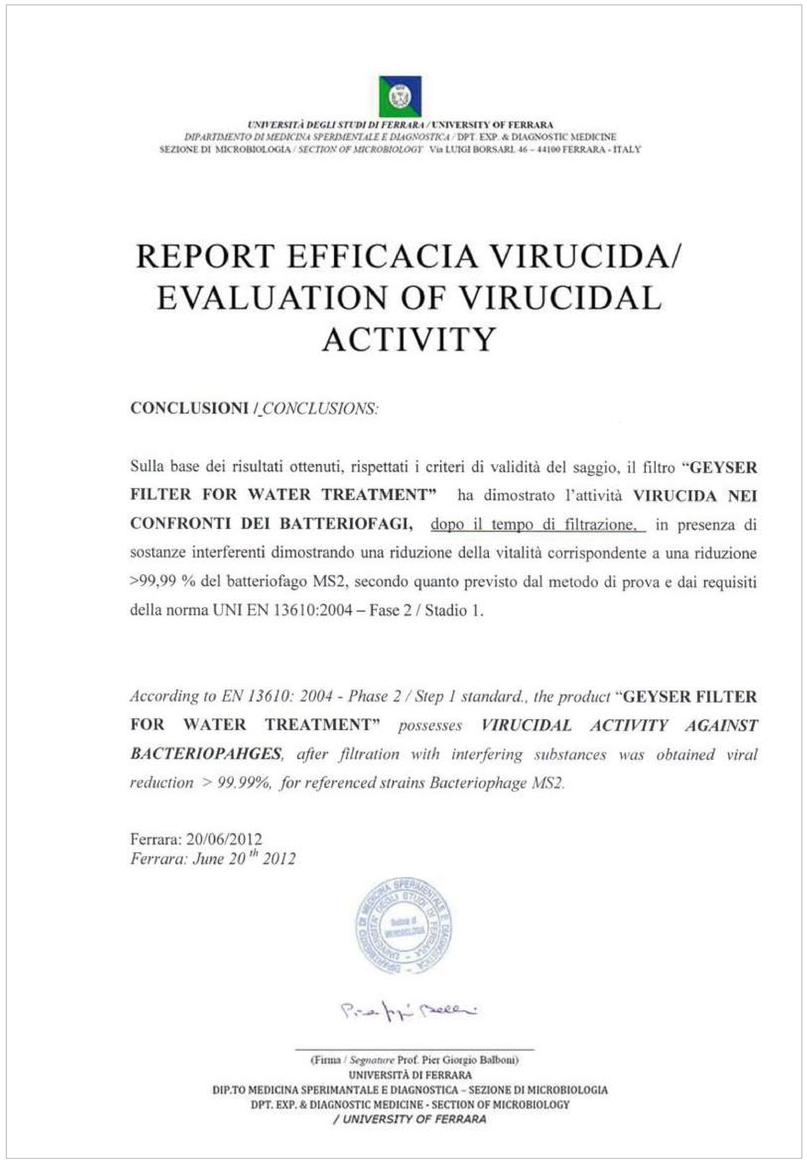
Ferrara: 25/01/2012
Ferrara: January 25th 2012

(Firma / *Signature* Prof. Pier Giorgio Balboni)
UNIVERSITÀ DI FERRARA
DIP.TO MEDICINA SPERIMANTALE E DIAGNOSTICA - SEZIONE DI MICROBIOLOGIA
DPT. EXP. & DIAGNOSTIC MEDICINE - SECTION OF MICROBIOLOGY
/ UNIVERSITY OF FERRARA

TESTING REPORT OF UNIVERSITÀ DI FERRARA, ITALY

"According to the results of the laboratory testing under procedure UNI EN 14476:2007 - phase 2, step 1, the filter
"Geyser" has an antiviral effect and clears water of herpes virus LSc-2a type 1 and circulating polio-virus. The laboratory tests have the virus reduction by 99,999%, which conforms to the stated standards and requirements of UNI EN 14476:2007 – phase 2, step 1.
The filter's efficiency was proven in the course of laboratory testing with use of albumin (0.3 g/l) and albumin (3 g/l) + erythrocytes (3 ml/l)."

GEYSER
water filters



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DIPARTIMENTO DI MEDICINA SPERIMENTALE E DIAGNOSTICA / DPT. EXP. & DIAGNOSTIC MEDICINE
SEZIONE DI MICROBIOLOGIA / SECTION OF MICROBIOLOGY Via LUIGI BORSARI, 46 – 44100 FERRARA - ITALY

REPORT EFFICACIA VIRUCIDA/
EVALUATION OF VIRUCIDAL
ACTIVITY

CONCLUSIONI / *CONCLUSIONS:*

Sulla base dei risultati ottenuti, rispettati i criteri di validità del saggio, il filtro **"GEYSER FILTER FOR WATER TREATMENT"** ha dimostrato l'attività **VIRUCIDA NEI CONFRONTI DEI BATTERIOFAGI,** dopo il tempo di filtrazione, in presenza di sostanze interferenti dimostrando una riduzione della vitalità corrispondente a una riduzione >99,99 % del batteriofago MS2, secondo quanto previsto dal metodo di prova e dai requisiti della norma UNI EN 13610:2004 – Fase 2 / Stadio 1.

According to EN 13610: 2004 - Phase 2 / Step 1 standard., the product **"GEYSER FILTER FOR WATER TREATMENT"** *possesses* ***VIRUCIDAL ACTIVITY AGAINST BACTERIOPAHGES****, after filtration with interfering substances was obtained viral reduction > 99.99%, for referenced strains Bacteriophage MS2.*

Ferrara: 20/06/2012
Ferrara: June 20 th 2012

(Firma / *Segnatore* Prof. Pier Giorgio Balboni)
UNIVERSITÀ DI FERRARA
DIP.TO MEDICINA SPERIMANTALE E DIAGNOSTICA – SEZIONE DI MICROBIOLOGIA
DPT. EXP. & DIAGNOSTIC MEDICINE - SECTION OF MICROBIOLOGY
/ UNIVERSITY OF FERRARA

TESTING REPORT OF UNIVERSITÀ DI FERRARA, ITALY

"According to the results of laboratory tests, the "Geyser" filter has antiviral effect and removes bacteriophages from water. The laboratory tests confirmed reduction of MS_2 bacteriophage by 99.99%, which conforms to the stated standards and requirements of EN 13610:2004."

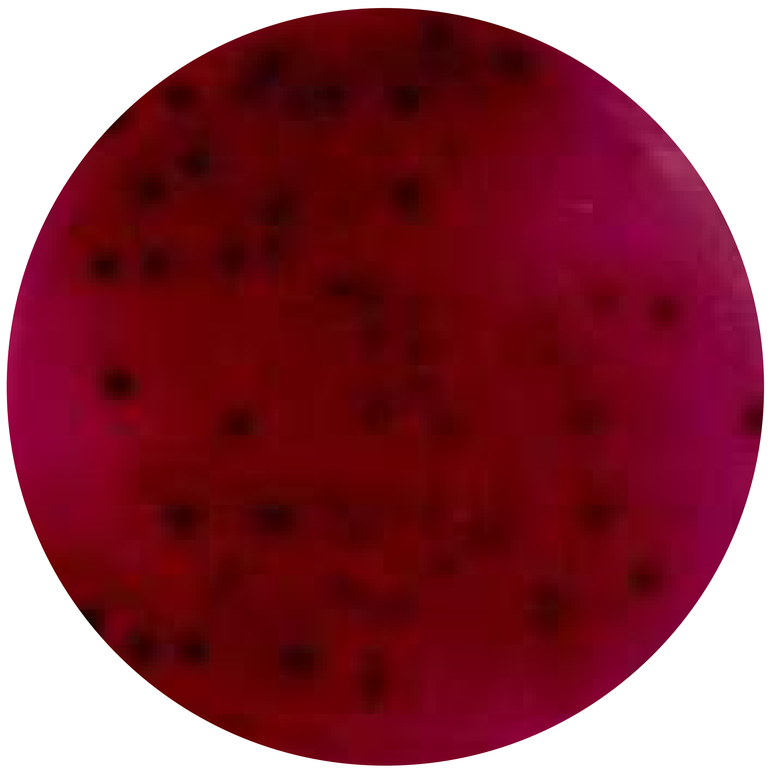
GEYSER
water filters

Institut Pasteur de Lille

INSTITUT PASTEUR DE LILLE (FRANCE)

The institute is named after the famous French microbiologist Louis Pasteur, its founder and the first director. For his prominent services to France Louis Pasteur was buried in Notre-Dame de Paris Cathedral, but later reburied on the territory of the Institute (Lille).
The important discoveries made in Pasteur Institute have contributed to the success of the fight against such virulent diseases as diphtheria, tetanus, tuberculosis, poliomyelitis, influenza, yellow fever and plague. The human immunodeficiency virus was discovered here in 1983. Since 1908 ten scientists of this institute have received Noble Prizes in Medical Science and Physiology.

GEYSER
water filters



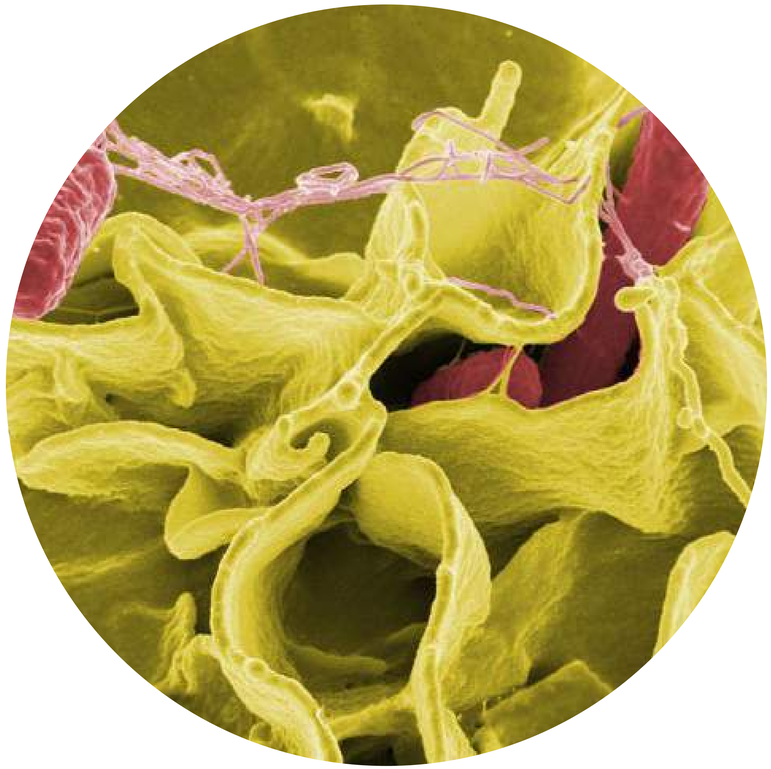
Institut Pasteur de Lille

BACTERIA AND VIRUSES REMOVAL

Test strains of bacteria and viruses typical for water supply networks were selected for testing.

- Salmonella
- Legionella pneumophila
- Polioviru strain Sabin type 1
- Hepatitis A
- Rotavirus

GEYSER
water filters



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BACTERIA AND VIRUSES REMOVAL
SALMONELLA

Salmonella is a mouse typhoid causative agent.
Non-spore-forming rod-shaped bacteria.
Length 1-7 μm; width about 0.3-0.7 μm. Salmonella bacteria are gram-negative mobile facultative anaerobic bacilli.

Growth and counting medium: Trypticase soy agar.

GEYSER
water filters

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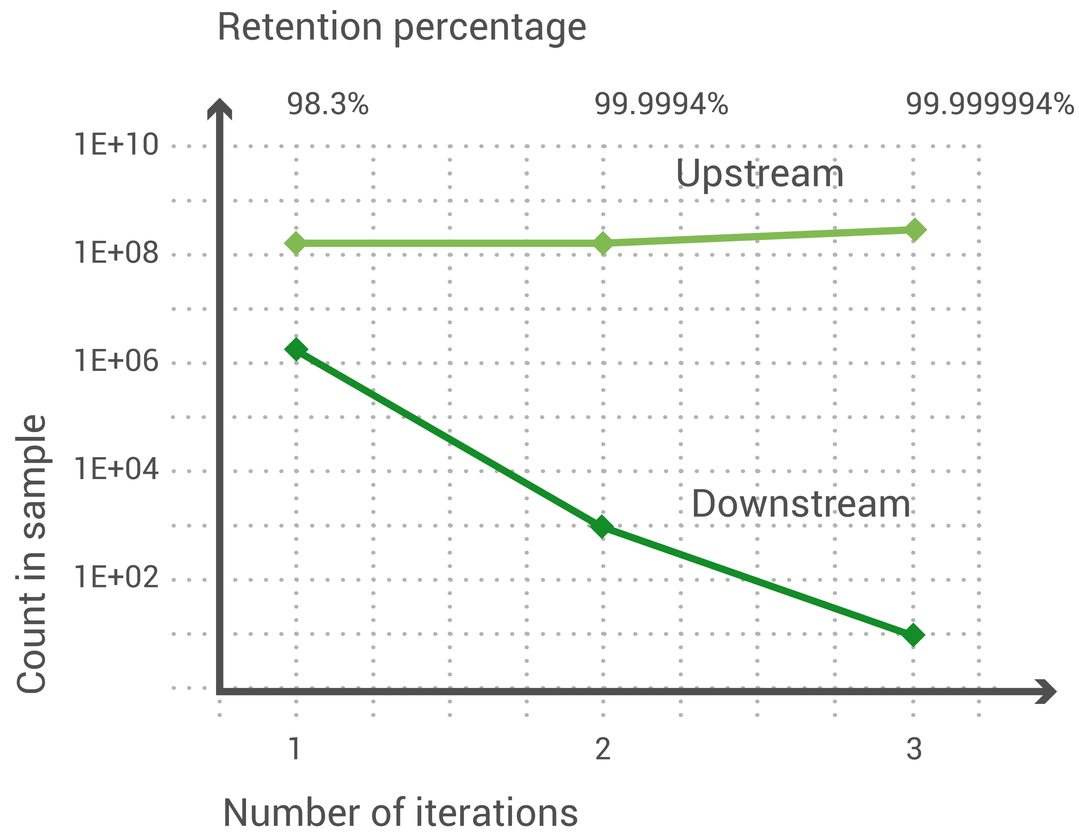
BACTERIA AND VIRUSES REMOVAL



GEYSER
water filters

Institut Pasteur de Lille

STRAINS AND MEDIA BACTERIA LEGIONELLA PNEUMOPHILA

Legionella pneumophila –
pathogenic gram-negative bacteria.
Diameter: 0.2 to 0.7 μm,
length: 2 to 20 μm.

Legionellosis (Legionnaires' disease) has been known since 1976 when it appeared as ARVI outbreak with severe pneumonia and high lethality among participants of the "American Legion" Veteran Organization's congress in Philadelphia. 182 persons of 4400 congress participants became ill, 29 of them died. This is when the disease was called the "Legionnaires' disease". In most cases the causative agent of the disease is Legionella pneumophilla. The habitats of legionella are fresh water bodies and soil, water supply and air conditioning systems in buildings, boilers and shower facilities, fountains, etc.

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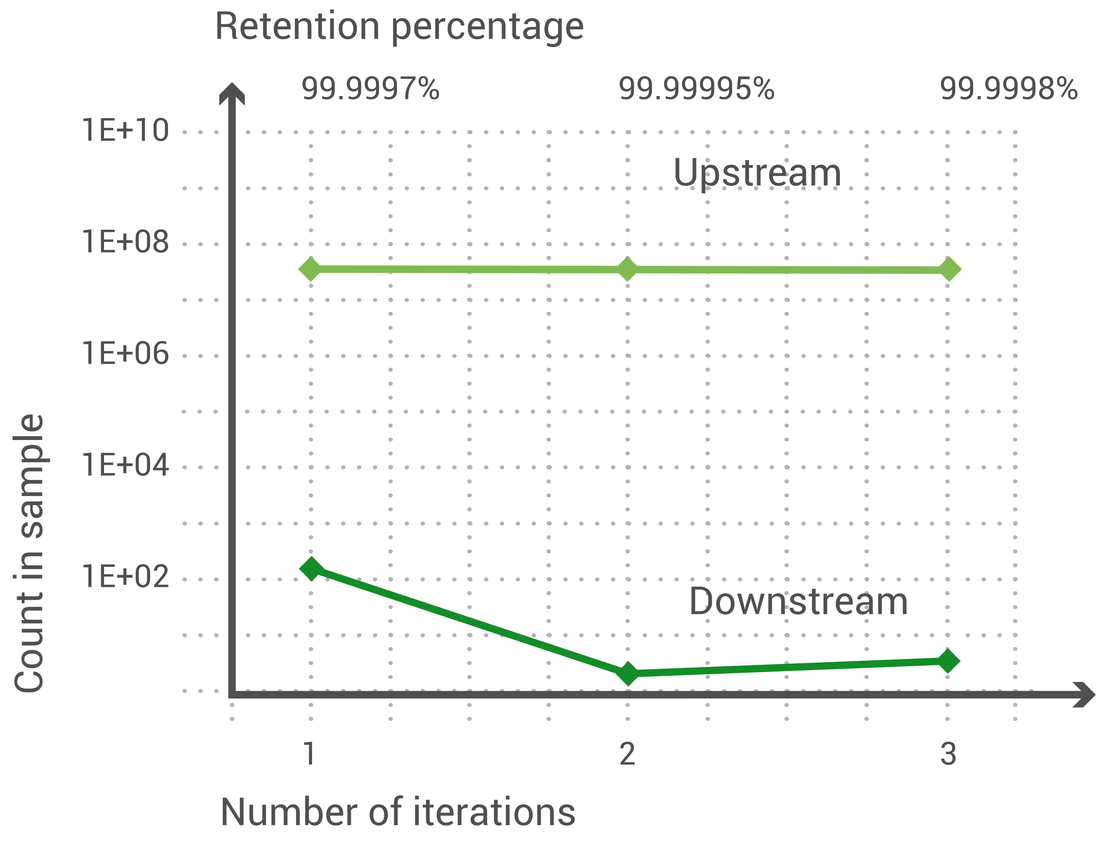
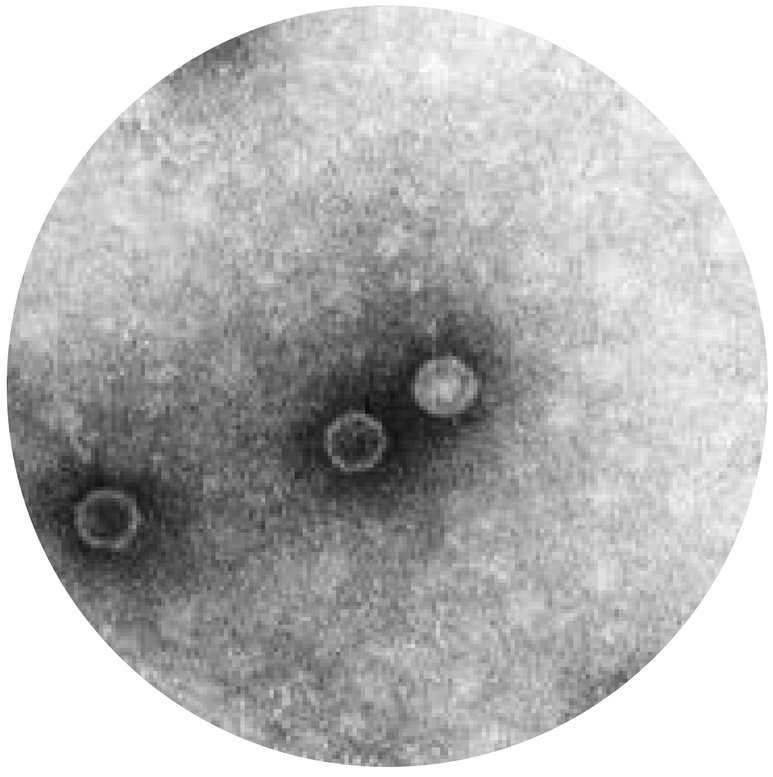
REMOVAL OF LEGIONELLA



GEYSER
water filters



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STRAINS AND MEDIA
VIRUSES
POLIOVIRUS

Poliovirus is a human enterovirus and member of the family of Picornaviridae.
Virus size: 27-30 nm.

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water filters

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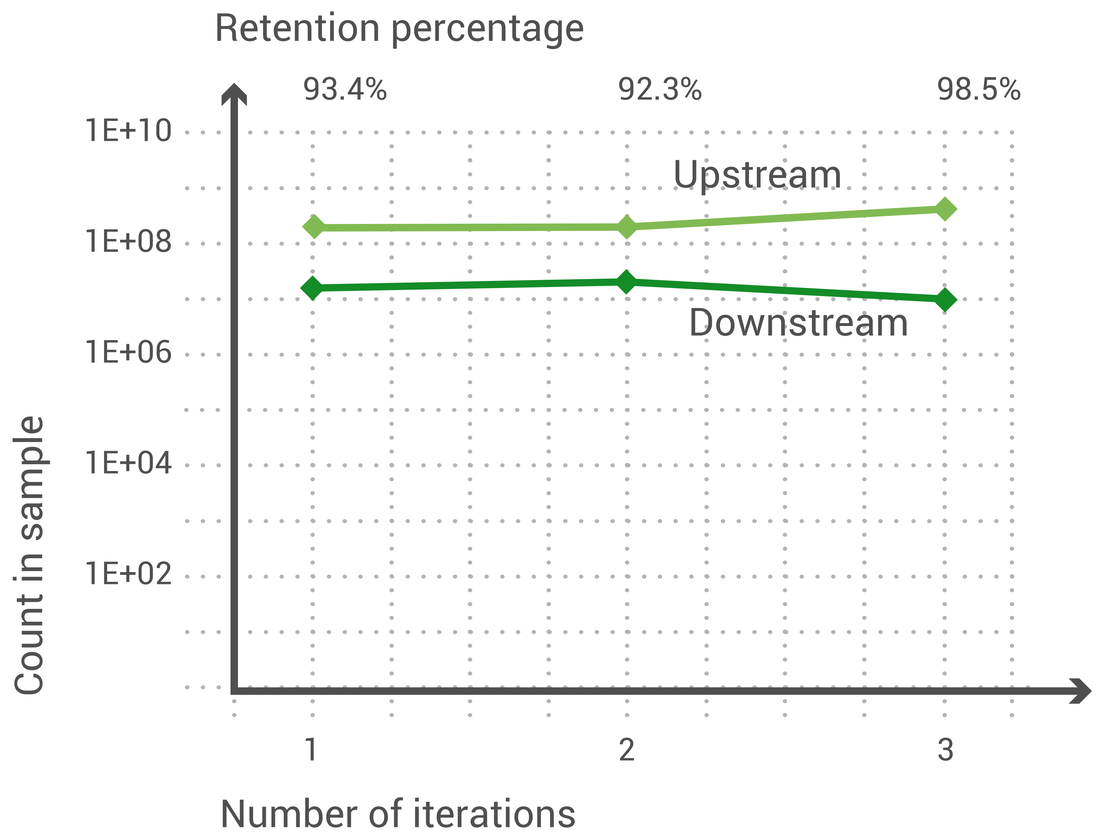
REMOVAL OF HEPATITIS A



GEYSER
water filters

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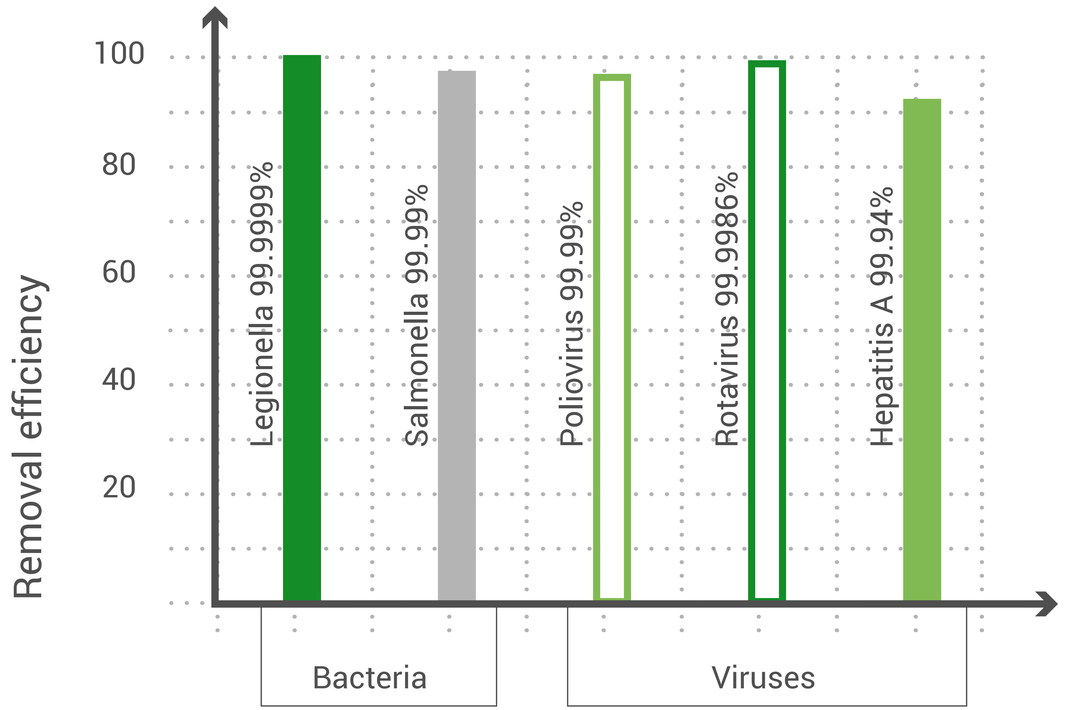
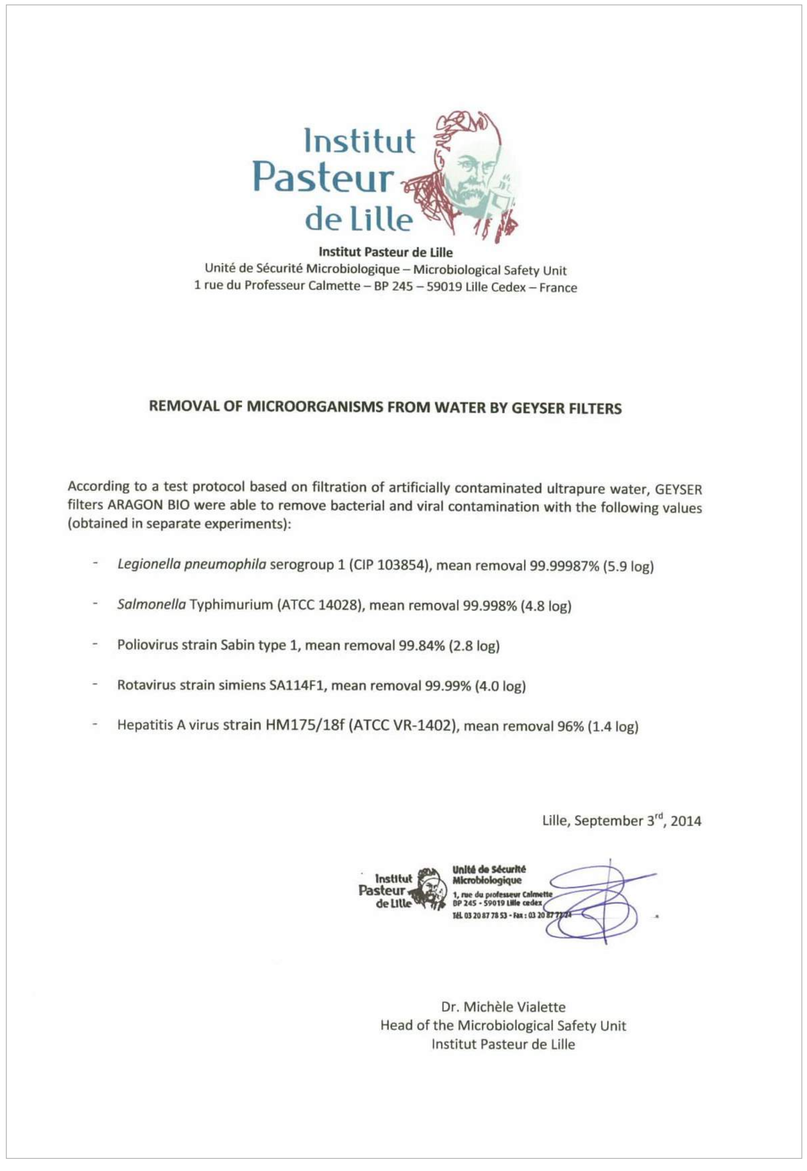
BACTERIA AND VIRUSES REMOVAL EFFICIENCY



GEYSER
water filters



Institut Pasteur de Lille

Institut Pasteur de Lille
Unité de Sécurité Microbiologique – Microbiological Safety Unit
1 rue du Professeur Calmette – BP 245 – 59019 Lille Cedex – France

REMOVAL OF MICROORGANISMS FROM WATER BY GEYSER FILTERS

According to a test protocol based on filtration of artificially contaminated ultrapure water, GEYSER filters ARAGON BIO were able to remove bacterial and viral contamination with the following values (obtained in separate experiments):

- *Legionella pneumophila* serogroup 1 (CIP 103854), mean removal 99.99987% (5.9 log)
- *Salmonella* Typhimurium (ATCC 14028), mean removal 99.998% (4.8 log)
- Poliovirus strain Sabin type 1, mean removal 99.84% (2.8 log)
- Rotavirus strain simiens SA114F1, mean removal 99.99% (4.0 log)
- Hepatitis A virus strain HM175/18f (ATCC VR-1402), mean removal 96% (1.4 log)

Lille, September 3rd, 2014

Institut Pasteur de Lille
Unité de Sécurité Microbiologique
1, rue du professeur Calmette
BP 245 - 59019 Lille cedex
Tél. 03 20 87 78 53 - Fax : 03 20 87 77 26

Dr. Michèle Vialette
Head of the Microbiological Safety Unit
Institut Pasteur de Lille

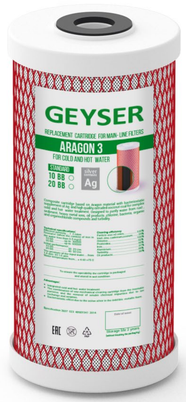
Institut Pasteur de Lille

TESTING REPORT OF INSTITUT PASTEUR DE LILLE, FRANCE

ONCLUSION:
Geyser filters were able to remove the tested bac-
te-ria from water, with log removal ranging
from 5,3 to 7,3. Virus removal efficiency
was lower - with average log removal of 2.8
for poliovirus, 4,0 for ratavirus and 1,4 for Hepatitis A.

GEYSER
water filters

FILTERELEMENT
ARAGON



ARAGON 3
10”/ 20” BB

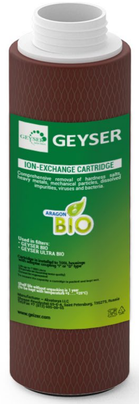
ARAGON
3 ECO

ARAGON
SMART

ARAGON (E)
10”SL

ARAGON
10”SL

ARAGON 2
10”SL



ARAGON BIO
10”SL

ARAGON MAX
10”SL

GEYSER
water filters

FILTERELEMENT ARAGON

WATER TYPE	COMPOSITION	FUNCTION	APPLICATION
Iron-rich water	Ion-exchange polymer material Aragon in H+ modificatio	Used for pH improvement in filters for iron-rich water. Feed water temperature +4...+75˚C	Geyser– Euro

GEYSER
water filters

ARAGON

WATER TYPE	COMPOSITION	FUNCTION	APPLICATION
Iron-rich water	Ion-exchange polymer material Aragon in H+ modification	Used for pH improvement in filters for iron-rich water. Feed water temperature +4...+75˚C	10″ Slim Line (hot water) 10″ Slim Line (cold water)
			Geyser - Classic 1U Euro

GEYSER
water filters

ARAGON H

WATER TYPE	COMPOSITION	FUNCTION	APPLICATION
Hard water	Ion-exchange polymer material Aragon in Na+ modification	Overall removal of iron, heavy metals and hardness salts. Feed water temperature +4...+75˚C	10" Slim Line (hot water) 10" Slim Line (cold water) Geyser - Classic 1U Euro

GEYSER
water filters

ARAGON M

WATER TYPE	COMPOSITION	FUNCTION	APPLICATION
Soft water	Ion-exchange polymer material Aragon in Ca+ modification	Does not remove hardness salts from water, preserves natural mineral balance. Feed water temperature +4...+75˚C	10" Slim Line (hot water) 10" Slim Line (cold water) Geyser - Classic 1U Euro

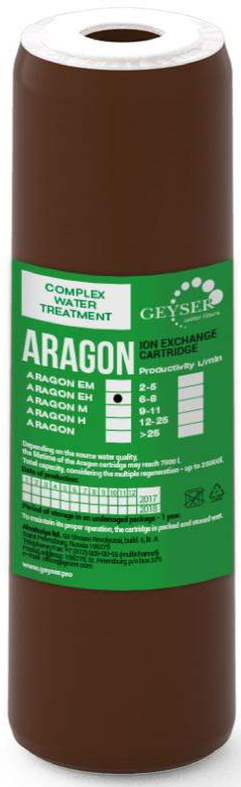
GEYSER
water filters

ARAGON EM

WATER TYPE	COMPOSITION	FUNCTION	APPLICATION
Soft water	Ion-exchange polymer material Aragon in Ca+ modification	Does not remove hardness salts from water, preserves natural mineral balance. Feed water temperature +4...+75˚C	10" Slim Line (hot water) 10" Slim Line (cold water)

GEYSER
water filters

ARAGON EH



WATER TYPE	COMPOSITION	FUNCTION	APPLICATION
Hard water	Ion-exchange polymer material Aragon in Na+ modification	Overall removal of iron, heavy metals and hardness salts. Feed water temperature +4...+75˚C	10″ Slim Line (hot water) 10″ Slim Line (cold water)

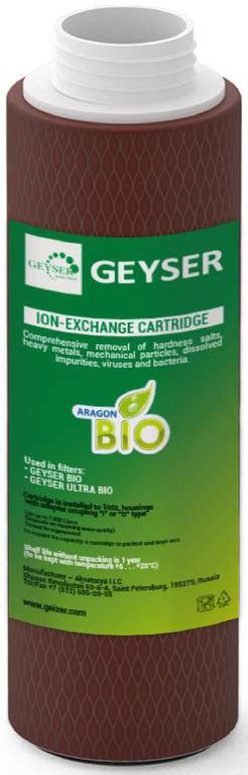
GEYSER
water filters

ARAGON 2

WATER TYPE	COMPOSITION	FUNCTION	APPLICATION
Hard water	Aragon H and cation-exchange resin combined cartridge	Five-fold increase in hardness salts removal capacity compared to cartridge Aragon H. Feed water temperature +4...+75˚C	10" Slim Line (hot water) 10" Slim Line (cold water) Geyser - Classic 1U Euro

GEYSER
water filters

ARAGON BIO



WATER TYPE	COMPOSITION	FUNCTION	APPLICATION
Soft/ hard water	Modification of cartridge Aragon with a high surface charge (ζ-potential)	100% removal of bacteria and viruses. Used in systems Geyser Bio, Ultra Bio. Feed water temperature +4...+75˚C	Geyser BIO

GEYSER
water filters

ARAGON MAX

WATER TYPE	COMPOSITION	FUNCTION	APPLICATION
Hard water	Aragon and special ion-exchange resins combined cartridge	Enlarged filtration area provides a high capacity and uniform softening. Filter life is up to 12 months without regeneration. Used only in combination: Aqua Soft, Aragon Max and CBC. Feed water temperature +4...+75˚C	Geyser MAX

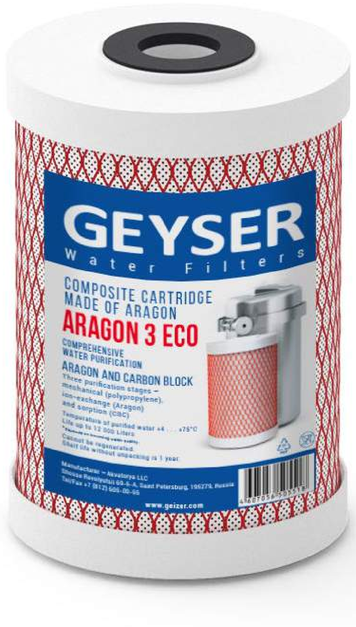
GEYSER
water filters

ARAGON SMART

WATER TYPE	COMPOSITION	FUNCTION	APPLICATION
Hard water	Ion-exchange polymer material Aragon in Na+ modification	Overall removal of iron, heavy metals and hardness salts. Feed water temperature +4...+75˚C	Geyser SMART

GEYSER
water filters

ARAGON 3 ECO



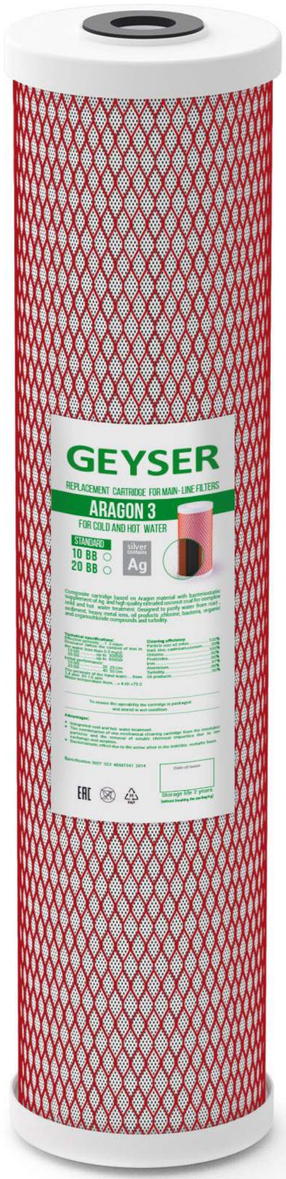
WATER TYPE	COMPOSITION	FUNCTION	APPLICATION
Soft, hard water	3-layer combined cartridge from polypropylene prefilter (5 µm), Aragon (0,1µm) and carbon block (10 µm)	Comprehensive water purification. Used only in Geyser Eco filter. Feed water temperature +4...+75˚C	Geyser ECO

GEYSER
water filters

ARAGON 3 (10”BB)

WATER TYPE	COMPOSITION	FUNCTION	APPLICATION
Soft, hard water	3-layer combined cartridge from polypropylene prefilter (5 µm), Aragon (2 µm) and carbon block (10 µm)	Cartridge for in-line filters provides overall purification. Feed water temperature +4...+75˚C	Typhoon 10'' BB 10'' Big Blue

GEYSER
water filters

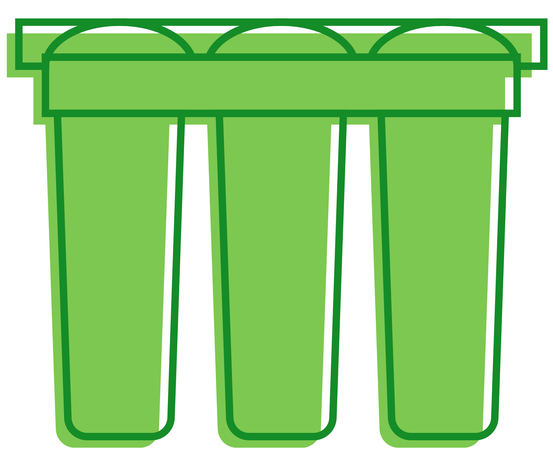


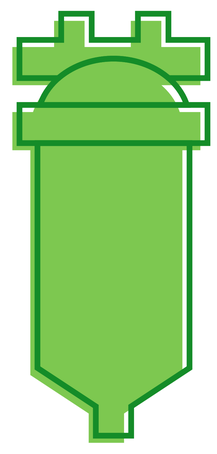
ARAGON 3 (20”BB)

WATER TYPE	COMPOSITION	FUNCTION	APPLICATION
Soft, hard water	3-layer combined cartridge from polypropylene prefilter (5 µm), Aragon (2 µm) and carbon block (10 µm)	Cartridge for in-line filters provides overall purification. Feed water temperature +4...+75˚C	Typhoon 20″ BB 20″ Big Blue

GEYSER
water filters

APPLICATIONS





GEYSER
water filters

GEYSER ECO

1U EURO

GEYSER – EURO

GEYSER – BIO

GEYSER – CLASSIC

GEYSER SMART

GEYSER – MAX

GEYSER
water filters

10” SLIM LINE

TYPHOON 10” BB

TYPHOON 20” BB

10” SLIM LINE

10” BIG BLUE

20” BIG BLUE

GEYSER
water filters

GEYSER – EURO

Inexpensive stylish compact filter for water filtration and conditioning. It is easily attached to any type of faucet and comes with all required adaptors.

FILTER LIFE	CARTRIDGE
up to 3 000 L	Filterelement Aragon

GEYSER
water filters

GEYSER – BIO

Geyser BIO system has no analogues in Russia.
It makes water safe to drink without boiling!
The comprehensive water purification by Geyser BIO provides potable water 100% clear of all contaminants, icnluding bacteria and viruses.

FILTER LIFE	CARTRIDGE
up to 7 000 L	Aragon Bio

GEYSER
water filters

GEYSER ECO

Geyser Eco - a modern effective compact system for a multipurpose water treatment. A food-grade stainless steel housing. Easily connected to a cold water pipeline with JG flexible hoses. Fast and simple cartridge replacement due to a clamp connection.

FILTER LIFE	CARTRIDGE
up to 12 000 L	Aragon 3 Эко

GEYSER
water filters

GEYSER – CLASSIC

Water treatment system with an enhanced degree of purification due to the use of cartridges Aragon and BAF. The top of the filter is made in the form of a monoblock with the double-walled cups that guarantes no leakage. The cartridge installation system makes it simple to change the water flow direction - all to make installation easy!

FILTER LIFE	CARTRIDGE
up to 10 000 L	Aragon 2 Aragon M

GEYSER
water filters

1U EURO

A countertop Geyser filter is a simple, economical and effective solution for tap water treatment. Installed near the sink.

FILTER LIFE	CARTRIDGE
up to 7 000 L	Aragon 2 Aragon M

GEYSER
water filters

GEYSER – MAX

Geyser Max system is designed for hard water treatment. The combination of unique technologies “AquaSoft”, Aragon Max extends the filter's life up to 1 year with no need of replacement or regeneration of the filter elements.

FILTER LIFE	CARTRIDGE
up to 10 000 L	Aragon MAX

GEYSER
water filters

GEYSER SMART

Geyser Smart has the so-called Qlck lock system which allows quic
ment of cartridges. Replacement of cartridge has never been easier
Perfect taste of pure water.

Quick cartridge replacement
Qlck lock system
Compact size

FILTER LIFE	CARTRIDGE
up to 10 000 L	Aragon SMART

GEYSER
water filters

10“ SLIM LINE

CARTRIDGE

Aragon 2 Aragon

GEYSER
water filters

TYPHOON 10“ BIG BLUE

- Bottom water discharge - easy and safe replacement of cartridge.
- Clamp connection of the cap.

CARTRIDGE

Aragon 3
10” BB

GEYSER
water filters

TYPHOON 20‘‘ BIG BLUE

- Bottom water discharge - easy and safe replacement of cartridge.
- Clamp connection of the cap.

CARTRIDGE

Aragon 3
20” BB

GEYSER
water filters

20“ BIG BLUE

CARTRIDGE

Aragon 3
20” BB

GEYSER
water filters

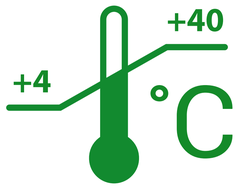
10“ BIG BLUE

CARTRIDGE

Aragon 3
10” BB

GEYSER
water filters

10‘‘ SLIM LINE



CARTRIDGE

Aragon 2 Aragon

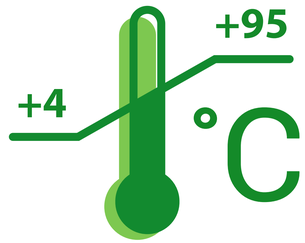
GEYSER
water filters

ADVANTAGES

ANTI-DISCHARGE

SELF-INDICATION

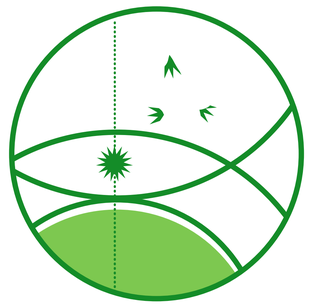
ACTIVE SILVER



HOT AND COLD
WATER TREATMENT

4 IN 1

QUASI-SOFTENING



REMOVAL OF BACTERIA
AND VIRUSES

REGENERATION

GEYSER

water filters