



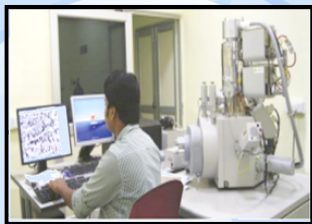
icmr
INDIAN COUNCIL OF
MEDICAL RESEARCH
Serving the nation since 1911


ICMR VALIDATION

ICMR Validates OptiMaser for Clinical Efficacy of 99.99% with Log 8 sterilisation

Dr. Maya NandKumar | Er. Nagesh D.S.

Report No. SCTIMST/ICMR/SD/Req. No. 59 Dated 06.05.2022



 Sree Chitra Tirunal Institute for Medical Sciences & Technology

Other Scientific Papers



1. A.I.I.M.S. New Delhi Study Springer

"Which one is more effective and efficient?" The AIIMS, New Delhi, India procured the Microwave Assisted Cold Sterilization (MACS™) technology called OptiMaser® as an alternative to autoclave for their on-site biomedical waste treatment. [Comparison of microwave and autoclave treatment for biomedical waste disinfection \(springer.com\)](https://www.springer.com)



2. National Institute of Tuberculosis & Respiratory Diseases Report on Mycobacterium (Sputum) Elsevier

OptiMaser® 30 is a popular commercial microwave technology used for sterilisation of clinical biomedical waste. The study was conducted to evaluate the effectiveness of Microwave as an alternative method to autoclaving for sterilising large volumes of sputum with viable M. tuberculosis for safe disposal. [Disposal of the large volume of sputum positive for Mycobacterium tuberculosis by using microwave sterilisation technology as an alternative to traditional autoclaving in a tertiary respiratory care hospital in Delhi, India - ScienceDirect](https://www.sciencedirect.com)



3. WM&R - Klaus Zimmermann Report Sagepub

The main benefit of microwave energy is the direct delivery of energy to microwave-absorbing materials, which allows the volumetric heating of samples. Issues such as long heating periods, thermal gradients, and energy loss to the environment can be minimized. <https://journals.sagepub.com/doi/10.1177/0734242X16684385>



4. Sanjay Gandhi Post Graduate Institute of Medical Sciences Report on TCID-50 by Dr. T.N. Dhole

As reported in literature one-minute exposure of Microwave can significantly kill about ninety-five percent of the virus under experimental conditions.

<https://drive.google.com/file/d/1qgSkAx-U0IPStmqkyuy8AtlUNppRuuw/view?usp=sharing>



5. Arab Health Infection Control Report 2019

Recently in 2019 an article was published in In-forma Journal of Arab Health magazine entitled "New Horizons for Medical Waste treatment Technology". In this article they compare the existing autoclave and the new radiation-based microwave technologies for the infection control in the healthcare facilities.

<https://www.sciencedirect.com/science/article/pii/S0956053X12004606>



6. Sterilization of Linen Matrices in Microwave:

Hospital linen which are soiled discharged of infectious patients, including those with HIV, hepatitis B, C, and other infectious agents. At least 8 log disinfection efficacy of representative bacteria, fungi, and spores were achieved via OptiMaser® treatment at 70°C with a hold time of 10 min.

<http://nopr.niscair.res.in/handle/123456789/51177>

<https://europepmc.org/article/pat/de10110952?client=bot>

श्री चित्रा तिरुनाल आयुर्विज्ञान एवं प्रौद्योगिकी संस्थान, त्रिवेन्द्रम, जैवचिकित्सकीय प्रौद्योगिकी स्कंध
पूजप्पुरा, तिरुवनन्तपुरम - 695 012, केरल, भारत



SREE CHITRA TIRUNAL INSTITUTE FOR MEDICAL SCIENCES AND TECHNOLOGY, TRIVANDRUM
BIO MEDICAL TECHNOLOGY WING

POOJAPPURA, THIRUVANANTHAPURAM - 695 012, KERALA, INDIA

(एक राष्ट्रीय महत्व का संस्थान, विज्ञान एवं प्रौद्योगिकी विभाग, भारत सरकार)

(An Institution of National Importance, Department of Science and Technology, Government of India)

टेलीफोन नं./Telephone No.: 0471-2340801/ 2520450 फैक्स/Fax: 0471-2341814

ई-मेल/E-mail: sct@sctimst.ac.in वेबसाइट/Website: www.sctimst.ac.in

Date: 06.05.2022

Report No: Sctimst/ICMR/SD/Req No.59

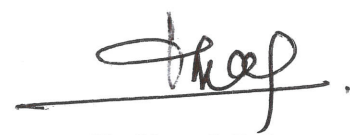
Total Number of pages: 03

- 1 Name of the product: OptiMaser™10, OptiMaser™30 & OptiMaser™60
- 2 Category: Hazardous waste disinfecting device
- 3 Application Request No(for ICMR review): 59
- 4 Customer/Company Name: SSMED
- 5 Date of Receipt of Application: 11th Feb 2022
- 6 Date/Period of Evaluation: 18th April 2022 to 26th April 2022.
- 7 Evaluation/Test Method used: Desktop Document Assessment
- 8 Description of the product: Mobile Microwave Sterilization System with easy portability and providing the highest sterilization.
- 9 Observations: Reports showed more than 7 log reduction of *E.coli*, *Staphylococcus aureus*, *Bacillus subtilis*, *Candida albicans*, *Aspergillus niger*, spores of *Bacillus atrophaeus*, *Mycobacterium tuberculosis* and enterovirus.
- 10 Result/Recommendation: It's a **high level steriliser** capable of disinfecting and ensuring greater than 7 log reduction in biomedical waste which includes pathogenic bacteria, pores, yeast and fungi, viruses and *Mycobacterium tuberculosis*

Declaration

I hereby certify that this Report is issued for the request received as per the ICMR guidance for evaluation of novel applications for COVID-19.


Dr.Maya Nandkumar
Scientist G


Er. Nagesh D.S.
Scientist G(Sr.Grade)

श्री चित्रा तिरुनाल आयुर्विज्ञान एवं प्रौद्योगिकी संस्थान, त्रिवेंद्रम, जैवचिकित्सकीय प्रौद्योगिकी स्कंध
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Sl No	Enforcement policy for Sterilizers, Disinfectant Devices, and Air purifiers during the Coronavirus Disease 2019 (COVID-19) Public health emergency	Company product – OptiMaser™ 10, 20 & 30	Report
	<p>Claims for the product by company:Broad spectrum efficiency against all microbes including bacteria, fungi, viruses, spores and mycobacteria and fast acting.Concentration needed:NA.Exposure: depending on load fed 10 to 30 minutes.</p> <p>Shelf life of disinfectant coating :NA Grade:99.99%.</p> <p>Use:Complete disinfection at the Point of Generation (PoG) of Bio-Medical Waste.</p>		
TESTS REQUIRED FOR DISINFECTANT DEVICES			
1.	Sporicidal activity of disinfectants	<i>Bacillus atrophaeus</i> sporicidal activity - 7 log reduction	High level disinfectant capable of disinfecting biomedical waste.
2.	Tuberculocidal activity of disinfectants	<i>Mycobacterium tuberculosis</i> used and data submitted.	
3.	Fungicidal activity of disinfectants by using <i>Trichophyton mentagrophytes</i> / others	<i>Candida albicans</i> and <i>Aspergillus niger</i> 7 log reduction	
	Antibacterial efficiency studies		
4.	Testing disinfectants against <i>Salmonella sp.</i>	NIL	
5.	Testing disinfectants against <i>Staph aureus/ epidermidis</i>	<i>Staphylococcus aureus</i> 7 log reduction	
6.	Testing disinfectants against <i>Pseudomonas aeruginosa/ E.coli</i>	<i>E.coli</i> 7 log reduction	
7.	Antiviral efficiency studies. Using MS2 bacteriophage	Yes. data submitted against Enterovirus	

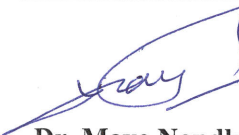
Dr. Maya Nandkumar
Scientist G

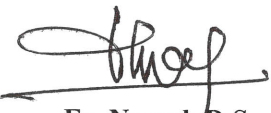
Maya Nandkumar
6/5/2022

2

Er. Nagesh D.S.
Er. Nagesh D.S.
Scientist G(Sr.Grade)

8.	Low level disinfection - Demonstrate 6 log reduction of vegetative organisms- <i>Staph aureus</i> , <i>Pseudomonas aeruginosa</i> , <i>E coli</i> , <i>Klebsiella pneumoniae</i> and <i>Enterobacter genus</i>	yes	
8	Intermediate level disinfection- Demonstrate 6 log reduction of vegetative bacteria and 3 log reduction of appropriated species of genus <i>Mycobacterium</i> .	yes	
9	High level disinfection- <ul style="list-style-type: none"> • Demonstrate 6 log reduction of vegetative bacteria and 6 log reduction of appropriated species of genus <i>Mycobacterium</i>. • Potency testing • Simulated use testing • In-use testing 	yes	
TESTS REQUIRED FOR AIR PURIFIERS			
1	Demonstrate 4 log reduction of claimed particulate	NOT APPLICABLE	NOT APPLICABLE
2	If intended for use against bacteria, effectiveness against representative gram positive and gram negative species		
3	If intended for use related to SARS-CoV-2, effectiveness against representative virus		
4	If intended for use in areas of sterile field or controlled air flow, a risk assessment to address turbulent air flow and/or potential site contamination		
	Safety issues addressed		
MISCELLANEOUS TESTS -NIL			


6/5/2022
Dr. Maya Nandkumar
Scientist G


Er. Nagesh D.S.
Scientist G(Sr.Grade)

What experts say about OptiMaser[®] Microwave Technology...



Shri Narendra Modi
Hon'ble Prime Minister of India

"Lucknow: Indian Institute of Toxicology and Research with Maser Technology, a startup develops disinfection machine for N95 Masks & PPE Kits."



Sheikh Saeed Bin Musallam
Technologist Mankhool Street
Dubai, UAE

"OptiMaser's recent display @ArabHealth had tremendous response from end users & alternative technologies which felt threatened by OptiMaser's potential." "OptiMaser[®] has tremendous potential in the European markets where environment & technology synthesis is the Ethos of any successful product."



Shri Manish Sisodia
Dy. Chief Minister Delhi State

"In order to control pollution in Delhi state there should be a clinical angle in disinfection of biomedical waste... people need to be educated about being sensitive towards handling the highly infectious medical waste ... OptiMaser[®] is the best solution for this..."



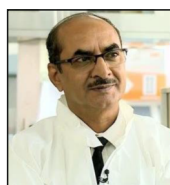
Prof. Alok Dhawan
Ex Director, CSIR-IITR

"OptiMaser[®] is the first in the world device which is used very successfully for disinfection of various products. It is highly disruptive in nature. It has zero discharge and zero emission; apart from this, it works on a domestic power line which makes it a technology of the future."



Prof. T.N. Dhole
Prof. & Head Dept. of Microbiology
SGPGIMS, Lucknow

"OptiMaser[®]... best suited for Rural & Urban Health Care..if well exploited, can eliminate secondary infections and bring down the current rate of Hospital Acquired Infection in India."



Dr. D.T. Maurya
Director NIV, PUNE

"The electric load of our existing Autoclave is 9KW whereas Microwave is of 1KW. Hence it is very economical to run..."

What experts say about OptiMaser[®] Microwave Technology...



Dr. Jitendra Sharma
 Managing Director & CEO
 AMTZ, Visakhapatnam

“Autoclaving issues such as long heating periods and heat loss can be bypassed by using microwave technology which runs in quick batches of small duration”.



Dr. Nashat Nafouri
 Chairman (Healthcare Group)
 Executive Officer, Saudi Quality Control

“It is a great technology that has great potential... it is more environment friendly as it achieves sustainability. It will lead the waste treatment market share in the near future!”



Shri Harsh Vardhan
 Chairman of the Executive Board
 World Health Organization

“The Indian Institute of Toxicology and Research(IITR), Lucknow (a CSIR lab) in association with a startup called Maser Technology, has indigenously developed a disinfection machine for N95 Masks and PPE Kits which makes them reusable.”



Dr. Aruna Sharma IAS
 Erstwhile Secretary
 MeitY- Ministry of Electronics
 & Information Technology

“Amongst the various methods... Incineration, Autoclaving, Deep burial, Microwave offers many advantages. The system developed has been validated for its efficacy at Haffkine's Institute, Mumbai- a leading Microbiology Test lab in the country.”



Mr. B.M. Baweja
 Senior Director (Retd.)
 MeitY, GOI

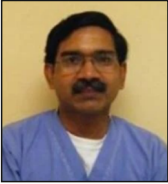
“In order to promote “Make in India” & “Swachh Bharat Abhiyan” flagship programmes, and make these a success, there is immediate need for encouraging the above indigenous technology developed by Govt. of India R&D organization.”



Dr. Charoo Hans
 Head- Microbiology (Retd.)
 RML Hospital, New Delhi

“RML had installed Austrian microwave disinfection system in the 90's. OptiMaser ups the technology with its mobility emission free, 1KW/hour usage & IOT. I am sure that this technology is the future of disinfection & sterilization.”

What experts say about OptiMaser® Microwave Technology...



Dr. V.P. Meenayadu
Department of Microbiology,
NITRD, Delhi

“Microwave can become an effective sterilisation method, especially for isolated tuberculosis care centres in countries which struggle for disposal of sputum, the biomedical waste”.



Mr. Mahesh Nakarmi
Director
Healthcare Foundation, Nepal HECAF

“Nepal is very progressive in Infection & Epidemic Control with latest technology & experts constantly working to improve the National healthcare. OptiMaser's microwave technology can effectively be used for pre-treatment & disinfection of blood bags & other medical waste. OptiMaser's proposed dialyser disinfection has tremendous potential in reducing cost of treatment & reuse.”



Dr. Parmeshwar Kumar
Asstt. Prof., Hospital Administration
AIIMS, New Delhi

“The microwave scenario was superior since its waste treatment equivalent cost was INR 9.18 per kg of waste instead of the autoclave scenario (INR 84.16 per kg of waste) and lime scenario (INR 117.05 per kg of waste)”.



Dr. Shobini Rajan
Asstt. Director General (BTS)
& Director (NBTC)

“Considering the fact that blood bags cannot be chemically pre-treated, microwave may also be adopted by blood banks as a method for pre-treatment of blood bags”.



Mr. Gary Box
Biomedical Waste Expert
United Kingdom

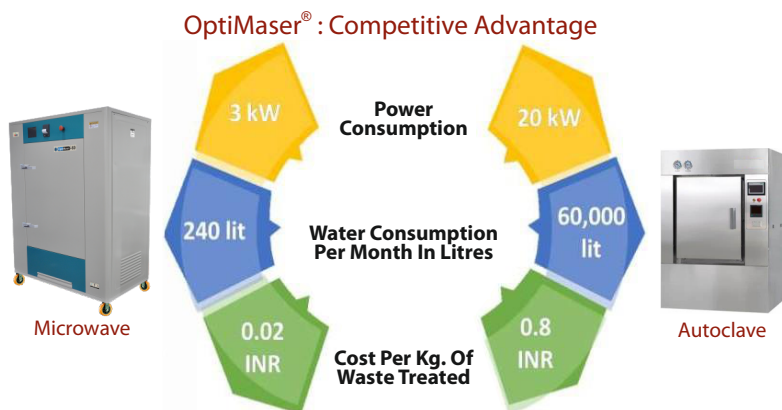
“OptiMaser® has tremendous potential in the European markets where environment & technology synthesis is the Ethos of any successful product.”



Dr. Vamsi Krishna Reddy
Senior Resident
AIIMS, New Delhi

“Use of Microwave will bring new insight into how to replace the 100-year-old legacy of employing outdated methods with innovative microwave aided disinfection to battle hospital acquired infections and secondary infections caused by improper or inadequate solid waste disposal”.

Why choose **OptiMaser**® ?



Traction

Our Clients Include World Class Medical Institutes



Global & India Installations (Part List)

- ❖ National Institute of Virology, Pune
- ❖ All AIIMS
- ❖ Indian Institute of Toxicology Research, Lucknow
- ❖ Municipal Corporation of Greater Mumbai (MCGM)
- ❖ GTB Hospital, New Delhi
- ❖ Lok Nayak Hospital, New Delhi
- ❖ BSF Hospitals, various locations
- ❖ NEIGRIHMS, Shillong
- ❖ ESIC Hospitals, various locations
- ❖ Railway Hospitals, various locations
- ❖ RML Hospital, New Delhi
- ❖ New Delhi Municipal Corporation
- ❖ JLN Medical College, Ajmer
- ❖ SMS Medical College, Jaipur
- ❖ RIMS, Imphal
- ❖ Lady Hardinge Medical College, New Delhi
- ❖ MCC, London
- ❖ Advance Veterinary Institute, Palestine
- ❖ Mid Western Regional Hospital, Nepal
- ❖ Filament Engineering Pvt. Ltd., Bangladesh

Notes

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A P P L I C A T I O N S



WORLD'S FIRST MOBILE MEDICAL INFECTION CONTROL SYSTEM

- Microbiology Labs
- Isolation Wards
- CHC / PHC
- OPDs / OTs
- Clinics
- District Hospitals
- Medical Colleges
- Tertiary Centres
- Private Hospitals
- Blood Banks
- Dialysis Centres
- CBWTFs
- Medical Colleges
- Multi OT Hospitals
- Tertiary Centres
- Pharma Companies
- 500 + Modular Usage



Advantages of Integrated ONLINE Shredder:

- Versatile
- Solar Power Connectivity
- Total Infection Control
- Ease of Storage
- Low Down time
- Low Power Consumption
- Low Maintenance
- Easy to Clean

Capacity	: 10/20/30 Kg/hr	Rotor Diameter	: 150
Blades	: Stainless Steel 316	Throat Size	: 250 X 280
Number of Blades	: 10	Sieve Hole Size	: 12 mm
Feed Width	: 250 X 280 mm	Control Panel	: YES
Blade Length	: 250 mm	Speed of Rotor	: <100 RPM
Number of Motors	: ONE	Automation	: Semi-Automatic

C O N S U M A B L E S



"Each **Microwave** that replaces an existing **Autoclave** provides drinking water **FREE** to almost **10,000 people for one year**" !!!

Don't let the "Life" slip down the drain...

Manufactured & Marketed by:

FORSTA MEDTECH PVT. LTD.

Corp. Office : #707, Ansal Bhawan, #16, K.G. Marg, Barakhamba
New Delhi-110001 | Mob.: +91 9792444111, 9839022234
Email : info@forstamedtech.com | Web.: www.forstamedtech.com

OptiMaser Research, Development & Incubation Centre:

Microwave Assisted Clinical Translation Research Program



Translational Research Program

AMTZ-Andhra Pradesh Medtech Zone Ltd.
C/o STERILA, Survey No. 480/2, Nadupuru Village,
Pedagantyada Mandal, Visakhapatnam