



Clack Filter-Ag Plus® – природная клиноптилолитовая загрузка с большой удельной поверхностью и микропористой структурой, используемая в высокоэффективных механических фильтрах.

Filter-Ag Plus®



Clack Filter-Ag Plus – это природный минерал клиноптилолит, обладающий рядом уникальных преимуществ перед традиционными песчаными и смешанными загрузками, применяемыми для задерживания взвешенных веществ. Под электронным сканирующим микроскопом гранулы выглядят многогранниками с шероховатой поверхностью и микроскопическими порами размером от 3 мкм. Благодаря этим свойствам они обладают поверхностью, более чем в 100 раз превышающей таковую кварцевого песка. Угловатая форма и сужающиеся поры позволяют задерживать грязь, ил и органические примеси, взвешенные в воде, путем флокуляции, стерического задерживания и адгезии. Шероховатая поверхность и пористость обеспечивают большую площадь поверхности, позволяя эффективно задерживать взвешенные примеси.

Для фильтрации через слой загрузки характерно удаление примесей от 5 мкм. Загрузка Filter-Ag Plus характеризуется меньшей величиной перепада давления и большей глубиной проникновения частиц примесей в толщу слоя загрузки, благодаря чему фильтры с загрузкой Filter-Ag Plus обладают большей грязеемкостью и повышенной длительностью фильтроцикла. Повышенная грязеемкость Filter-Ag Plus позволяет избежать быстрого нарастания перепада давления и забивания фронтального слоя загрузки, присущих песчаным фильтрам. Увеличение длительности фильтроцикла приводит к снижению частоты обратных промывок и экономии промывочной воды. Таким образом, идеальное сочетание формы гранул, свойств поверхности и пор делают Filter-Ag Plus отличным материалом для получения качественной очищенной воды с малым потреблением воды на собственные нужды.

Существенного сокращения капитальных затрат можно добиться проектированием системы водоочистки под загрузку Clack Filter-Ag Plus. Ее низкое гидравлическое сопротивление, высокая производительность и грязеемкость в сочетании с уменьшенным потреблением промывочной воды позволяют уменьшить габаритные размеры оборудования и снизить нагрузку на насосные станции. Низкая плотность загрузки Filter-Ag Plus также позволяет сэкономить средства на доставке и транспортировке.

Загрузка Filter-Ag Plus может быть использована в системах напорной и проточной фильтрации. Благодаря своим уникальным свойствам, Filter-Ag Plus может заменить собой смешанные загрузки полидисперсного свойства.

Преимущества

Увеличение глубины фильтрующего слоя приводит к улучшению качества очищенной воды и увеличению срока службы оборудования;

Высокая грязеемкость позволяет увеличить продолжительность фильтроциклов с существенной экономией воды на собственные нужды и сокращением времени простоя при промывках;

Высокая удельная производительность загрузки позволяет сократить капитальные затраты и пространство, отведенное под размещение оборудования;

Сниженная стоимость доставки за счет меньшей насыпной плотности загрузки;

Замена смешанных загрузок на Filter-Ag Plus в эксплуатируемых установках может улучшить показатели фильтра;

Filter-Ag Plus это природный, экологичный материал;

Физические свойства

Цвет	от светло-коричневого до практически белого
Плотность материала	2,2 г/см ³
Насыпная плотность	0,8 кг/дм ³
Размер частиц US Mesh	14×30
Эффективный размер	0,55 мм
Коэффициент однородности	1,8
Твердость по Моссу	4...5

Рабочие параметры

pH	Широкий диапазон
Температура обрабатываемой воды, макс.	60°C
Высота слоя загрузки	600...900 мм
Свободное пространство в фильтре	50% от высоты слоя, мин.
Линейная скорость фильтрования в рабочем режиме	30...48 м/час
Линейная скорость при взрыхлении	36...48 м/час
Расширение слоя при взрыхлении	30...40% высоты слоя загрузки
Перед первым взрыхлением необходимо выдержать загрузку в воде в течении 12 часов	
Необходимо наличие поддерживающего слоя гравия	

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acc. to OSHA HCS (29CFR 1910.1200) and WHMIS 2015 regulations

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1 Identification

- **Product identifier**
- **Trade name:** Filter-Ag Plus
- **CAS Number:**
12173-10-3
- **Recommended use and restriction on use**
- **Recommended use:** Mixture of naturally occurring raw materials, sintered at high temperatures
- **Restrictions on use:** No relevant information available.
- **Details of the supplier of the Safety Data Sheet**
- **Manufacturer/Supplier:**
Clack Corporation
4462 Duraform Lane
Windsor, WI 53598 USA
Tel: 608-846-3010
- **Emergency telephone number:**
ChemTel Inc.
(800)255-3924 (North America)
+1 (813)248-0585 (International)

2 Hazard(s) identification

- **Classification of the substance or mixture**
The substance is not classified as hazardous according to the Globally Harmonized System (GHS).
- **Additional information:** Long term inhalation of product dust may be harmful.

· Label elements

- **GHS label elements** Not regulated.
- **Hazard pictograms:** Not regulated.
- **Signal word:** Not regulated.
- **Hazard statements:** Not regulated.
- **NFPA ratings (scale 0 - 4)**



Health = 0
Fire = 0
Reactivity = 0

- **HMIS-ratings (scale 0 - 4)**



Health = 0
Fire = 0
Reactivity = 0

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- **Other hazards** There are no other hazards not otherwise classified that have been identified.

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3 Composition/information on ingredients

- **Chemical characterization: Substances**

- **CAS No. Description**

12173-10-3 Clinoptilolite Zeolite/ Potassium, Calcium, Sodium Aluminosilicate

- **Components:**

14808-60-7	Quartz (SiO ₂)	 Carc. 1A, H350	<0.1%
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- **Additional information:** For the wording of the listed Hazard Statements refer to section 16.

4 First-aid measures

- **Description of first aid measures**

- **After inhalation:** Supply fresh air; consult doctor in case of complaints.

- **After skin contact:**

Immediately wash with water and soap and rinse thoroughly.

If skin irritation is experienced, consult a doctor.

- **After eye contact:**

Remove contact lenses if worn.

Rinse opened eye for several minutes under running water. If symptoms persist, consult a doctor.

- **After swallowing:**

Rinse out mouth and then drink plenty of water.

Do not induce vomiting; immediately call for medical help.

- **Most important symptoms and effects, both acute and delayed:**

Gastric or intestinal disorders when ingested.

- **Indication of any immediate medical attention and special treatment needed:**

No relevant information available.

5 Fire-fighting measures

- **Extinguishing media**

- **Suitable extinguishing agents:** Use fire fighting measures that suit the environment.

- **For safety reasons unsuitable extinguishing agents:** None.

- **Special hazards arising from the substance or mixture** No relevant information available.

- **Advice for firefighters**

- **Protective equipment:**

Wear self-contained respiratory protective device.

Wear fully protective suit.

6 Accidental release measures

- **Personal precautions, protective equipment and emergency procedures**

Ensure adequate ventilation.

For large spills, wear protective clothing.

For large spills, use respiratory protective device against the effects of fumes/dust/aerosol.

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- **Environmental precautions** No special measures required.
- **Methods and material for containment and cleaning up** Pick up mechanically.
- **Reference to other sections**
See Section 7 for information on safe handling.
See Section 8 for information on personal protection equipment.
See Section 13 for disposal information.

7 Handling and storage

- **Handling**
- **Precautions for safe handling:**
Use only in well ventilated areas.
Prevent formation of dust.
Any deposit of dust which cannot be avoided must be regularly removed.
- **Information about protection against explosions and fires:** No special measures required.
- **Conditions for safe storage, including any incompatibilities**
- **Storage**
- **Requirements to be met by storerooms and receptacles:**
Avoid storage near extreme heat, ignition sources or open flame.
Store in cool, dry conditions in well sealed receptacles.
- **Information about storage in one common storage facility:**
Store away from oxidizing agents.
Store away from foodstuffs.
- **Further information about storage conditions:**
Store inside. Keep out of sunlight. Sunlight exposure damages bags.
- **Specific end use(s)** No relevant information available.

8 Exposure controls/personal protection

· Control parameters

· Components with limit values that require monitoring at the workplace:

12173-10-3 Clinoptilolite Zeolite/ Potassium, Calcium, Sodium Aluminosilicate

OSHA PEL (USA) Ceiling limit value: 15 mg/m³

14808-60-7 Quartz (SiO₂)

PEL (USA)	see Quartz listing
REL (USA)	Long-term value: 0.05* mg/m ³ *respirable dust; See Pocket Guide App. A
TLV (USA)	Long-term value: 0.025* mg/m ³ *as respirable fraction
EL (Canada)	Long-term value: 0.025 mg/m ³ ACGIH A2; IARC 1

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EV (Canada)	Long-term value: 0.10* mg/m ³ *respirable fraction
LMPE (Mexico)	Long-term value: 0.025* mg/m ³ A2, *fracción respirable

· Exposure controls

· Personal protective equipment:

· General protective and hygienic measures:

- Keep away from foodstuffs, beverages and feed.
- Immediately remove all soiled and contaminated clothing.
- Wash hands before breaks and at the end of work.
- Do not inhale dust / smoke / mist.

· Engineering controls: Provide adequate ventilation.

· Breathing equipment:

- Not required under normal conditions of use.
- Use respiratory protection when grinding or cutting material.
- Use suitable respiratory protective device when high concentrations are present.
- P95 mask

· Protection of hands:



Protective gloves

Wear gloves for the protection against mechanical hazards according to OSHA and NIOSH rules.

· Eye protection:



Safety glasses

· Body protection: Protective work clothing

· Limitation and supervision of exposure into the environment

No relevant information available.

· Risk management measures See Section 7 for additional information.

9 Physical and chemical properties

· Information on basic physical and chemical properties

· Appearance:

Form:	Granulate
Color:	According to product specification
Odor:	Characteristic
Odor threshold:	Not determined.

· pH-value:

Not determined.

· Melting point/Melting range:

Not determined.

· Boiling point/Boiling range:

Not determined.

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· Flash point:	Not applicable.
· Flammability (solid, gaseous):	Not applicable.
· Auto-ignition temperature:	Not determined.
· Decomposition temperature:	Not determined.
· Danger of explosion:	Product does not present an explosion hazard.
· Explosion limits	
Lower:	Not determined.
Upper:	Not determined.
· Oxidizing properties:	Non-oxidizing.
· Vapor pressure:	Not determined.
· Density at 20°C (68 °F):	2.2 - 2.4g/cm ³ (18.36-20.03 lbs/gal)
· Relative density:	Not determined.
· Vapor density:	Not determined.
· Evaporation rate:	Not determined.
· Solubility in / Miscibility with Water:	Not miscible or difficult to mix.
· Partition coefficient (n-octanol/water):	Not determined.
· Viscosity	
Dynamic:	Not determined.
Kinematic:	Not determined.
· Other information	No relevant information available.

10 Stability and reactivity

- **Reactivity:** No relevant information available.
- **Chemical stability:**
- **Thermal decomposition / conditions to be avoided:**
No decomposition if used and stored according to specifications.
- **Possibility of hazardous reactions**
As the product is supplied it is not capable of dust explosion; however enrichment with fine dust causes risk of dust explosion.
- **Conditions to avoid** Prevent formation of dust.
- **Incompatible materials** No relevant information available.
- **Hazardous decomposition products** Toxic metal oxide smoke

11 Toxicological information

- **Information on toxicological effects**
- **Acute toxicity:**
- **LD/LC50 values that are relevant for classification:** None.

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- **Primary irritant effect:**
- **On the skin:** Based on available data, the classification criteria are not met.
- **On the eye:** Based on available data, the classification criteria are not met.
- **Sensitization:** No sensitizing effects known.

· **IARC (International Agency for Research on Cancer):**

14808-60-7 | Quartz (SiO₂)

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· **NTP (National Toxicology Program):**

Substance is not listed.

· **OSHA-Ca (Occupational Safety & Health Administration):**

Substance is not listed.

· **Probable route(s) of exposure:**

Ingestion.
Inhalation.
Eye contact.
Skin contact.

- **Germ cell mutagenicity:** Based on available data, the classification criteria are not met.
- **Carcinogenicity:** Based on available data, the classification criteria are not met.
- **Reproductive toxicity:** Based on available data, the classification criteria are not met.
- **STOT-single exposure:** Based on available data, the classification criteria are not met.
- **STOT-repeated exposure:** Based on available data, the classification criteria are not met.
- **Aspiration hazard:** Based on available data, the classification criteria are not met.

12 Ecological information

- **Toxicity**
- **Aquatic toxicity** No relevant information available.
- **Persistence and degradability** No relevant information available.
- **Bioaccumulative potential:** No relevant information available.
- **Mobility in soil:** No relevant information available.
- **Additional ecological information**
- **General notes:** Generally not hazardous for water
- **Results of PBT and vPvB assessment**
- **PBT:** Not applicable.
- **vPvB:** Not applicable.
- **Other adverse effects** No relevant information available.

13 Disposal considerations

- **Waste treatment methods**
- **Recommendation:**
The user of this material has the responsibility to dispose of unused material, residues and containers in compliance with all relevant local, state and federal laws and regulations regarding treatment, storage and disposal for hazardous and nonhazardous wastes.
Smaller quantities can be disposed of with household waste.

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Can be reused after reprocessing.

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· **Uncleaned packagings**

· **Recommendation:** Disposal must be made according to official regulations.

14 Transport information

· **UN-Number**

· DOT, ADR, IMDG, IATA

Not regulated.

· **UN proper shipping name**

· DOT, ADR, IMDG, IATA

Not regulated.

· **Transport hazard class(es)**

· DOT, ADR, IMDG, IATA

· Class

Not regulated.

· **Packing group**

· DOT, ADR, IMDG, IATA

Not regulated.

· **Environmental hazards**

· Marine pollutant:

No

· **Special precautions for user**

Not applicable.

· **Transport in bulk according to Annex II of
MARPOL73/78 and the IBC Code**

Not applicable.

15 Regulatory information

· **Safety, health and environmental regulations/legislation specific for the substance or mixture**

· United States (USA)

· SARA

· **Section 302 (extremely hazardous substances):**

Substance is not listed.

· **Section 355 (extremely hazardous substances):**

Substance is not listed.

· **Section 313 (Specific toxic chemical listings):**

Substance is not listed.

· **TSCA (Toxic Substances Control Act)**

Substance is not listed.

· **Proposition 65 (California)**

· **Chemicals known to cause cancer:**

Present in trace quantities.

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· **Chemicals known to cause reproductive toxicity for females:**

Substance is not listed.

· **Chemicals known to cause reproductive toxicity for males:**

Substance is not listed.

· **Chemicals known to cause developmental toxicity:**

Substance is not listed.

· **Carcinogenic categories**

· **EPA (Environmental Protection Agency):**

Substance is not listed.

· **IARC (International Agency for Research on Cancer):**

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· **NIOSH-Ca (National Institute for Occupational Safety and Health):**

Substance is not listed.

· **Canadian Domestic Substances List (DSL):**

Substance is not listed.

16 Other information

This information is based on our present knowledge. However, this shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.

· **Date of preparation / last revision** October 16, 2017 / -

· **Abbreviations and acronyms:**

ADR: European Agreement concerning the International Carriage of Dangerous Goods by Road

IMDG: International Maritime Code for Dangerous Goods

DOT: US Department of Transportation

IATA: International Air Transport Association

CAS: Chemical Abstracts Service (division of the American Chemical Society)

NFPA: National Fire Protection Association (USA)

HMIS: Hazardous Materials Identification System (USA)

LC50: Lethal concentration, 50 percent

LD50: Lethal dose, 50 percent

PBT: Persistent, Bio-accumulable, Toxique

vPvB: very Persistent and very Bioaccumulative

NIOSH: National Institute for Occupational Safety and Health

OSHA: Occupational Safety & Health Administration

Carc. 1A: Carcinogenicity – Category 1A

· **Sources**

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Website, European Chemicals Agency (echa.europa.eu)

Website, US EPA Substance Registry Services (ofmpub.epa.gov/sorinternet/registry/substreg/home/overview/home.do)

Website, Chemical Abstracts Registry, American Chemical Society (www.cas.org)

Patty's Industrial Hygiene, 6th ed., Rose, Vernon, ed. ISBN: 978-0-470-07488-6

Casarett and Doull's Toxicology: The Basic Science of Poisons, 8th Ed., Klaasen, Curtis D., ed., ISBN: 978-0-07-176923-5.

Safety Data Sheets, Individual Manufacturers

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