

## BIO CLEANING SOLUTIONS

### Bio Tech GT Liquid Hand Soap Gel

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#### 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.



Green Worx Cleaning Solutions introduces new age hand hygiene bio-enzyme technology. Keeping hands clean through improved hand hygiene is one of the most important steps we can take to avoid getting sick and spreading germs to others. Many diseases and conditions are spread by not washing hands

with soap and clean, running water.

### When should you wash your hands?

- Before, during, and after preparing food
- Before eating food
- Before and after caring for someone who is sick
- Before and after treating a cut or wound
- After using the toilet
- After changing diapers or cleaning up a child who has used the toilet
- After blowing your nose, coughing, or sneezing
- After touching an animal, animal feed, or animal waste
- After handling pet food or pet treats
- After touching garbage

## How should you wash your hands with Bio Tech GT Foam Hand Soap?

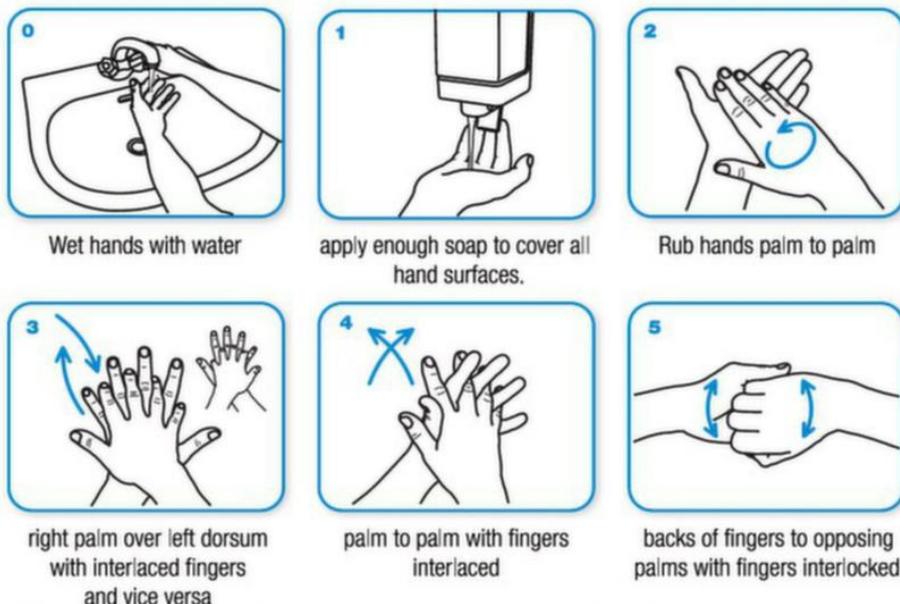
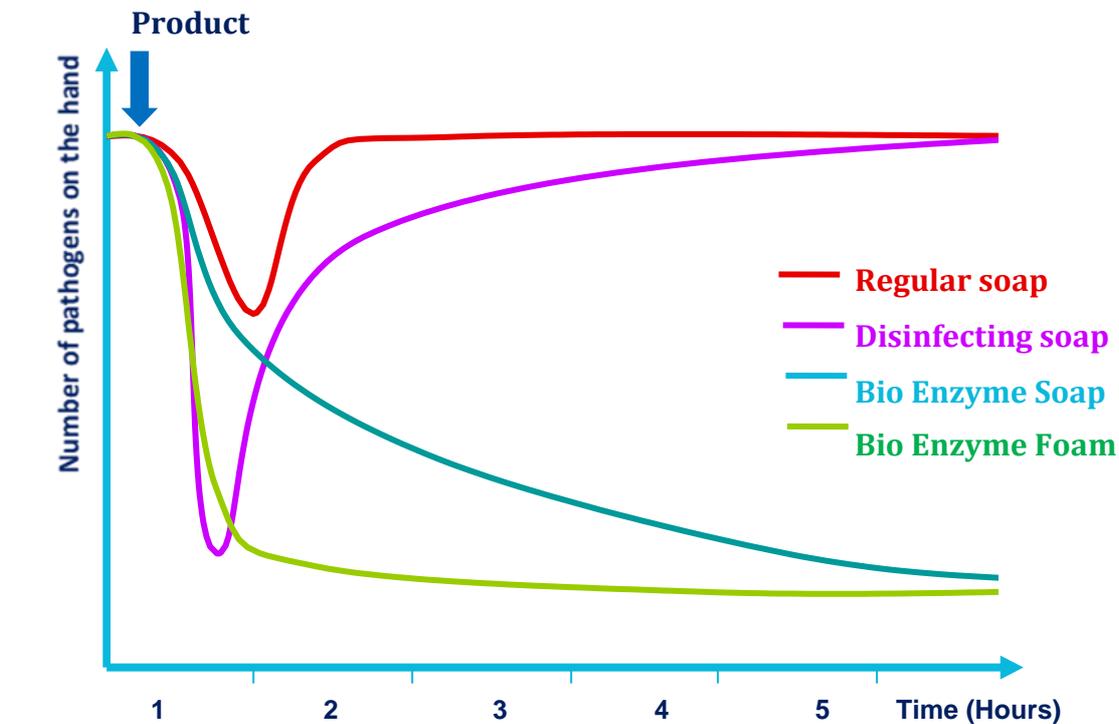
- **Wet** your hands with clean, running water (warm or cold), turn off the tap, and apply soap.
- **Lather** your hands by rubbing them together with the soap. Be sure to lather the backs of your hands, between your fingers, and under your nails.
- **Rub / Scrub** your hands for at least 20 seconds. Need a timer? Hum the “Happy Birthday” song from beginning to end twice.
- **Rinse** your hands well under clean, running water.
- **Dry** your hands using a clean towel or air dry them

### TESTING OF Liquid Hand Soaps

RESULTS OF Bio Enzyme Liquid Hand Soap

COMPARED TO CURRENT REGULAR & DISINFECTANT SOAPS

- The Green Worx CS Hand soap and foam: is a creamy and a foam Bio Enzyme skin cleanser creating a healthy and stable microflora on the hands and other skin areas.



The overall concept of Bio Enzyme hand hygiene is that immediately upon application the Bio Enzyme bacteria will colonize the hands and prevent pathogenic bacteria, yeasts and moulds from multiplying and spreading.

**SUMMARY:** It can be seen that there is a significant difference in the protection against the risk of infection between the hospital legacy cleaning and disinfectant solutions used over the past decades compared to the cleaning ability of Bio Enzyme Hand Soap solutions.

Of prime importance in infection control is the “**Protection Time Factor**”.

Studies show that staff hand washing is inconsistent. Therefore, the protection from disinfecting soaps of only minutes, compared to the many hours of Bio Enzyme protection offering significant advantage in infection control.

This chart demonstrates why Bio Enzyme products, in addition to risk reduction, also provide substantially better cleaning. Disinfectants stop working as soon as they are dry. Bio Enzymes keep working, cleaning and protecting surfaces, for up to three days after each application. However, since skin is a dynamic environment that is constantly touching many different surfaces, repetitively being contaminated and washed, the Bio Enzymes should be used several times per day and for each hand-washing.

## Biological Validation of Bio Enzyme Liquid Hand Soap

### Results

The test consisted out of three phases:

- Phase 1: comparative test for immediate and selected pathogen removal.
- Phase 2: protective effect of the bio-enzyme bacteria
- Phase 3: test in a real life situation

**Phase 1** indicated that Liquid Hand Soap without bio-enzymes/ bacteria was equally efficient in compared to other hand soaps and sanitizers.

**Phase 2** results indicated that the addition of the bacteria resulted in an improvement of the product performance. The bacteria were transferred to the skin and the risks of other micro-organisms was significantly reduced and suppressed for a longer period of time after application.

**Phase 3** showed that the everyday use of the skin cleansers provided a long lasting microbial protection of the hands. Although occasional bacterial contamination by hand contact with highly contaminated surfaces can never be prevented, the use of bacteria based hand hygiene products certainly reduces the risk of pathogenic organisms on the hands.

### Conclusion

**Bio Tech GT Liquid Hand Soap forms a healthy and protective micro flora on the hands.**

### Goal of the test

To verify the effect of Bio Tech GT Liquid Hand Soap on the micro flora of the skin.

**Location:** Green Worx R&D

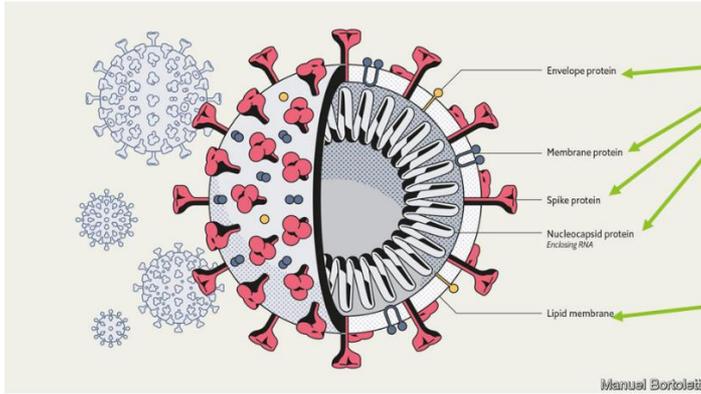
**Date:** July 2018

**Product used:** Green Worx CS Bio Tech GT Liquid Hand Soap

## PRODUCT CHARACTERISTICS

- **Bacteria Counts** : 6 X 10<sup>7</sup> /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 & glycerol. If not broken down, fats can go rancid & 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 malodour and staining to provide microbial cleaning at the smallest level of dirt/contamination.
- **Salmonella** : Not detected
- **Appearance** : Blue Gel
- **Fragrance** : Pleasantly perfumed
- **Shelf-life** : Two years; maximum loss of 1.0 log at recommended storage condition

## Bacillus Subtilis produces enzymes



The enzyme protease breaks down protein - thus breaking down the cell wall

The enzyme lipase breaks down lipid / fat - thus breaking down the lipid membrane

Bio Enzymes are special proteins that can break large molecules into small molecules. Different types of enzymes can break down different nutrients: ... protease enzymes break down proteins into amino acids. Lipase enzymes break down lipids (fats and oils) into fatty acids and glycerol.

### Spectrum of activity for Bio Tech GTX products

## TEST REPORT

<b>Issued to:</b> M/S Green Worx Cleaning Solutions Unit 1, New Port Business Quarts Rd, Kya Sand Bus. Park Kya Sand, South Africa	<b>Report No.</b>	<b>MS- 071220-01</b>
	Report date:	12/ 12/ 2020
	Sample Received:	07/12/2020
	Analysis date:	07/12/2020 to 12/12/2020
	Sampled By:	Customer

**Sample Description:** Bio Tech GTX Probiotic Surface Cleaner & Sanitiser.

P-1/2

**Brand Name:** - Bio Tech GTX

**Condition of Sample:** Received in Sealed & Marked Plastic container.

### RESULTS

Sr. No.	Product	Unit	Test Method	Result	Remark
1	Minimum Inhibitory Count (MIC)	-	AOAC/SRTL SOP	Yes	Passed
2	Minimum Bactericidal Count (MBC)	%	ASTM E1153/AOAC	>99.9	Passed
3	Quantitative kill-time test for Bacteria	%	ASTM E1153/AOAC	>99.0% reduction in 30 sec	Passed
4	Quantitative kill-time test for Virus (including HINI and common flu virus)	%	ASTM E-1153/AOAC	>99.0% reduction in 30 sec	Passed
5	Lead (as Pb)	ppm	GIMEFCC/SRTL SOP/01	Not Detected	Passed
6	Chromium Element s	ppm	GIMEFCC/SRTL SOP/01	Not Detected	Passed
7	Sanitizer Base (solvent)	%	GIMEFCC	Natural Enzymes, Plant Based Surfactants, D.M. water, Combined with pleasant Odour.	Passed
8	Anti - Corona Virus Effect	%	ASTME1153	99.90	Passed
9	Human Safe		GIMEFCC	Yes	Passed
10	Toxicity	-	GIMEFCC	Not Detected	Passed
11	Eye Safe & Skin Safe	-	GIMEFCC	Passed the test	Passed
12	Food Safe	-	GIMEFCC	Yes	Passed
13	Animal Safe	-	GIMEFCC	Yes	Passed
14	Vegetation Safe	-	GIMEFCC	Yes	Passed

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**Sample Description: Bio Tech GTX Probiotic Surface Cleaner & Sanitiser.**

**Brand Name: - Bio Tech GTX**

Sr. No.	Product	Unit	Test Method	Result	Remark
15	Water Solubility	%	OCED (Method 301G)	99.0%	Passed
16	Acute dermal Toxicity	-	GIMEFCC	Negative	Passed
17	Acute Oral Toxicity	-	GIMEFCC	Negative	Passed
18	Bioaccumulation	-	GIMEFCC	None	Passed
19	Efficiency	%	ASTME1153	99.80	Passed
20	UTL Layering	Micron	GIMEFCC/AOAC	0.80	Passed
21	Ingestion Effect	-	GIMEFCC/ AOAC	Absent	Passed
22	Biodegradable	%	OCED (Method 301G)	99%	Passed
23	pH at 20-c	-	SRTL/SOP/01	6.20	Passed
24	Hazardous Polymerization	%	GIMEFCC/SRTL SOP/01	Not Detected	Passed
25	Anti Bacterial Effect	%	GIMEFCC/SRTL SOP/01	99.90	Passed

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**END OF REPORT**

TESTED BY  


Technical Manager  
  
AUTHORIZED SIGNATORY

From the above analysis it can be clearly seen that Bio Tech GTX 1 is effective against

- Anti Covid Virus Effect at 99.9% within 30 seconds – international test method applied ASTME1153 measured at 99.9%

**In addition to the above it has been proven that Bio Tech GTX has a positive kill of 99% on the following microorganisms**

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. Bio Tech GTX Probiotic Floor cleaner	<b>Methicillin-resistant <i>Staphylococcus aureus (MRSA)</i></b>	1.05 X 10 <sup>5</sup>	3.4 X 10 <sup>2</sup>	99.67%
	<i>Klebsiella pneumoniae</i>	1.09 X 10 <sup>5</sup>	4.5 X 10 <sup>2</sup>	99.58%
	<i>Escherichia coli</i>	1.15 X 10 <sup>5</sup>	4.9 X 10 <sup>2</sup>	99.57%
	<i>Pseudomonas aeruginosa</i>	1.11 X 10 <sup>5</sup>	5.4 X 10 <sup>2</sup>	99.51%

## Bio Tech GTX Probiotic at a 1:4 dilution and 24hours contact time

### Surviving microorganisms (cfu) and % kill at 1:4 dilution and 24hours contact time

First Run Contact Time: 24hours			
Organism challenged with	Control sample	Test sample	% Kill (1)
<i>S. aureus</i>	2.0E+09	1.0E+02	99.9%
<i>E. coli</i>	2.3E+08	5.0E+03	99.9%
<i>P. aeruginosa</i>	3.0E+07	1.0E+02	99.9%
<i>P. vulgaris</i>	1.1E+08	1.0E+02	99.9%
<i>E. aerogens</i>	6.0E+08	4.2E+04	99.9%
<i>E. faecalis</i>	1.4E+08	1.1E+04	99.9%
<i>A. faecalis</i>	7.0E+08	1.0E+03	99.9%
<i>C. albicans</i>	2.1E+06	1.0E+01	99.9%
<i>S. epidermidis</i>	2.8E+06	5.0E+03	99.8%
<i>M. luteus</i>	9.0E+07	1.1E+04	99.9%

Study conducted by Mirochem Specialised lab services – full study available on request

All test results are available on request – please email [info@greenworx.eco](mailto:info@greenworx.eco)

**Bio Tech GTX Liquid Hand Soap** is designed as a bio-technical aid to treatment of organic waste material offering liquefaction and reduction of solids, reduction of odour, 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. Regular use and rinsing will aid in the degradation of organics within the drain system.

### Mixing and dilution guidelines.

Most formulators can produce liquid products. This product allows formulators to be present in the lucrative biological cleaning product market without extensive specialist knowledge.

- The most common 'bio' products in the industrial, institutional, and consumer markets are liquids - the Bio Tech GTX concentrate series are designed specifically for this use.
- Simple format that is easily dilutable in clean water.
- Concentrates are easy to handle and store.
- Simple dilution format for easy calculation in formulation – follow the guidelines for dilution and mixing. Always ensure you work in a hygienically clean environment free from contaminants. When decanting the concentrate into a mixing vessel, ensure the vessel is hygienically clean, and the mixing apparatus is clean before use. Once you have achieved the desired dilution, ensure that any container to be decanted in is hygienically clean and that the closing cap is clean and free of any contaminants.

### Product Availability

Bulk Pack Sizes – 1000 liter, 25, liter and 5 liter

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