

BIO CLEANING SOLUTIONS

Bio Tech GTX 20 FF Concentrate

IMPORTANT NOTICE

Green Worx CS contends that this product is manufactured according to and conforms to the terms and conditions as stipulated in SABS/TC 1006/SC 02 "Detergents, soaps, cleaners, degreasers and oil spill dispersants and absorbents" including SANS CD 1604ED1.1: Biologically enhanced cleaning and degreasing products.

Multi-purpose probiotic bio-formulation concentrate and multi-action microbial consortium.



Bio Tech GTX 20 FF probiotic / microbial consortium that demonstrates superior enzyme performance for use in multiple applications. It exhibits a broad range of degradation capabilities needed for a multi-purpose product efficacious in maintenance of drain line and grease traps, improving septic and waste degradation and cleaning and odour control making this product technologically the most advanced on the South African market.

In their natural environment, bacteria produce hundreds of enzymes in response to the organics present in their environment. They

produce extracellular enzymes that break down proteins, starches, fats, oils, greases, urine, esters, and toilet tissue into smaller particles outside the bacterial cell. The bacteria then transport the smaller particles across their cell membrane for use as an energy source and for building of new cellular components. Since bacteria detect the organics present as potential food and produce specific enzymes to breakdown these organics, it is a very efficient system. Many different enzymes are required to completely breakdown a substrate.

The bacillus consortium in **Bio Tech GTX 20 FF** produces seven separate enzymes to ensure a swift degradation of key organic contaminants to ensure drain lines, grease traps, septic systems and surfaces are biologically cleaned, and odours controlled. Although many bacteria can utilise these organics as food sources, it is the bacteria with the most rapid production of these enzymes that provide the most dramatic effects.

Safety of Bio Tech GTX 20 FF Consortium:

Bio Tech GTX 20 FF contains a blend of safe Bacillus microorganisms. Toxicity studies done by an independent laboratory shows that **Bio Tech GTX 20 FF** consortium has no acute oral toxicity, no acute dermal toxicity, and no acute inhalation toxicity at maximal test dose. Acute dermal irritation and acute eye irritation studies classify it as non-irritating, it does not elicit a skin sensitization reaction.

DATA SHEET

Benefits

Features

<ul style="list-style-type: none"> • Drain lines and grease traps – degrades and eliminates organics found in drain lines and grease traps. Regular addition of Bio Tech GTX 20 maintains a cleaner and odour-free system. • Septic and waste treatment – maintains effective activity in septic systems, eliminating the need for excessive pumping. Eliminates odours caused by incomplete digestion of malodorous volatile fatty acids. • Hard Surface and Bathroom cleaning and odour control – penetrates cracks, crevices, and pores of surfaces where organics accumulate, removing the organics leaving a visually cleaner surface. Provides long term odour control by removing the organics that cause odours and prevents their return. 	<ul style="list-style-type: none"> • A stable consortium of safe Bacillus spores • Production of multiple enzymes providing a wide range of degradation capabilities • A synergistic blend that works in concert to provide superior performance across multiple applications. • Excretion of high levels of amylase, cellulase, lipase and protease enzymes • Ability to work under aerobic and anaerobic conditions. • Single product simplicity for multi-application flexibility
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PRODUCT CHARACTERISTICS

- **Bacteria Counts** : 1.2 X 10⁹/ml.
- **Bacteria Type** : Bacillus consortium producing the following enzymes:
 - ✓ **Protease** – breaks down proteins (e.g., meat, excreted/secreted proteins) into amino acids.
 - ✓ **Lipase** – breaks down fats/grease into fatty acids and glycerol. If not broken down, fats can go rancid and lead to off-odours and blocked drains/fat grease traps.
 - ✓ **Amylase** – starch acts as a glue for dirt – amylases catalyse the break-down of starch into sugars which are then further used as a food source by the bacillus.
 - ✓ **Cellulase** – breaks down cellulosic material.
 - ✓ **Urease** - catalyzes the hydrolysis of urea into break-down products.
 - ✓ **Esterase** - splits esters into an acid and an alcohol in a chemical reaction with water called hydrolysis. Esters have characteristic odours most of which are pleasant/fruity, however can also include onion/garlic and worse odours.
 - ✓ **Xylanase** – help in breaking down plant cell walls.
 - What this means – the bacillus use the multitude of enzymes produced to break down the components of malodours and staining to provide microbial cleaning at the smallest level of dirt/contamination.
- **Salmonella** : Not detected
- **Appearance** : Clear liquid
- **Fragrance** : Pleasantly perfumed
- **Shelf-life** : Two years; maximum loss of 1.0 log at recommended storage condition

Dilution Rates (Follow dilution rate)

Bio Tech GTX 20 FF is diluted 1:19 to produce a ready to use product. Blend with soft water for 30 minutes and package under agitation. Label the RTU “Shake before use” as the biological spores may settle over time.

For general cleaning and deodorising of urinals, toilets, showers, tiles and floors:

The diluted **Bio Tech GTX 20 FF** concentrate can be further diluted dependent on application to an additional maximum of 1:9 and needs to be used on the day – do not store. Apply as per usual no need to rinse, can be left to air dry. Other suitable applications for **Bio Tech GTX 20 FF** to be formulated and to be used as an RTU when diluted 1:19.

1. **FOOD WASTE – DOMESTIC & INDUSTRIAL:** reducing blockage of drains, pipes: treatment of effluent not on main drainage: reduction of odours and general-purpose cleaning.

Area	Dilution	Initial Dose Rate	Regular Maintenance Rate	Method of Application
Effluent tanks and Cess Pits	1:19	400g per typical house	100g per month	Through any convenient access point e.g. toilet
Cess Pits	1:19	400g per typical house	100g per month	Through any convenient access point e.g. toilet
Urinals	1:19		Spray twice daily	
Bathroom	1:19		Daily cleaning	As per cleaning method
Drains	1:19	15g	15g/month	Direct

2. **AGRICULTURE WASTE:** reduction of high solids/crusting of waste: liquefaction and cleaning (i.e. cowsheds, piggeries, poultry farms, etc.)

Area	Dilution	Initial Dose Rate	Regular Maintenance Rate	Method of Application
Buildings	1:19	1kg per 10 tons animal weight	Weekly for two weeks, then 500gm per week	Spray over surfaces
Floors		1kg / 120m ²	½ kg/20 000 liter per week	Spray over surface
Effluent Pits		1kg / 250 000 liter	Weekly	Spray over cone
Ponds & Slurry Tanks		1kg / 250 000 liter	Weekly	Spray over cone

3. **SEWAGE PLANTS:** general aid to processing.

Area	Dilution	Initial Dose Rate	Regular Maintenance Rate	Method of Application
Trickling filters	1:19	1kg / 4,5 million liter	500g / 4.5 million liter per week	Add to primary settling tank
Anaerobic digesters		500g / 45 000-liter	Repeat for 3 days then per week	Add to inflow pipe
Retention ponds		500g / 45 000 liter	Repeat for 3 days then per week	Add to inflow pipe
Activated sludge		500g / 45 000 liter	Repeat for 3 days then per week	Add to inflow pipe

4. **ABATTOIRS:** for easier handling of high protein/fats in concentrated areas

Area	Dilution	Initial Dose Rate	Regular Maintenance Rate	Method of Application
Total effluent	1:19	4kg / 450 000 liter per day	Repeat for 3 days, then ½ kg / 450 000 liter	Add manually
Grease traps	1:19	100g / 500-liter capacity	50g / 500 liter per week	Pour through drain

Evaluation of Antimicrobial activity of Bio Tech GTX 20 FF by ASTM E 2315

Organisms used:

1. Methicillin-resistant *Staphylococcus aureus* Strain No. ATCC 6538 (Gram Positive Bacteria)
2. *Klebsiella pneumoniae* Strain No. ATCC 4352 (Gram Negative Bacteria)
3. *Escherichia coli* Strain No. ATCC 10799 (Gram Negative Bacteria)
4. *Pseudomonas aeruginosa* Strain No. ATCC 19154 (Gram Negative Bacteria)

Additional Information:

1. Contact time: 1 min, 5 mins, 30 mins and 1 hr.
2. Culture Growth time: 24 hrs.
3. Inoculum density: 1.00×10^5
4. Cfu: colony forming unit
5. Percentage reduction of Microorganisms (R): $100 \times (B-A/B)$

ANTIMICROBIAL ACTIVITY RESULTS

Table 1: Antibacterial Activity Results for 1 min contact time

Sample Identification	Test Culture	No. of colonies recovered at '0' hr [B]	No. of colonies recovered at 5 mins [A]	Reduction of Microorganisms [R]
1. Floor cleaner	Methicillin-resistant <i>Staphylococcus aureus</i> (MRSA)	1.05×10^5	4.4×10^3	47.57%
	<i>Klebsiella pneumoniae</i>	1.09×10^5	5.4×10^3	41.12%
	<i>Escherichia coli</i>	1.15×10^5	6.1×10^3	48.24%
	<i>Pseudomonas aeruginosa</i>	1.11×10^5	6.9×10^3	37.06%

Table 2: Antibacterial Activity Results for 5 mins contact time

Sample Identification	Test Culture	No. of colonies recovered at '0' hr [B]	No. of colonies recovered at '30 mins [A]	Reduction of Microorganisms [R]
1. Floor cleaner	Methicillin-resistant <i>Staphylococcus aureus</i> (MRSA)	1.05 X 10 ⁵	1.5 X 10 ³	95.42%
	<i>Klebsiella pneumoniae</i>	1.09 X 10 ⁵	2.2 X 10 ³	95.22%
	<i>Escherichia coli</i>	1.15 X 10 ⁵	2.7 X 10 ³	95.71%
	<i>Pseudomonas aeruginosa</i>	1.11 X 10 ⁵	3.5 X 10 ³	95.25%

Table 3: Antibacterial Activity Results for 30 mins contact time.

Sample Identification	Test Culture	No. of colonies recovered at '0' hr [B]	No. of colonies recovered at '30 mins [A]	Reduction of Microorganisms [R]
1. Floor cleaner	Methicillin-resistant <i>Staphylococcus aureus</i> (MRSA)	1.05 X 10 ⁵	3.4 X 10 ²	99.67%
	<i>Klebsiella pneumoniae</i>	1.09 X 10 ⁵	4.5 X 10 ²	99.58%
	<i>Escherichia coli</i>	1.15 X 10 ⁵	4.9 X 10 ²	99.57%
	<i>Pseudomonas aeruginosa</i>	1.11 X 10 ⁵	5.4 X 10 ²	99.51%

Table 4: Antibacterial Activity Results for 1 hr contact time

Sample Identification	Test Culture	No. of colonies recovered at '0' hr [B]	No. of colonies recovered at '30 mins [A]	Reduction of Microorganisms [R]
1. Floor cleaner	Methicillin-resistant <i>Staphylococcus aureus</i> (MRSA)	1.05 X 10 ⁵	1.9 X 10 ²	99.81%
	<i>Klebsiella pneumoniae</i>	1.09 X 10 ⁵	2.2 X 10 ²	99.79%
	<i>Escherichia coli</i>	1.15 X 10 ⁵	2.5 X 10 ²	99.78%
	<i>Pseudomonas aeruginosa</i>	1.11 X 10 ⁵	1.9 X 10 ²	99.82%

Name of the Organization	Vikr Bioscience
Customer Name	Mr. Bharat Panchal
Sample Description	1 Biotech Floor cleaner sample – dilution 1:80
Sample Collected by	Dr. Madhura Nerurkar
Sample received on	17/08/2020
Date of Test Initiation	17/08/2020
Sample ID	CBPL/2315/00068
Sample analysed by	Dr. Madhura Nerurkar
Method of analysis	ASTM E 2315
Microbiological analysis completed on	21/08/2020
Test Report No.	CBPL/TRT2315/00068

*Copy of full report available on request

Bio Tech GTX 20 FF Concentrate is designed as a bio-technical aid to treatment of organic waste material offering the following advantages; liquefaction and reduction of solids, reduction of odor, easier disposal of waste, aids general cleaning of soiled areas, safety in operation of effluent systems, offers a viable alternative to current processing techniques using a bio-technical approach.

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