

CELLOZYME 1000 HC – TECHNICAL DATA SHEET

Microbial Ecosystem for Wastewater Treatment of Hydrocarbons

Description

Cellozyme 1000 HC is a dehydrated, buff-coloured, microbial complex which may be readily mixed with water and liquid waste.

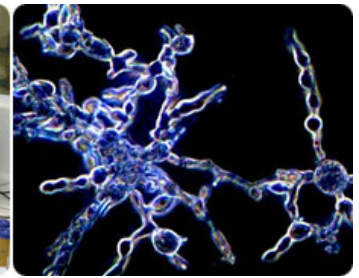
Cellozyme 1000 HC contains a unique microbial ecosystem which is capable of enzymatically metabolizing various types of hydrocarbons and organic chemical intermediates to ecologically acceptable end products under aerobic and facultative anaerobic conditions.

Why Use Cellozyme 1000 HC?

The discharge of toxic organic chemical wastes into municipal or industrial waste treatment systems markedly affects the microbial population by inhibiting or poisoning a number of vital enzyme systems in the microorganisms which are necessary to the process of biodegradation. Waste conversion, as a result of this loss of biological activity, is severely hampered unless there is a replacement for those microorganisms inactivated or poisoned by the toxicants.

There are adapted natural microbial cultures which are capable of coping with the toxicants, such as those found in Cellozyme 1000 HC. After reactivation with water, Cellozyme 1000 HC offers the advantage of immediate microbial activity at pre-determined levels to compensate for the toxic waste affecting the performance of municipal and industrial waste treatment systems.

Cellozyme 1000 HC, with its unique microbial ecosystem, is able to biologically degrade aliphatic and aromatic hydrocarbons, phenols, naphthalenes, amines and organic acids, aldehydes, ketones, glycols, alcohols, oils and other toxic organic wastes from petroleum refineries and organic chemical plants. In the process, Cellozyme 1000 HC, reduces the effects of toxic shock loadings on municipal and industrial waste treatment systems.



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For Cyanide Wastes

Inorganic and organic cyanide derivatives are extremely toxic to all life forms and can poison unadapted microorganisms even at very low concentrations. Cellozyme 1000 HC with its adapted microbial ecosystem, is capable, under aerobic conditions, of oxidizing the cyanide group at a very high velocity, to cyanates and then on to ecologically acceptable residues with normal processing times.

Organic cyanides, such as acetonitrile, have a lower index of toxicity when compared to HCN but are still toxic to unadapted microorganisms. Such compounds, through a unique system of oxidative biodegradation, are removed by Cellozyme 1000 HC both rapidly and efficiently in aerobic waste treatment systems. This will result in the maintenance of a dissolved oxygen concentration of no less than 2 – 3 ppm.

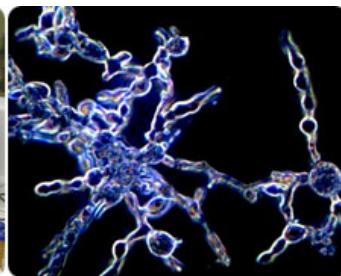
For Steel Mill Effluents

Steel mills, with their coking operations, generate considerable tonnages of phenol, cyanide and ammonia. This trilogy of toxicants is highly resistant to normal biological treatment and natural adaptation of the biomass is relatively unsuccessful due to the wide variance in shock loadings to which the biomass is exposed. Dissolved ammonia creates an antagonistic pH which inhibits biological growth and activity.

Cellozyme 1000 HC offers efficient removal of these toxicants without excessive capital expenditure for additional waste treatment equipment. For examples, neutralization of the ammonia with sulphuric acid or phosphoric acid brings the pH to 6.8 to 7.0, permitting the microbial ecosystem to use the ammonium salt as a source of metabolic nitrogen.

For Organic Colours and Dyes

Coloured wastes, such as those being generated by paper mills, organic chemical plants and textile dyeing plants, vary quite considerably in colour and intensity. Tannins and lignins from paper mill pulping liquors, produce red to brown effluents, which are highly resistant to treatment.



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For Organic Colours and Dyes continued...

Textile dyeing produces many different colours based on a wide variety of organic dyes, while organic chemical plants discharge highly coloured chemical intermediates containing a broad-spectrum of colour-producing chromophore groups.

Coloured wastes of this type strongly interfere with the natural photosynthetic processes of the receiving waters and impose extremely high BOD loadings on waste treatment systems. Cellozyme 1000 HC, with its unique microbial ecosystem, biodegrades tannins, lignins, organic dyes and highly coloured organic intermediates to compounds of little or no colour intensity.

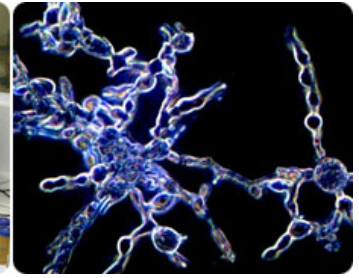
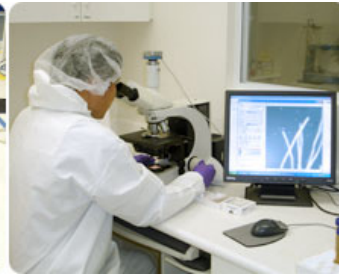
For Phenols and Halogenated Organic Compounds

Amongst the leading organic contaminants found in the effluents of many refineries and organic waste treatment plants are phenols of various types. In addition, they form the basic ring structure for many of the halogenated organic compounds, which are in common use today. Concentrations of phenol above 15 to 20 ppm are extremely toxic to unadapted biomass microorganisms and destroys the integrity of the biomass.

Cellozyme 1000 HC, with its adapted natural microbial ecosystem, is able to tolerate significantly higher concentrations of these toxic compounds and biodegrades them in less residence time. This quantum increase in biological activity is of major importance when applied to the removal of vast tonnages of recalcitrant, halogenated organic wastes, which are accumulating in our soil and water supplies.

Important Information

Cellozyme 1000 HC is supplied as a dehydrated powder and must be rehydrated with water to activate the microorganisms before use. To rehydrate, add one part of Cellozyme 1000 HC to eight to ten parts of warm water (100 ° – 120 ° F) and allow to stand for one to two hours, with occasional stirring. Upon completion of hydration the activated culture is added to the system to be treated.



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Directions for Use

Activated Sludge Systems

Initial Treatment:

Add 25 pounds per MGD flow rate for the first five days. Reduce dosage to 5 pounds per MGD flow rate for the next ten days.

Preventative Maintenance:

Add one pound per MGD flow rate bi-weekly or weekly.

Trickling Filter

Initial Treatment:

Add 25 pounds per MGD flow rate for the first five days. Reduce dosage to 5 pounds per day per MGD flow rate for the next ten days.

Preventative Maintenance:

Add one pound per MGD flow rate bi-weekly or weekly to maintain filter efficiency.

Oxidation Lagoons

Initial Treatment:

Add 25 pounds daily for five days per 500,000 gallons of lagoon capacity by adding as a slurry in water to the sewer line feeding the lagoon.

Preventative Maintenance:

Add one pound per 500,000 gallons of lagoon capacity weekly.

Parameters for Use in Treatment Systems

Parameter	Optimum	Minimum	Maximum
pH	7	4.5	9
DO	3 ppm +	2 ppm	
C/N ratio	10 - 1		20 - 1
Temperature	30oC	10oC	40oC

Free of toxic metals, such as hexavalent chromium and reasonable dilution of organic and inorganic cyanide wastes and normally toxic compounds.