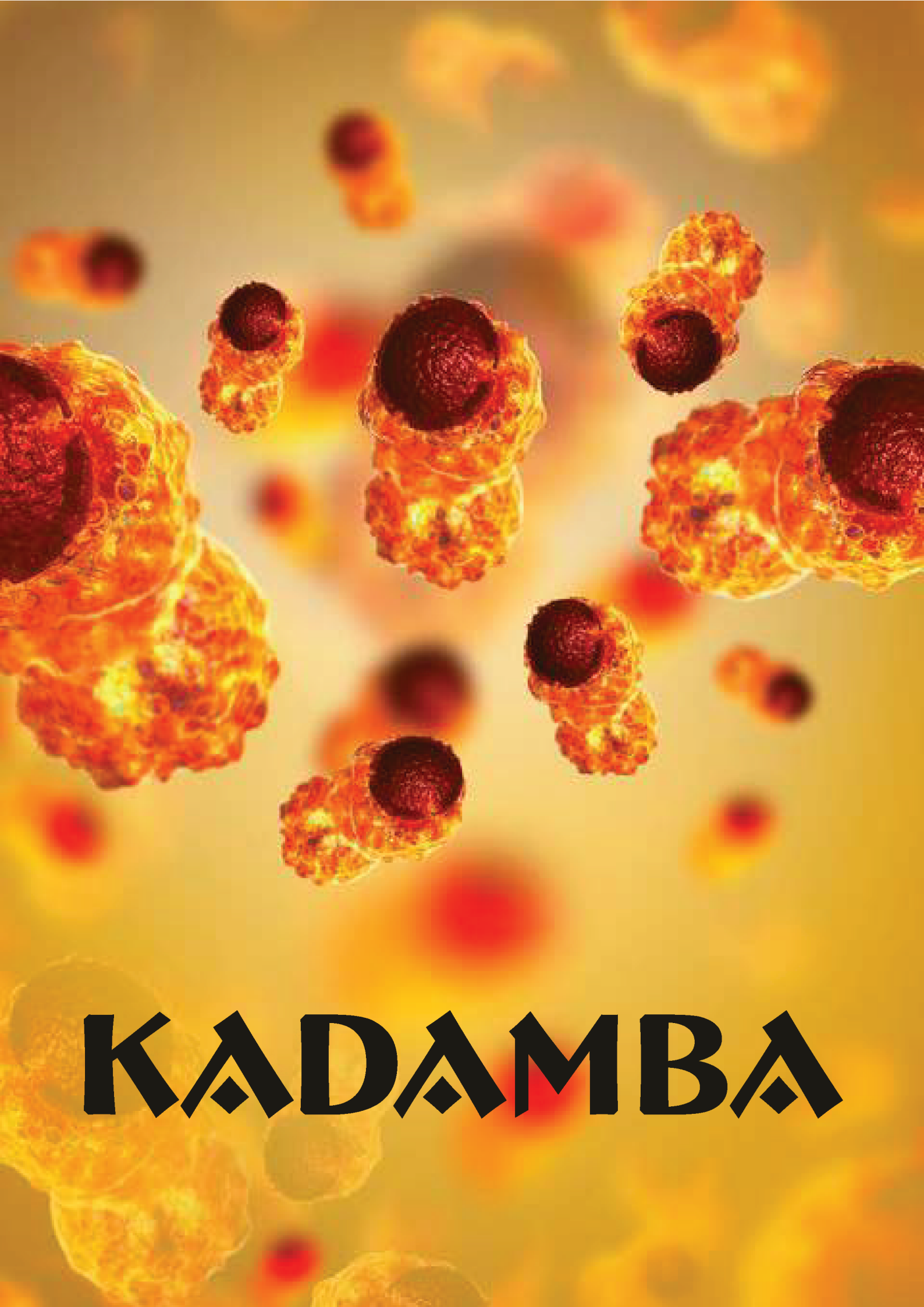
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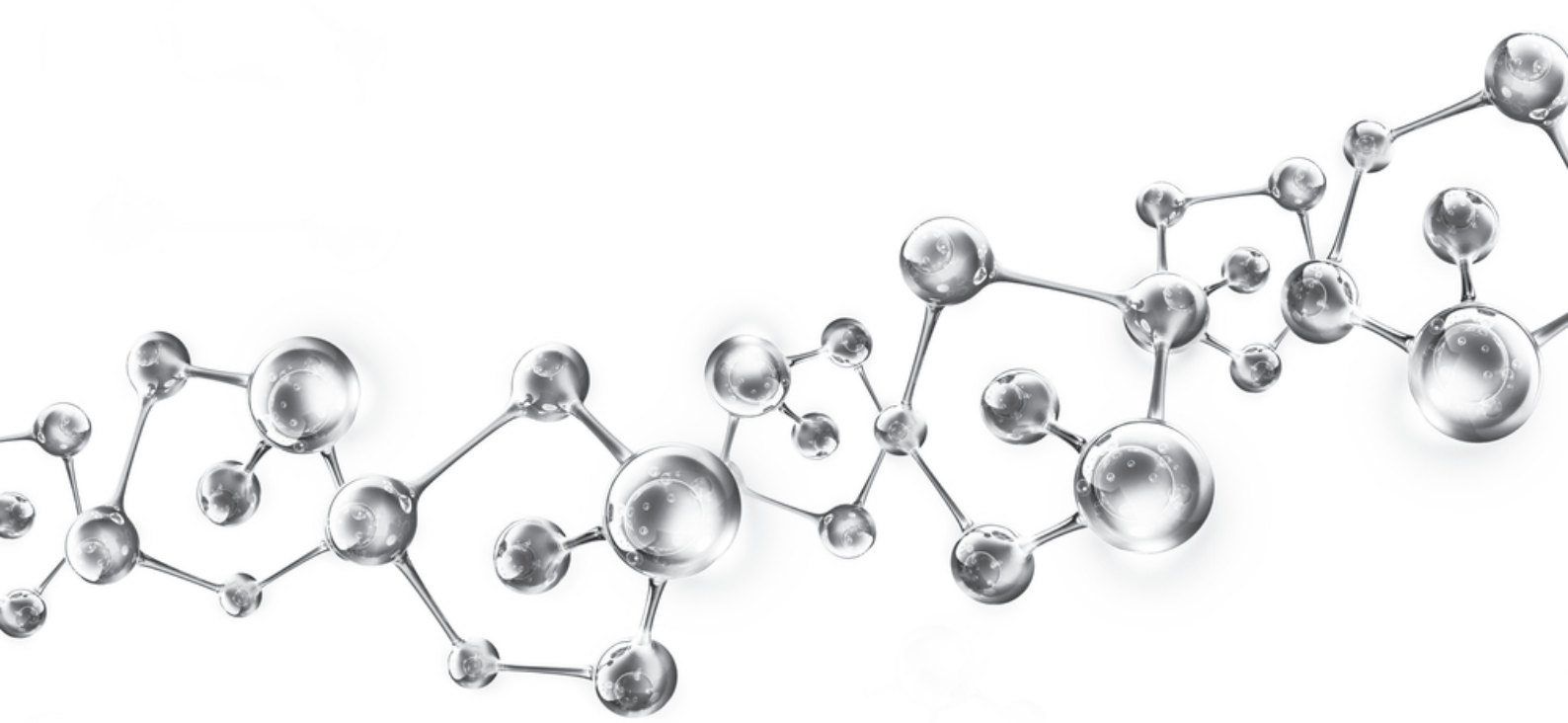

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GREEN NANOTECHNOLOGY PRODUCTS (SILVER)

GREEN NANO PRODUCTS (SILVER)

TECHNICAL DATA SHEET

SECTION 1 – MATERIAL AND COMPANY IDENTIFICATION

1.1 Material code: DNAKAPG1X00118

Material form: Solution

Material Identifier: Silver nanoparticles

1.2 Relevant identified uses and restrictions on use of this material:

This technical sheet is written to provide the outline of the properties of the material including the health, safety and environmental information for people handling this material in the workplace. It is not intended to provide information relevant to medicinal use of the material.

SECTION 2- DESCRIPTION

Silver nanoparticles are particles of the noble metal silver whose core diameter lies in between 1-100 nm. There are various methods available so far for the preparation of silver nanoparticles. The 'silver nanomaterials' discussed here is prepared using green nanotechnology method. The physical and chemical properties of these silver nanoparticles (in dispersed state) is discussed in the Section 3.1.

SECTION 3- PHYSICAL AND CHEMICAL PROPERTIES

3.1 Information on basic physical and chemical properties

Physical state	:	Solution
Colour	:	Color varies from dark yellow to brownish yellow to brown
Odour	:	Characteristic
pH	:	2.0 to 5.0
Specific gravity		0.96 to 1.10
Silver content	:	158 to 193 ppm
Absorbance	:	0.5 to 2.5
Particle size	:	Core size (TEM)= 30 ± 10 nm
Zeta potential	:	-5 to -35 mV
Freezing point	:	-5 ^{0}C
Boiling point	:	110 ^{0} C
Flammability (solid, gas)	:	Non inflammable
Solubility Water	:	Miscible in water
Viscosity	:	1 cps at 20 ^{0} C
Chemical family	:	Noble metals

SECTION 4- COMPOSITION/INFORMATION ON INGREDIENTS

Name: Silver nanoparticles

Composition: Silver nanoparticle with herbal extracts

No components need to be disclosed according to the applicable regulations.

SECTION 5 – EFFICACY DATA

Proven effective against a spectrum of Gram positive bacteria such as methicillin-resistant *Staphylococcus aureus*, *Staphylococcus epidermidis*, *Bacillus subtilis*, *Enterococcus faecalis*, *Streptococcus mutans*, *Clostridium perfringens*; including Gram negative bacteria such as *Escherichia coli*, *Pseudomonas aeruginosa*, *Acinetobacter baumannii*, *Salmonella enteritica*, *Klebsiella aerogenes*, *Shigella flexneri* and yeast *Candida albicans*. Possess high penetration capacity against biofilm and destroys them.

SECTION 6 - HANDLING AND STORAGE

6.1 Precautions for safe handling

For precautions see section 7.2.

6.2 Conditions for safe storage, including any incompatibilities

Storage conditions: This material should be stored at room temperature, in air-tight container, protected from light.

Storage class: Non-combustible liquid

Incompatible products: None

6.3 Specific end use(s)

Medical applications, personal hygiene products, cosmeceuticals etc.

SECTION 7 - HAZARD IDENTIFICATION

7.1 Classification of the material or mixture

Not a hazardous material or mixture according to Regulation (EC) No. 1272/2008.

7.2 Label elements

Not a hazardous material or mixture according to Regulation (EC) No. 1272/2008.

7.3 Other hazards

None

SECTION 8 - FIRE FIGHTING MEASURES

8.1 Extinguishing media / Suitable extinguishing media

Non- inflammable material

8.2 Special hazards arising from the material or mixture

Non hazardous material

8.3 Advice for firefighters

Not applicable for non inflammable material

SECTION 9 - ACCIDENTAL RELEASE MEASURES

9.1 Personal precautions, protective equipment and emergency procedures

Avoid breathing vapors, mist or gas.

For personal protection see section 10.

9.2 Environmental precautions

No special environmental precautions required.

9.3 Methods and materials for containment and cleaning up

Keep in suitable, closed containers for disposal.

9.4 Reference to other sections

For disposal see section 13.

SECTION 10- EXPOSURE CONTROL / PERSONAL PROTECTION

10.1 Control parameters

Appropriate engineering controls

General industrial hygiene practice.

10.2 Exposure controls

Special personal protective equipment not required.

10.3 Eye/face protection

Not required

10.4 Skin protection

Not special protection required.

For hygienic handling use gloves.

10.5 Body Protection

No special precautions.

10.6 Respiratory protection

Respiratory protection is not required.

10.7 Control of environmental exposure

No special environmental precautions required

SECTION 11 - STABILITY AND REACTIVITY

11.1 Chemical stability

Stable under recommended storage conditions.

11. 2 Possibility of hazardous reactions

Non hazardous material

11.4 Conditions to avoid

Generally safe for use.

11.6 Hazardous decomposition products

Non hazardous material.

SECTION 12 - TOXICOLOGICAL PROPERTIES

12.1 Acute toxicity

LD 50 > 10 ml / kg (Silver equivalent 1700 mcg) body weight- in rats and mice.

12.2 Repeated dose toxicity

NOAEL (No Observed Adverse Effect Level) of silver nanoparticles is considered to be 10 ml/kg(Silver equivalent 1700 mcg) body weight in both rabbits and rats.

12.3 Skin corrosion/irritation

Non-irritant to skin.

12.4 Serious eye damage/eye irritation

Silver nanoparticles is classified as "Non-Irritant" as per Globally Harmonised Integrated Classification System.

12.5 Respiratory or skin sensitization

Non irritant

12.6 Germ cell mutagenicity

Non mutagenic

12.7 Carcinogenicity IARC:

Non carcinogenic

12.8 Reproductive toxicity

Non toxic

12.9 Aspiration hazard

Non hazardous

SECTION 13 - DISPOSAL CONSIDERATIONS

13.1 Waste treatment methods

Dispose in a safe manner in accordance with Regional legislation (waste)

13.2 Contaminated packaging

Dispose of as unused material.

SECTION 14 -TRANSPORT INFORMATION

In accordance with ADR / RID / ADNR / IMDG / ICAO / IATA.

Not regulated as hazardous material by DOT.

Not regulated as dangerous good by IATA.

14.1 UN number

No dangerous good in sense of transport regulations

14.2 UN proper shipping name

Not applicable

14.3 Transport hazard class(es)

Non hazardous

14.4 Environmental hazards

Non hazardous

14.5 Special precautions for user

No special precautions required

SECTION 15 - REGULATORY INFORMATION

15.1 Safety, health and environmental regulations/legislation specific for the material or mixture

This safety datasheet complies with the requirements of Regulation (EC) No. 1907/2006.

SECTION 16 - OTHER INFORMATION

Permission granted to make unlimited paper copies for internal use only. The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. The information in this document is based on the present state of our knowledge and is applicable to the material with regard to appropriate safety precautions.

Kadamba LivNatural Silver Nano
(Anti-microbial Efficacy)

Micro-organism	ATCC Number	MIC ($\mu g/ml$)	MBC ($\mu g/ml$)	EC_{50} ($\mu g/ml$)
Escherichia coli	12435	5	10	3.5
Pseudomonas Aeruginosa	15442	5	5	3
Enterobacter Aerogenes	13048	10	10	4
Acinetobacter Baumannii	19606	5	10	2
Staphylococcus Aureus	25923	10	≈20	4
Staphylococcus Epidermidis	35984	5	20	4
Bacillus Subtilis	6051	5	20	2
Enterococcus Faecalis	29212	5	5	3
Candida albicans	10231	10	5	<0.16

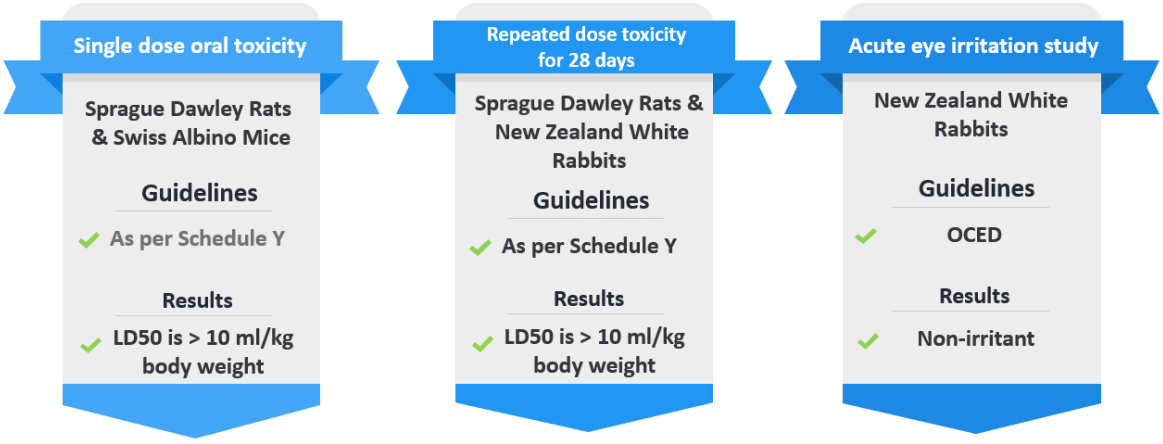
MIC- Minimum inhibitory concentration-lowest concentration of an antibacterial agent necessary to inhibit visible growth

MBC- Minimum bactericidal concentration-lowest concentration of silver nanoparticles to prevent growth

EC_{50}- concentration of a drug that gives half-maximal response

Source - Studied at research operations division of North Dakota State University, USA

Toxicity Study of Silver Nanoparticles



Note: Each ml of Silver nanoparticle Liquid contains Silver equivalent 170 mcg.

Conclusion: No mortality, morbidity, clinical signs of toxicity, gross lesions were observed

*** Studied at CEFT, Sri Ramachandra Institute of Higher Education and Research (OECD GLP certified preclinical research organization (GLP/C-062/2014)**

Test Report

TEST REPORT

TEST REPORT NO: TNTH/S-1248/2018-19 DATE: 08.11.2018

SAMPLE SUBMITTED BY CUSTOMER

SAMPLE DESCRIPTION	DNAKAPG1X00118(Rajata Bhasma Liquid)
BATCH NUMBER	TB1810005
ANALYSIS STARTED ON	01.11.2018
ANALYSIS COMPLETED ON	08.11.2018

S. NO	PARAMETERS	METHOD	UNITS	RESULTS	SPECIFICATION
1	Rideal walker coefficient	IS 1061:1997	-	6	Min 5
2	Staphylococcus aureus coefficient (SAC)		-	9	Min 2.5
3	Stability after dilution		-	Complies	Be miscible and not show separation at the top and bottom
4	Mercury compounds		mg/kg	Absent	Absent
5	Stability on storage		-	Complies	To comply IS 1061:1997

***** END OF REPORT*****

Our Green Nanotechnology Products

1. Hand Sanitizers
2. Floor Disinfectant
3. Mouth Wash

Hand Sanitizer's

CLINICAL STUDY REPORT

Protocol No: NLHSSKIN/017/19

Version: 1.0.

Dated:07.02.2019

TITLE:

EVALUATION OF IRRITATION POTENTIAL OF HAND SANITIZER PLUS (SILVER 100% NANO PARTICLE) THROUGH DERMATOLOGICALEVALUATION BY SINGLE OCCLUSIVE PATCH TEST ON HEALTHY ADULT HUMAN VOLUNTEERS

Study Title	Evaluation of irritation potential of Hand sanitizer (silver 100% nano particle) through dermatological Evaluation by single occlusive patch test on Healthy adult human volunteers
Test Product	Hand sanitizer (silver 100% nano particle).Batch no: KP1811002.
Reference product	Nil
Study Objective	To study the irritation potential of hand sanitizer on healthy human subjects using dermatological evaluation by single occlusive patch test method.
Study design	Outpatient, Non Comparative, Open label, single application occlusive patch study, non-comparative, single center study, subjects served as their own references.
Protocol Code	NLHSSKIN/017/19
Development Phase of the study	Phase II
Study population	24 healthy adult human subjects
Selection criteria	Healthy subjects with healthy skin on the studied anatomic unit (free of eczema, wounds &any other inflammatory scar)
Study duration	8 days: [3 days and T8 (T+1 week) visit to monitor follow up reactions].
Study Schedule	Evaluation visits: T0:30/01/2019 T1:31/01/2019 T2: 01/02/2019 T8:06/02/2019

The test products were supplied free of charge by the study sponsor.

Product name: Hand sanitizer (Silver 100% Nano Particle) **Batch no: KP1811002.**

Product code:

The study sponsor is in charge of product manufacturing, packaging, responsible for product identification, purity determination, composition, innocuousness and any other characteristics of each product to be tested prior to the beginning of the study. The study sponsor is responsible for supplying the appropriate amount of product needed to carry out the study. For this study, the study sponsor agreed to supply: The appropriate quantity of the product required to treat all of the subjects; One product for reference will be retained in the sample cabinet of **Ki3** for the period of one year after dispatch of the report. Products are stored in an ambient temperature away from light. Formulation details of the test product is as follows:

Product name: DNAKAPG1X00118			
Batch no./Lot no.	: KP1811002	AR. No.	: QCIM180376
Quantity	: 500 litre	AR date	: 04/12/2018
Mfg. Date	: Nov 2018	Exp.Date/Retest date	: Oct 2020
Date of approval	: 18/12/2018		
Specification no.	: SPEC-DNAQC-023 Revision No. R0		
Description	: Brownish yellow, clear solution		
pH	: 3.38		
Silver content	: 170.04 ppm		
Storage condition	: To be stored at room temperature, in air tight container, protected from light.		

Study Methodology:

24 adult healthy subjects were selected for the study. The subjects selected for this study were a mixed population of healthy females and males, aged between 18 and 55 years old. In which 12 were females and 12 were male subjects. Selection of the subjects were carried out as per the norms indicated in the protocol. The entire study procedure, patch application, patch reading and grading is detailed in the protocol and followed as per the protocol.

STUDY OUTCOME:

This report is based on the exploitation of the results regarding the irritation potential of hand sanitizer formulation by Primary Irritation Occlusive Patch test method. In this section, the results and findings, derived out from statistical analysis of the data on the irritation potential aspects of the test product, the hand sanitizer as opinioned by the study investigators are detailed as below. Data obtained from the CRF's are taken for statistical analysis, interpretations and findings:

OBSERVATIONS

Table 1: Subject Compliance & follow up:

Technique	T0	T1	T2	T8
Dermatological Evaluation	24	24	24	24

From above techniques and time points, data for T2 visit (24h after patch removal) - Dermatological evaluation was considered for the mean score calculation of patch test.

Description of the exploited panel:

The exploited panel consisted of 24 adult, healthy male and female subjects aged between 18 and 55 years old of Asian (Indian) skin type.

i. Subject demographics:

a. Age of the study subjects:

The age of the test participant is presented as follows.

Table 2: Age of study participants

	N	**Mean age (years)**
Total	24	33.5

The mean age of the total 24 participants is 33.5 years

b. Gender of the subjects:

Of the total 24 study subjects, 12 were females and remaining 12 were males.

Table 3: Gender of study participants

Gender	**N**	**Percentage**
Female	12	50.0
Male	12	50.0
Total	24	100.0

ii. Dermatological Evaluation:

The detailed results of the dermatological evaluation are presented below: The studied parameters are:

- **Erythema**
- **Oedema**
- **Mean Irritation Index**

a. Observed results for Erythema at T2 and T8 days (at 24 hours and 1 week after patch removal):

<u>Clinical score for Erythema/Dryness/Wrinkles : scale 0-4</u>

Scale: Score for Erythema Reaction

0 - No reaction

1 - Very slight erythema/dryness with shiny appearance

2 - Slight erythema/dryness/wrinkles

3 - Moderate erythema/dryness/wrinkles

4 - Severe erythema/wrinkles/scales

The following table summarizes the severity mean scores for Erythema obtained on the exploited panel, on T2 & T8 Days:

Table 4: Severity of mean scores on Erythema

Test sample	**Scores: T2 days**	**Scores: T8 days**
hand sanitizer (silver 100% nano particle)	E: 0.0	E: 0.0

Note: E – refers to Erythema

Analysis:

At T2 & T8 days visit (at 24 hours and 1 week of patch removal), total mean score of erythema, oedema from all the 24 subjects was found to be 0.0 for the test product, **the hand sanitizer plus** as there was no reaction for Erythema/Dryness/Wrinkles and Oedema on the patch applied site. Therefore, the mean irritation index score is 0.0. No irritative type response at T2 & T8 days visit (at 24 hours and 1 week of patch removal) was observed by the dermatologist.

"Hence the test sample can be considered as Non-Irritant".

iii. Adverse effects:

In the current study, there was no adverse events, as none perceived/observed any adverse effects during the entire study period.

Table 5: Adverse effects of the product

	N	**Absence of Adverse effect- in %**
ERYTHEMA		P
Nil	24	100
ITCHING		
Nil	24	100
Irritation		
Nil	24	100
RASHES		
Nil	24	100
STINGING		
Nil	24	100

Discussion and Conclusion:

In our current study, based on the single application of 24 hours occlusive patch test on the test product, the hand sanitizer plus (silver 100% nano particle) Batch no: KP1811002, according to the Primary irritation patch test method, the incident of the response namely, mean scores erythema and oedema observed on the panel of 24 human subjects comprising of 12 females and 12 males, aged between 18 and 55 years old, leads to the

Test product, the hand sanitizer (silver 100% nano particle). Batch no: KP1811002, can be considered as Non-irritant to skin.

following results through dermatological evaluation at 24 hours and 1 week after patch removal.

As the mean scores for both Erythema and Oedema were "0", the test product can be considered as Non-irritant to the skin. Further there was no clinically significant adverse reactions, overall subject compliance to the trial was excellent as there was no drop outs.

We could therefore declare that "**Test product, the hand sanitizer (silver 100% nano particle). Batch no: KP1811002, can be considered as Non-irritant to skin**."

Mouth Wash

INTRODUCTION

MOUTHWASH is a preparation commonly used to maintain healthy oral hygiene. Concept of mouthwash originated in India as evidenced by the terminology "kavala", "gandush" in Ayurvedic textbooks.

Currently available mouthwashes have alcohol – ethyl alcohol as one of the ingredients. An antibacterial chlorhexidine is used.

Kadamba LivNatural's MOUTHWASH is 100 % green preparation with natural ingredients and completely devoid of any synthetic chemicals. (NIL ALCOHOL CONTENT)

ACTIVE INGREDIENT:

RAJATA BHASMA (Liquid) silver equivalent 20 mcg/ml.

OTHER INGREDIENTS:

Pepper mint oil, Clove bud oil, Cardamom oil, Glycerine, Extracts of Neem, Haridra, Karuvellam, Tulsi,Mint

PACKING: Amber PET bottle with plastic screw cap.

Major Ingredients used in Mouthwash and their efficacy

Group	Gram Positive Bacteria	Gram Negative Bacteria	Bacteria	Fungi	Viruses	Speed of Action	Comments
Alcohols	+++	+++	+++	+++	+++	Fast	Optimum concentration 60%-95%; no persistent activity
Chlorhexidine (2% and 4% aqueous)	+++	++	+	+	+++	Intermediate	Persistent activity; rare allergic reactions
Iodine compounds	+++	+++	+++	++	+++	Intermediate	Causes skin burns; Intermediate usually too irritating for hand hygiene
Iodophors	+++	+++	+	++	++	Intermediate	Less irritating than iodine; acceptance varies
Phenol derivatives	+++	+	+	+	+	Intermediate	Activity neutralized by nonionic surfactants
Triclosan	+++	++	+	--	+++	Intermediate	Acceptability on hands varies
Quaternary ammonium compounds	+	++	--	--	+	Slow	Used only in combination with alcohols; ecological concerns
Silver Nanoparticles (20ppm)	+++	+++	+++	+++	++	Fast	Persistent activity; Penetrates Bioflims and Non Toxic

Note: +++ = excellent; ++ = good, but does not include the entire bacterial spectrum; + = fair; - - = no activity or not sufficient.
*Hexachlorophene is not included because it is no longer an acceptable ingredient of hand disinfectants.

MATERIAL SAFETY DATA SHEET – MOUTHWASH

Refer attachment- Annexure 1

EFFICACY DETAILS

Clinical study to evaluate efficacy and compare with marketed available mouthwash containing chlorhexidine

TITLE	A RANDOMIZED OPEN LABEL PILOT STUDY TO ASSESS THE EFFICACY AND SAFETY OF MOUTH WASH (Silver -100% Nanoparticles) ON GINGIVAL HEALTH.
STUDY OBJECTIVES	1. To study the efficacy of mouth wash (Silver-100% Nanoparticles) in gingival health and compare with chlorhexidine mouth wash.

	2. To assess the safety of mouth wash (Silver-100% Nanoparticles) by monitoring the occurrence of any adverse effects.
STUDY DESIGN	Randomized, Open label, pilot, parallel group interventional trial
CTRI Registration	The trial was registered in CTRI. Reference number: CTRI/2019/02/017396.
<u>STUDY POPULATION</u> Number of subjects Study specific requirements	24 patients diagnosed with Gingivitis were divided into 2 arms of 12 (considering it as a pilot study) in each arm. <u>Inclusion criteria:</u> Systemically healthy subjects in the age group of 18-55 years, and who agreed to comply with the study visits were included <u>Exclusion Criteria:</u> Subjects with mal-aligned teeth, wearing orthodontic appliances and removable partial dentures; subjects with chronic or aggressive periodontitis; subjects with history of oral prophylaxis within past six months; tobacco consumers and smokers, subjects on any antibiotic therapy in past three months and subjects with medical or pharmacological history that could compromise the conduct of the study Subjects who are pregnant or nursing. Subjects with hypersensitivity to any of the test products.

<u>INVESTIGATIONAL PRODUCT:</u> Route of administration Frequency of dosage Duration of dosing:	(Silver- 100% Nanoparticles) Mouth wash 15 ml of mouth wash gargled for one minute and spitted out, twice daily.
DURATION OF STUDY	14 days
METHODOLOGY	Patients with Gingivitis were randomized into 2 groups with 12 subjects in each group. All the subjects received complete supragingival scaling to remove all plaque, stains and calculus at baseline. All the study subjects received the toothbrushes and toothpastes of same make to overcome the confounding bias. The study drug 15 ml of mouth wash/ Chlorhexidine mouthwash is rinsed in mouth for 60 seconds twice daily in the morning and night 30 min after tooth brushing for 14 days and then spitted out. The subjects were asked not to eat or drink anything for next half an hour to achieve the effect of the mouthwash. Group 1 – Subjects were administered- Kadamba mouth wash, twice daily for 14 days. Group 2 - Subjects were administered - Chlorhexidine mouthwash, twice daily for 14 days. Gingival swab for microbiology was taken at baseline and on day 7 and day 14, before and after using the mouth wash. The plates were incubated at 37°C under aerobic conditions. The total bacterial and fungal contamination were recorded as the number of colonies forming units (cfu) recovered after 48 hours of incubation.

PRIMARY OUTCOME MEASURES	The primary outcome measures were; Assessment and comparison of Oral Hygiene Index - Simplified (OHI-S), Plaque Index (PI) and Gingival Index (GI) on day 7 and 14. The average reduction in the number of colonies of bacterial and fungal, from samples before and after using the mouth wash on day 1,7 and 14. The bacterial and fungal contamination were compared between the two groups for anti-microbial efficacy on day 1,7 and 14. At the end of treatment, the physician & subject will give a final overall acceptance rating of the mouth wash (0= no effect, 1= poor effect, 2 = reasonable effect, 3 = good effect, 4 = excellent effect).
SECONDARY OUTCOME MEASURES	To monitor for any adverse events during the study period of 14 days.

RESULTS

There is significant improvement ($p<0.0001$) in the oral hygiene index, Gingival index and plaque index on Day 7 and Day 14 when compared with day 1, in both the groups. Hence, Kadamba mouth wash is equally effective to Chlorhexidine in improving the dental hygiene in patients with Gingivitis.

The subject gives overall effect of the Silver nano mouth wash as "Good Effect". The flavor was pleasant when compared to Chlorhexidine group. The investigator also gives an overall good healing effect for gingivitis and it is comparable with Chlorhexidine.

Subjects of both the group had significant improvement of the Gingival health, which is evident from the photographs described below.

CONCLUSION

On comparing the percentage of bacterial growth inhibition on day 14 with respect to day 1, the Kadamba mouth wash showed 87.5% inhibition and Chlorhexidine mouth wash showed 91.66% inhibition. At the end of day 14, 10 subjects out of 12, showed complete inhibition of bacterial growth in silver nano Group. Similarly, 11 subjects out of 12 showed complete

inhibition of bacterial growth in Chlorhexidine group. Both the mouth wash was equally effective in controlling the bacterial and fungal growth in patients with gingivitis. In addition, Silver nano mouth wash showed 100% inhibition on Klebsiella, Enterobacter and Pseudomonas species.

The oral hygiene, gingival and plaque index showed significant improvement from day 1 to day 14 in both the groups. The overall acceptability of Kadamba mouth wash was good and the flavor was better when compared to Chlorhexidine. The investigator also gives an overall good healing effect for gingivitis and it is comparable with Chlorhexidine.

MATERIAL SAFETY DATA SHEET

SECTION 1 - PRODUCT AND COMPANY IDENTIFICATION

1.1 Product Name: Mouthwash

Product Code: MWSNPG

Product Form: Transparent solution

Product Identifier: Ayurvedic proprietary product

1.2 Relevant identified uses and restrictions on use of this Medicinal Product:

This safety data sheet is written to provide health, safety and environmental information for people handling this formulated product. It is not intended to provide information relevant to medicinal use of the product.

Restrictions on use: No other uses are advised.

SECTION 2 - HAZARD IDENTIFICATION

2.1 Classification of the substance or mixture

Not a hazardous substance or mixture according to Regulation (EC) No. 1272/2008.

2.2 Label elements

Not a hazardous substance or mixture according to Regulation (EC) No. 1272/2008.

2.3 Other hazards

None

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

Composition: Silver nanoparticles, natural oil, natural fragrance, organic surfactant.

SECTION 4 - FIRST AID MEASURES

4.1 Description of first aid measures

If inhaled

Not harmful

In case of skin contact

Not harmful

In case of eye contact

Wash the eyes immediately with clean water.

If swallowed

Not harmful

4.2 Most important symptoms and effects, both acute and delayed

See section 2.2 and in section 11

4.3 Indication of any immediate medical attention and special treatment needed

Not required.

SECTION 5 - FIRE FIGHTING MEASURES

5.1 Extinguishing media

Non-Inflammable solution

5.2 Special hazards arising from the substance or mixture

Not hazardous

5.3 Advice for firefighters

Non –inflammable solution

SECTION 6 - ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures

No special precaution or protection required.

6.2 Environmental precautions

No special environmental precautions required.

6.3 Methods and materials for containment and cleaning up

Keep in suitable, closed containers for disposal.

SECTION 7 - HANDLING AND STORAGE

7.1 Precautions for safe handling

Avoid direct contact with eyes

7.2 Conditions for safe storage, including any incompatibilities

Storage conditions: Store protected from sunlight

Storage class: Not Applicable

Incompatible products: None

7.3 Specific end use(s)

For oral hygiene

SECTION 8 - EXPOSURE CONTROL / PERSONAL PROTECTION

8.1 Eye/face protection

Not required

8.2 Skin protection

Not required

8.3 Body Protection

No special precautions.

8.4 Respiratory protection

Respiratory protection not required.

8.5 Control of environmental exposure

No special environmental precautions required

SECTION 9- PHYSICAL AND CHEMICAL PROPERTIES

9. Information on basic physical and chemical properties

1

Physical state	:	Transparent to translucent solution
Color	:	Yellow to yellowish brown or brown
Odor	:	Characteristic
pH	:	2.0 to 7.0
Specific gravity	:	0.80 to 1.20
Freezing point	:	-5 ^{o} C
Boiling point	:	110 ^{0} C
Flammability	:	Non inflammable
Solubility/Miscibility Water	:	Miscible with water
Viscosity	:	1 cps@20^{0} C
Explosive properties	:	Not explosive
Chemical family	:	Silver nanoparticle

SECTION 10 - STABILITY AND REACTIVITY

10.1 Reactivity

Non-reactive

10.2 Chemical stability

Stable under recommended storage conditions.

10.3 Possibility of hazardous reactions

Non hazardous

SECTION 11 - TOXICOLOGICAL PROPERTIES

11. Toxicity studies

11.1 Acute toxicity

LD_{50} was found to be > 10 ml/kg in both rats and mice.

(10 ml approximately contains 1.7 mg of Silver nanoparticles.)

11.2 Skin corrosion/irritation

Non -irritant

11.3 Serious eye damage/eye irritation

Non irritant

11.4 Respiratory or skin sensitization

Non irritant

11.5 Germ cell mutagenicity

Not mutagenic.

11.6 Carcinogenicity IARC:

Non carcinogenic

11.7 Reproductive toxicity

Non toxic

SECTION 12 - DISPOSAL CONSIDERATIONS

12.1 Waste treatment methods

Dispose in a safe manner in accordance with Regional legislation (waste)

12.2 Contaminated packaging

Dispose of as unused product.

SECTION 13 -TRANSPORT INFORMATION

In accordance with IATA

Not regulated as hazardous material by DOT.

Not regulated as dangerous good by IATA.

13.1 UN number

No dangerous good in sense of transport regulations

13.2 Transport hazard class (es)

Not hazardous

13.3 Environmental hazards

Not hazardous

SECTION 14 - OTHER INFORMATION

Permission granted to make unlimited paper copies for internal use only. The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. The information in this document is based on the present state of our knowledge and is applicable to the product with regard to appropriate safety precautions.

Document Reference no. MSDS-AM/R0

Issued on: 05-09-2019

Hospital Disinfectant

Introduction

A combined strategy is the need in every hospital to prevent nosocomial or health –care- associated infections. The effective use of disinfectants is part of the process. Appropriate disinfection and sterilization procedures are a must for control of hospital-acquired infection. Disinfection in hospital practice is mainly achieved either by surface disinfection (e.g., disinfection of surfaces of the tables, trolleys, instruments, walls and floors, etc.) or immersing the contaminated objects in the disinfectant solution.

In the absence of a regulatory body like EPA in India the disinfectants choice/use becomes more of individual based choice rather than scientific or evidence based. There is little or no awareness or impact of these chemicals on the health care workers (HCW) in the long term. Toxicity issues have led to discontinued use of glutaraldehyde's in some developed countries but, in developing countries, they are used very frequently.

Kadamba LivNatural has combined principle of Green nanotechnology and principle of using organic substances to develop HOSPITAL DISINFECTANT.

Silver nanoparticles is the ACTIVE ingredient with proven antimicrobial activity against numerous bacteria, fungi.

As it is synthetic chemical free, it is safe to use.

It is effective as disinfectant as proven by the numerous tests executed.

In –vitro efficacy test has been performed followed by BIS tests for disinfectants,

The standard tests to check disinfection efficiency include Rideal-Walker phenol coefficient (R.W.C) test, Chick-Martin etc.

MSDS & EFFICACY TESTING:

REFER ATTACHMENTS

MATERIAL SAFETY DATA SHEET

SECTION 1 - PRODUCT AND COMPANY IDENTIFICATION

1.1 Product code: DISNPO

Product form: Solution

Product Identifier: Ayurvedic proprietary product

1.2 Relevant identified uses and restrictions on use of this Medicinal Product:

This safety data sheet is written to provide health, safety and environmental information for people handling this formulated product in the workplace. It is not intended to provide information relevant to medicinal use of the product.

Restrictions on use: No other uses are advised.

SECTION 2 - HAZARD IDENTIFICATION

2.1 Classification of the substance or mixture

Not a hazardous substance or mixture according to Regulation (EC) No. 1272/2008.

2.2 Label elements

Not a hazardous substance or mixture according to Regulation (EC) No. 1272/2008.

2.3 Other hazards

None

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

Name: Hospital Disinfectant

Composition: Silver nanoparticles

SECTION 4 - FIRST AID MEASURES

4.1 Description of first aid measures

If inhaled

Not harmful if inhaled.

In case of skin contact

Nonirritant to the skin.

In case of eye contact

Non-irritant. For general comfort, wash the eyes immediately with clean water.

If swallowed

Not harmful if swallowed. Rinse mouth if required.

4.2 Most important symptoms and effects, both acute and delayed

See section 2.2 and in section 11

4.3 Indication of any immediate medical attention and special treatment needed

Not required.

SECTION 5 - FIRE FIGHTING MEASURES

5.1 Extinguishing media

Non-Inflammable product

5.2 Special hazards arising from the substance or mixture

Not hazardous

5.3 Advice for firefighters

Non –inflammable liquid

SECTION 6 - ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures

General protection is sufficient.

6.2 Environmental precautions

No special environmental precautions required.

6.3 Methods and materials for containment and cleaning up

Keep in suitable, closed containers for disposal.

SECTION 7 - HANDLING AND STORAGE

7.1 Precautions for safe handling

Regular precaution while handling liquids is sufficient.

7.2 Conditions for safe storage, including any incompatibilities

Storage conditions: This product should be stored as per the label instructions.

Storage class: Non-combustible liquid

Incompatible products: None

7.3 Specific end use(s)

Disinfectant

SECTION 8 - EXPOSURE CONTROL / PERSONAL PROTECTION

8.1 Control parameters

General industrial hygiene practice.

8.2 Exposure controls

General personal protective gear sufficient

8.2.1 Eye/face protection

Not required

8.2.2 Skin protection

Handle with gloves.

8.2.3 Body Protection

No special precautions.

8.2.4 Respiratory protection

Respiratory protection not required.

8.2.5 Control of environmental exposure

No special environmental precautions required

SECTION 9- PHYSICAL AND CHEMICAL PROPERTIES

9. Information on basic physical and chemical properties

1

Physical state	:	Solution
Color	:	Color varies from dark yellow to brownish yellow to brown
Odor	:	Odorless
pH	:	2.0 to 3.0
Specific gravity	:	0.98
Freezing point	:	-5℃
Boiling point	:	110℃
Flammability (solid, gas)	:	Non –inflammable liquid
Solubility Water	:	Freely miscible
Viscosity	:	1cps @ 20℃
Explosive properties	:	Non inflammable
Explosive limits	:	Non explosive
Chemical family	:	Silver nanoparticle

SECTION 10 - STABILITY AND REACTIVITY

10.1 Reactivity

Non-reactive

10.2 Chemical stability

Stable under recommended storage conditions.

10.3 Possibility of hazardous reactions

Non hazardous

SECTION 11 - TOXICOLOGICAL PROPERTIES

11. Toxicity studies

11.1 Acute toxicity

LD50 was found to be > 10 ml/kg in both rats and mice.

(10 ml approximately contains 1.7 mg of Silver nanoparticles.)

11.2 Skin corrosion/irritation

Non -irritant

11.3 Serious eye damage/eye irritation

Non irritant

11.4 Respiratory or skin sensitization

Non irritant

11.5 Germ cell mutagenicity

Not mutagenic.

11.6 Carcinogenicity IARC:

Non carcinogenic

11.7 Reproductive toxicity

Nontoxic

SECTION 12 - DISPOSAL CONSIDERATIONS

12.1 Waste treatment methods

Dispose in a safe manner in accordance with Regional legislation (waste)

12.2 Contaminated packaging

Dispose of as unused product.

SECTION 13 -TRANSPORT INFORMATION

In accordance with IATA.

Not regulated as hazardous material by DOT.

Not regulated as dangerous good by IATA.

13.1 UN number

No dangerous good in sense of transport regulations

13.2 Transport hazard class (es)

Not hazardous

13.3 Environmental hazards

Not hazardous

SECTION 14 - OTHER INFORMATION

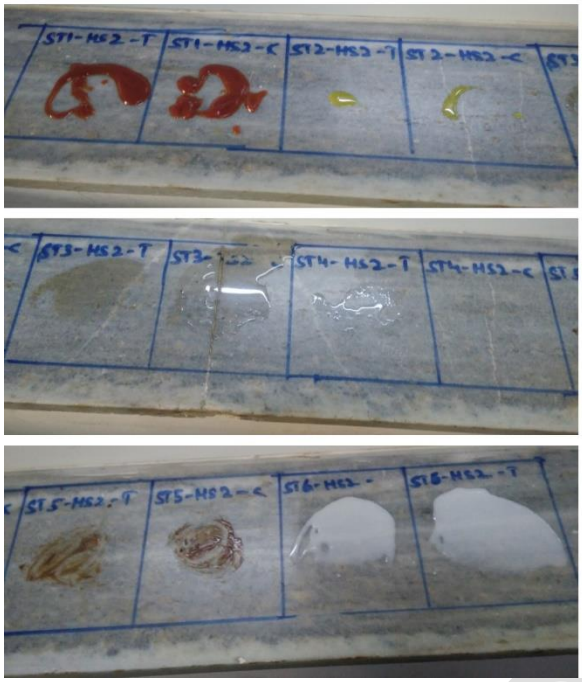
Permission granted to make unlimited paper copies for internal use only. The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. The information in this document is based on the present state of our knowledge and is applicable to the product with regard to appropriate safety precautions.

Document Reference no. MSDS-AK/R0

Issued on: 5.9.2019

Test of Disinfectant on various materials
MARBLE

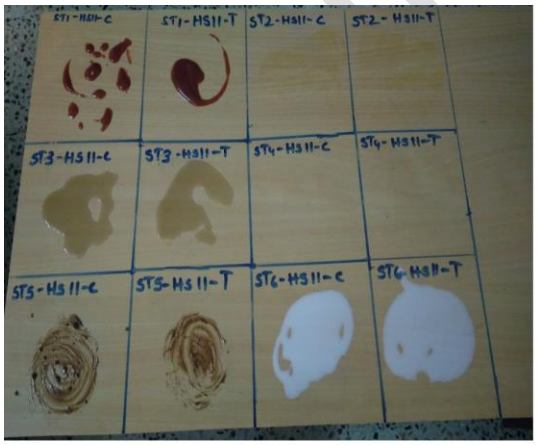
BEFORE CLEANING



AFTER CLEANING

LAMINATED MICA

BEFORE CLEANING



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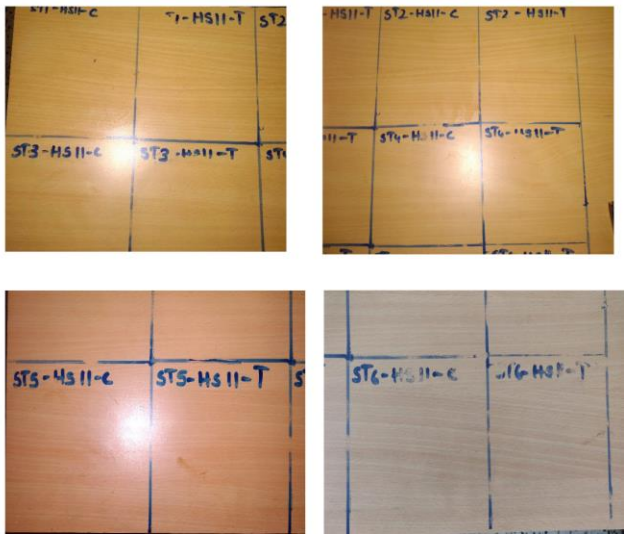
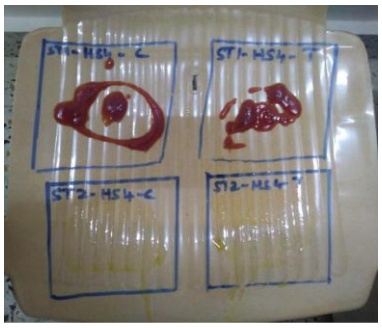
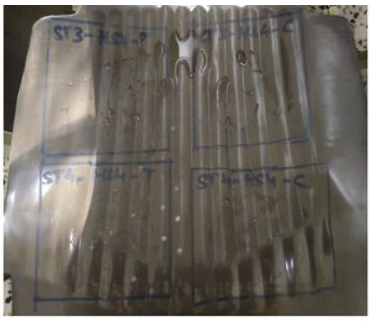
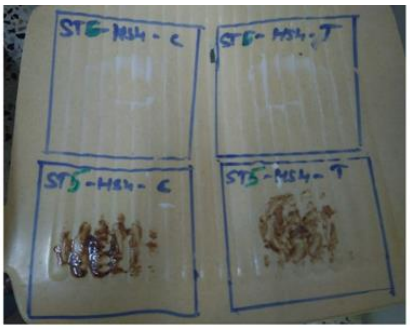


PLASTIC

BEFORE CLEANING

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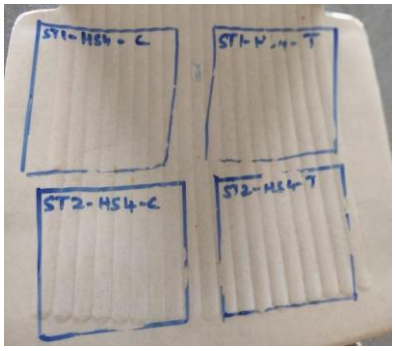
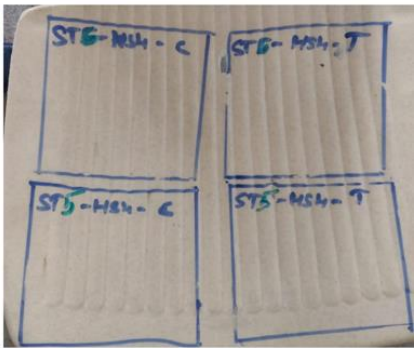




PORCELAIN

BEFORE CLEANING

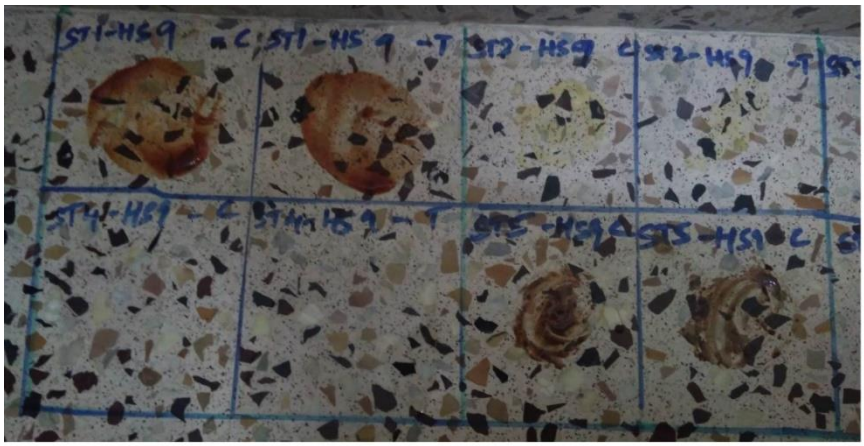


AFTER CLEANING



MOSAIC

BEFORE CLEANING



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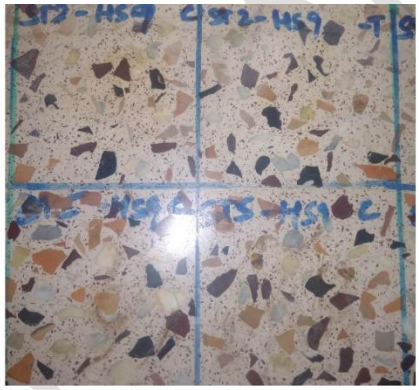

Test Reports

CoE - Microbiology Laboratory

Test Report No	: **M1800038**	Report Date	: **08-06-2018**
SITRA Ref No	: **XXVII / M / E / 1274 / 18**	No of Samples	: **1**
Customer Ref No	: **31.05.18**	Received On	: **07-06-2018**

Dear Sir / Madam,

This has reference to the sample(s) submitted by you for testing vide your Requisition Form reference no : **31.05.18**.

The results pertaining to your sample(s) are enclosed herewith.

Yours faithfully,

Authorized Signatory HEAD - COE Medical Textiles

Encl : Bill

IMPORTANT

This report is strictly CONFIDENTIAL. Its use for publicity, arbitration or as evidence in legal disputes is forbidden. Reference of sample(s) given by the party. Samples are not drawn by the laboratory. The above results are related to the samples tested. The report shall not be reproduced except in full, without the written approval of the laboratory.

Test Name : Antibacterial Evaluation (Qualitative) - AATCC 147 - 2016 - Antibacterial Activity Assessment of textile materials: Parallel streak Method

Test Condition:

Test Organisms Used : *Staphylococcus aureus* ATCC 6538, *Klebsiella pneumpniae* ATCC 4352
Sample size / Volume : Swatches of 25 mm x 50 mm for each bacterium
Media used : Nutrient agar
Incubation conditions : 37^0C for 24 h

Observation :

Fabric kept in contact with the test culture for 24 h showed the following results

Test Organisms used	**M1800038-1** **Fabric: DNA TEX - 001**	
	Bacteriostatic activity (mm)	Growth under fabric
Staphylococcus aureus ATCC 6538	0	Absent
Klebsiella pneumoniae ATCC 4352	0	Absent

Results :

M1800038-1 : The sample showed presence of antibacterial activity against *Staphylococcus aureus* ATCC 6358 and *Klebsiella pneumoniae* ATCC4352 when tested according to AATCC 147 2016 Method.

Authorized Signatory

- End of Report -

Conclusion:

Ready to collaborate with our partners for product development and further research

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