



CELLOZYME 2000 L – TECHNICAL DATA SHEET

Microbial Ecosystem for Industrial Wastewater Treatment

Why use Cellozyme 2000 L?

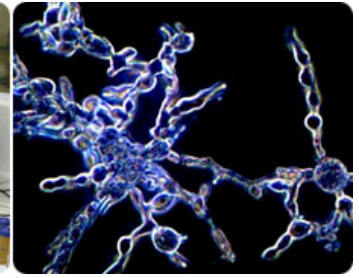
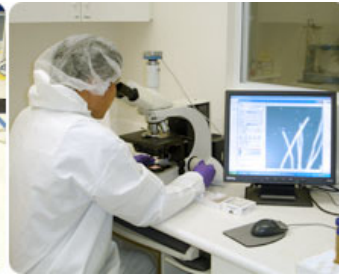
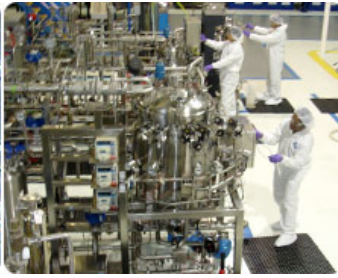
Cellozyme 2000 L contains a unique microbial ecosystem that is capable of enzymatically metabolizing various types of hydrocarbons and organic chemical intermediates to ecologically acceptable end products under aerobic and facultative anaerobic conditions.

The discharge of toxic organic chemicals from industrial waste treatment systems markedly affects the microbial population of the receiving environment. These chemicals inhibit or poison a number of vital enzyme systems of these microorganisms that 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 inactivated, poisoned microorganisms by adapted natural microbial cultures that are capable of coping with the toxins.

Cellozyme 2000 L after reactivation with water, offers the advantage of immediate microbial activity of water treatment systems at pre-determined levels to compensate for the toxic chemicals present in the municipal or industrial waste.

Cellozyme 2000 L with its unique microbial ecosystem is able to biologically degrade aliphatic and aromatic hydrocarbons, phenols, naphthalenes, amines, organic acids, aldehydes, ketones, glycols, alcohols, oils and other toxic organic wastes from petroleum refineries and organic chemical plants.

By using Cellozyme 2000 L the effects of toxic shock loadings on municipal and industrial waste treatment systems will be reduced considerably.



CELLOZYME 2000 L – TECHNICAL DATA SHEET

Cyanide Waste

Inorganic and organic cyanide derivatives are extremely toxic to all life forms and can poison un-adapted microorganisms even when these are present in very low concentrations.

Cellozyme 2000 L, with its adapted microbial ecosystem, is capable under aerobic conditions, of rapidly oxidizing the cyanide group to cyanates and then on to ecologically acceptable residues within normal processing times.

Organic cyanides such as acrylonitrile, have a lower index of toxicity when compared to HCN, but are still toxic to un-adapted microorganisms. Such compounds, through a unique system of oxidative biodegradation, are removed by Cellozyme 2000 L rapidly and efficiently in aerobic waste treatment systems.

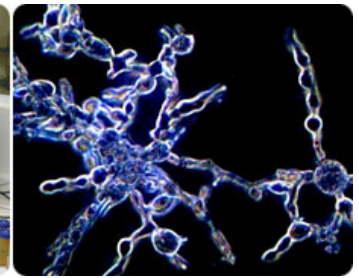
Cellozyme 2000 L helps build capability of maintaining in the waste treatment system dissolved oxygen content of at least 2 ppm.

Steel Mills

Steel mills, with their coking operations, generate considerable tonnages of phenol, cyanide and ammonia. This trilogy of toxins is highly resistant to normal biological treatment and natural adaptation of the biomass has relatively been unsuccessful due to the wide variance in shock loadings to which the biomass is exposed.

Moreover, the dissolved ammonia creates an antagonistic pH, which inhibits biological growth and activity. Neutralization of the ammonia with sulphuric acid or phosphoric acid brings the pH to 6.8 – 7.0 permitting the microbial ecosystem to use the ammonium salt as a source of metabolic nitrogen.

Cellozyme 2000 L offers efficient removal of these toxins without excessive capital expenditure for additional waste treatment equipment.



CELLOZYME 2000 L – TECHNICAL DATA SHEET

Organic Colours and Dyes

Coloured wastes, such as those being generated by paper mills, organic chemical plants and textile dyeing plants, vary considerably in colour and intensity. Tannins and lignins from paper mill pulping liquors produce red to brown effluents, which are highly resistant to treatment. Textile dyeing produces many different colours based on a wide variety of organic dyes, while organic chemical plants discharge. These are highly coloured chemical intermediates containing a broad-spectrum of colour-producing chromophore groups. Coloured wastes of this type strongly interfere with the natural photosynthetic process in the receiving waters and impose extremely high BOD loadings on waste treatment systems.

Cellozyme 2000 L, with its unique microbial ecosystem, biodegrades tannin, lignins, organic dyes and highly coloured organic intermediates to compounds of little or no colour intensity.

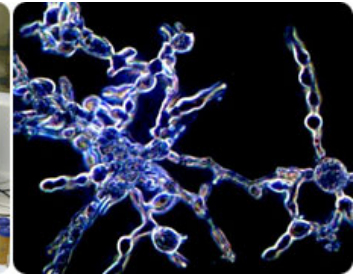
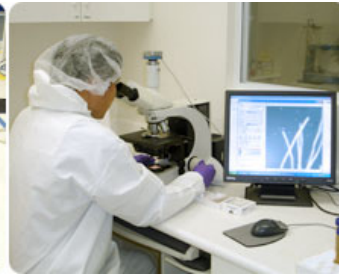
Phenols and Halogenated Organic Compounds

Amongst the leading organic contaminants found in organic waste treatment effluents of many refineries are various types of phenols. They also form the basic ring structure for many of the halogenated organic compounds that are in common use today. Concentrations of phenol above 15 to 20 ppm are extremely toxic to unadapted microorganisms and destroy the integrity of the biomass.

Cellozyme 2000 L, with its adapted natural microbial ecosystem, is able to tolerate significantly higher concentrations of these toxic compounds and biodegrades them in short resident times. This quantum increase in biological activity is of major importance when applied to the removal of vast tonnages of recalcitrant, halogenated organic wastes that are accumulating in our soil and water supplies.

Appearance and Odour

Cellozyme 2000 L is supplied as a milky brown liquid with a mild fermented broth smell.



CELLOZYME 2000 L – TECHNICAL DATA SHEET

Directions for Use

Activated Sludge Systems

Initial treatment:

Add 25 liters per MGD flow rate for the first 5 days. Reduce dosage to 5 liters per MGD flow rate for the next 10 days.

Preventative maintenance:

Add 1 liter per MGD flow rate bi-weekly or weekly.

Trickling Filter

Initial treatment:

Add 25 liters per MGD flow rate for the first 5 days.

Preventative maintenance:

Reduce dosage to 5 liters per day per MGD flow rate bi-weekly or weekly to maintain filter efficiency.

Oxidation Lagoons

Initial treatment:

Add 25 liters daily for 5 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 liter per 500,000 gallons of lagoon capacity weekly.

Table 1. Allowable Environmental Parameters

Parameter	Minimum	Optimum	Maximum
pH	4.5	7	9
Dissolved Oxygen (ppm)	2	3	No max
C:N Ratio		10:01	20:01
Temperature (°C)	10	30	40

Note: Wastewater must be free of toxic metals, such as chromium(VI)