



Sustainable and eco friendly cleaning with the force of nature

Made in Germany

hagenuk BIOSATIVA OS product family

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hagenuk BIOSATIVA – the completely biodegradable cleaning concentrate

- PATENTED - MADE IN GERMANY
- Completely biodegradable
- Made of naturally renewable raw materials
- Skin-compatible, non-toxic to humans and animals

What is hagenuk BIOSATIVA and how does it work?

hagenuk BIOSATIVA is an ecological water soluble cleaning concentrate that solves greasy and oily dirt and thus enables natural biological degradation. Enormous cleaning power is achieved with the innovative surfactants contained therein.

Further, hagenuk BIOSATIVA is

- Non-hazardous to water, animals or plants
- Non-toxic to humans, animals and environment
- Neutral, non-aggressive to paints, plastics or other materials
- Dermatologically harmless
- Completely degradable within several days
- Made of controlled ecologically cultivated ingredients

The hagenuk BIOSATIVA OS product family comprises several formulas for different cleaning purposes and applications:

- For canteen kitchens, snack stalls, bakeries, catering, hotels, gastronomy, washing rooms and sanitary areas, etc.
- For industry, vehicle fleets, machinery, workshops, production halls and factory workshops, petrol stations, etc.
- For ecological operations, cleaning of railway stations and street, etc.
- For odour prevention, particularly petroleum odour, etc.
- For cleaning up of waters and shores, etc.
- For ground and soil remediation, etc.

The SGS Institute Fresenius has prepared the declarations and performed marking verifications (merchantability) and the safety data sheet.

What is a surfactant?

Surfactant i.e. a surface-active agent, is a substance that once solved in the water provides the product with the ability to remove dirt from surfaces (machines, floors, walls, etc.), human skin, textiles and other solid substances.

How do the surfactants work?

Effect on the surface tension:

The surfactants lower the surface tension of the water.

Wetting power of surfactants:

Under the term wetting power shall be understood spreading capacity of liquids on (solid) surfaces. The lower the surface tension of the liquid is, the better is the wetting. Therefore, one drop of a surfactant spreads better than a water drop as the hydrophobic tail of the surfactant molecule creates contact between the surface and the water (the hydrophilic head is in water) and in this way strong intermolecular forces are created.

Dispersing properties:



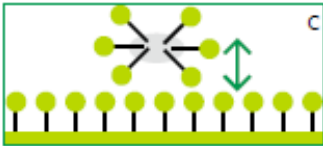
Accumulation of surfactant anions on the surface and soil (Fig. a)

The surfactant anions function as a connector between hydrophilic water and hydrophobic surface and soil (surface activity of surfactants)



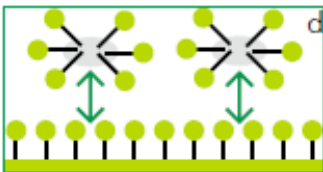
Lowering the soil adherence (Fig. b)

The (negatively) like-charged anions of the surfactant repel each other. The soil particles are loosened from the surface and break up.



Soil detachment from the surface (Fig. c)

The negative charges of surfactant anions repel each other. Micelles are formed (during the formation of micelles the surfactant molecules surround the soil particles).



Keeping soil from redeposition (Fig. d)

The repulsion of the same charges result in dispersion of soil particles, i.e. soil particles are kept in suspension. Soil redeposition is avoided.

Based on the properties of surfactants

- Lowering the surface tension
- Surface activity
- hydrophilic/hydrophobic (amphiphilic) structure

the hagenuk BIOSATIVA product show during cleaning

- high wetting capacity
- excellent soil solution properties (anti-soil-effect)
- high dispersing properties

Use of hagenuk BIOSATIVA OS product family in practice

Areas of application: canteen kitchen, bakeries, snack stalls, slaughterhouses

Keep the working surfaces and the drains free of fat

The use of **hagenuk BIOSATIVA** avoids clogging of drains and filters from fat residues, greasy stoves and baking pans as well as greasy floors. Cleaning of fume extractor hoods and their filters belongs to one of possible applications offered by **hagenuk BIOSATIVA**. Regular use of **hagenuk BIOSATIVA** prevents fat deposition. It helps to keep your canteen kitchen clean and in good order and condition.

hagenuk BIOSATIVA is non-flammable and completely biodegradable. It is harmless to environment and free of chlorine. It removes animal and vegetable fats and oils.

The use of **hagenuk BIOSATIVA** product family is governed by the general waste disposal regulations and there is no need to observe any additional provisions. The cleaning effect of **hagenuk BIOSATIVA** continues in drains and, if used regularly, the pipes are kept almost fat-free.



Areas of application: Workshops, industrial and production plants

Cleaning of machines, workplaces, floors, motors, engines, etc., degreasing of parts, etc.

The **hagenuk BIOSATIVA** is ideal for degreasing work in the metal industry. It removes synthetic and mineral-based greases and oils. **hagenuk BIOSATIVA** is suitable for removal of soot, cleaning of machine parts, motor blocks, workplaces, tanks, hall floor, concrete floors and can be used in degreasing bathes (also with nozzle system) or as cooling liquid. There apply the general legal regulations governing waste disposal and as to **hagenuk BIOSATIVA** no additional provisions are to be observed.



Areas of application: Tanker and vessel cleaning

Cleaning of machine rooms, tanks, decks, etc.

The **hagenuk BIOSATIVA** is suitable for removal of mineral-based and synthetic oils and grease in storage tanks, machine rooms, etc.

It can be used in all cleaning systems and also under high pressure and temperatures. When heated, no harmful substances are released. **hagenuk BIOSATIVA** acts quickly, effectively, economically and presents no health hazards.



Areas of application: Agriculture

Cleaning of agricultural buildings, stables and machines

Environmental compatibility plays an important role in the agriculture. Therefore, the use of **hagenuk BIOSATIVA** in the agriculture is an absolute necessity. Plants and animals that come in contact with **hagenuk BIOSATIVA** are not adversely affected.

The **hagenuk BIOSATIVA** is suitable for cleaning of silos, stables, farms, machine halls and boxes as well as for cleaning of agricultural machines, engines and many others. It is ideal for use in high-pressure cleaners and is very economical in dosing.



Areas of application: Railway track installations and railway stations

Cleaning of wagons and track installations and keeping them oil-free

Oil pollution in the track area, on railway stations or along the rail routes can be effectively removed with **hagenuk BIOSATIVA** in an environmentally friendly manner. It has no negative effect on the environment and nature. The **hagenuk BIOSATIVA** meets the requirements of Deutsche Bahn AG. It is not aggressive with plastics, paints or other surfaces.



Areas of application: Environmental operations, railway station and road cleaning

Post-treatment of major oil spills

For cleaning up oil and fuel spills on roads and lanes, cleaners that meet the requirements of the tracks Federal Environment Agency can only be used. The **hagenuk BIOSATIVA** meets the relevant criteria to the full extent. The **hagenuk BIOSATIVA** does not affect adversely the road surface or other pavements and distinguishes itself by its particular environmental compatibility. Contrary to other common cleaning agents the **hagenuk BIOSATIVA** causes that the oil and grease molecules are dispersed and not bound to the cleaning agent. It has subsequent degreasing effect. In this way, clogging of the drainage systems with residues is avoided. The **hagenuk BIOSATIVA** is suitable for cleaning of marketplaces or festival grounds, fish market halls and many others.



Areas of application: Prevention of odours

Odour neutralisation

For example, rooms contaminated with fuel oil (boiler rooms, boiler systems, etc.) smell, as a rule, extremely unpleasantly. After cleaning with **hagenuk BIOSATIVA** and subsequent treatment with **hagenuk BIOSATIVA** the odour nuisance can be completely neutralized.



Areas of application: Cleaning up of waters and shores

Removal of oil films in littoral zones

Where the work with the common oil binding agents (mostly chemical and toxic) is impossible or can be only carried out with great difficulties (e.g. with residual oils and Diesel fuel oil polluted shore areas such as reed belts and rip raps), the application of **hagenuk BIOSATIVA** starts immediately the process of degradation and accelerates it significantly. The **hagenuk BIOSATIVA** is non-toxic to fish, algae, water fleas and other species in the water and on the water surface and is therefore assigned to the water hazard class 1 where substances with the lowest hazard to water are listed.

Many chemical oil removal agents bind the spilled oil and cause its sinking („out of sight, out of mind“) – during this process a lot of oxygen is consumed and the aquatic creatures often die of suffocation and not of the oil itself. The **hagenuk BIOSATIVA** ensures bioavailability of oil and thus facilitates the natural biological degradation. To determine the level of soiling/contamination a specialized laboratory shall be involved.



Areas of application: Waste water treatment plant

Faster degradation of oils, cleaning of clarifying tanks

The use of **hagenuk BIOSATIVA** in water treatment plants helps to degrade and remove the oil and grease residues effectively and in a natural manner. The **hagenuk BIOSATIVA** ensures environmentally friendly cleaning of facilities.



Areas of application: Earth remediation

Ecological soil remediation to remove the damage caused by oil

With **hagenuk BIOSATIVA** we offer the possibility to treat the contaminated soil in a biological manner. To determine the soil pollution degree of heavily contaminated soils, samples of the contaminated soil are to be analysed by a specialized laboratory.

After determination of chemical, geological and biological properties the **hagenuk BIOSATIVA** will be adjusted exactly to the required applications.



A product of:

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