



US Food & Drug Administration  
Reg. No. 3007914014

# **G·SOL®(Global Solution)**

**For Innovative Hygiene & Life  
: Preparation for the Post-Corona-Era**

**G·SOL** G·SOL Corporation Co., Ltd.

## Ref.1 G·SOL® R&D GROUP

- GP&E Co., Ltd. in South Korea
  - Research & Development, Technology Headquarter
- enTree Life & Health Co., Ltd. in South Korea
  - Manufacturing & QA/QC
- G·SOL Corporation Co., Ltd. in South Korea
  - Marketing & Sales
- GP&E America, Inc. in San Jose, CA 95134, USA
  - Global Marketing & Distribution



## Ref.2 G·SOL® Registrations and Patents

- U.S. FDA Registration No. 3007914014 as Disinfectant
- U.S. FDA OTC Approved NDC No. 81042-010-01 as Sanitizer
- Korea Ministry of Environment Registration No. GB20-21-0065 as Disinfectant
- U.S. Patent Registered No. 8673331
- Korean Patent Registered No. 10-1083609
- Korean Patent Registered No. 10-1425347
- Korean Patent Registered No. 10-1586771
- Korean Patent Registered No. 10-1615666
- China Patent Applied No. 2018115202729



# Worldwide Health & Hygiene Problems

**Global Warming & Environmental Contamination cause Harmful Infectious Virus/Bacteria to spread and seriously increase the Risk of Disease**



**Bacteria**



**Virus**



**Toxic Chemicals**



# Innovative Material for Long-Term Prevention

- ◆ **Critical Global Prevention Problems** : i) World will always be surrounded by harmful viruses like COVID-19 and Seasonal Flu Viruses will follow a Cyclic Endemic Pattern, ii) It may take several years to develop perfect & acceptable vaccine and cure/treatment for infectious viruses, iii) Conventional sanitizing materials, volatile & flammable Alcohols etc., only allow disinfecting effect for a short time, less than 10 seconds.
- ◆ Our R&D Concept of **"BLOCKING SURFACE INFECTION PATHWAY for a very Long Time"** is the best alternative for preventing the spread of virus infection.
- ◆ Therefore, a New Long-Term Antiviral/Antibacterial Surface Disinfecting Material is inevitably needed in combating COVID-19.



**"LONG-TERM SURFACE DISINFECTANT"** to Prevent Infection for a very Long Time!!!



- ✓ Highly Disinfection Efficacy
- ✓ Long-Term Prevention
- ✓ Safe for Human & Environment



# What is G·SOL®?

- ◆ **G·SOL® is an innovative eco-friendly disinfecting material developed by new formulation methodology of synthesizing antiviral/antibacterial inorganic materials and it can kill all kinds of viruses, bacteria and germs effectively.**

## **1. Water-based Liquid Phase: No color, No odor, Non-flammable and Acid-free**

- ✓ **G·SOL® can kill various harmful viruses/bacteria ⇒ Excellent Disinfecting Power**

## **2. Eco-friendly Mineral Materials : Non-toxic & Non-irritant to Human Body**

- ✓ **Safe for Human and Environment : No Chlorine, No Alcohol, No Formaldehyde, No harmful Chemicals**

## **3. G·SOL® Particle's Excellent Coating to Various Surfaces**

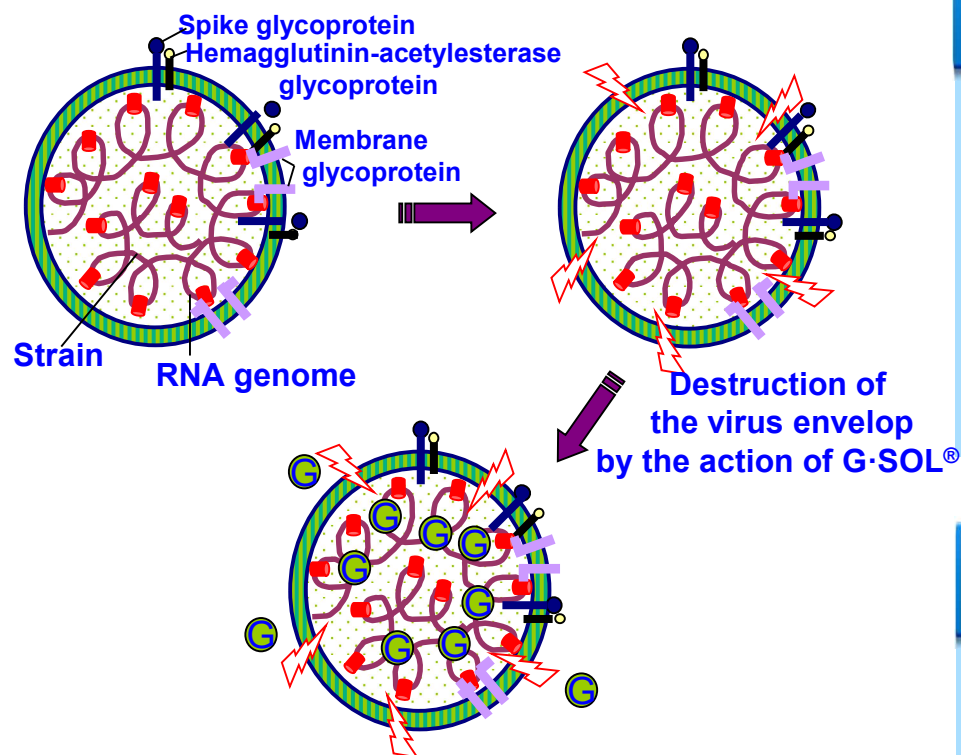
- ✓ **Keeping Virucidal/Bactericidal Efficacies for a very Long Time**  
⇒ **" G·SOL® is a Novel Surface Disinfectant with Long-Term Efficacy of 3 months and also G·SOL® is a Virus Variation Blocker"**

# What is G·SOL® Technology ?

- 1. New Synthesizing Technology:** Element-Binding Antiviral/Antibacterial Inorganic Materials: Maximization of Surface Disinfecting Power  
⇒ Kill various kinds of Virus/Bacteria with Disinfection Efficacy, 99.9%
  - 2. Unique Particle Coating Technology:** Using Intermolecular Forces of van der Waals Force and Ionic Bond between G·SOL® Particles and a Surface  
⇒ Long-Term Surface Disinfection Efficacy (up to 3, 6, 12 months)  
: it depends upon various surfaces (fabric & textiles, woven & unwoven, plastics, metals, woods, solutions, etc.)
- Ref.) Critical Problem of Conventional Sanitizing Materials:** (e.g.) ethyl alcohol, isopropyl alcohol, etc. are spontaneously volatilized in the air  
⇒ Very Short-Time Sanitizing less than 10 seconds, then How to Prevent Secondary Infectious Virus on the Surface???
- ⇒ **So, G·SOL® is the only Innovative Prevention Solution for Long-Term Disinfection on Various Surfaces and Environment**



# Virucidal Mechanism of G·SOL®



Kill virus by a coagulation (aggregation) reaction which causes suffocation or death by starvation

1

Particles of G·SOL® features antiviral activities through suffocating, starving out the cell by catalyzing enzyme proteins which are necessary for cell growth and energy metabolism and inactivating the cell function by letting liquid to penetrate into the body of the virus

2

G·SOL®, the particles of 0.10µm on average, with its superior adhesion ability, shows strong antimicrobial activities through restraining or destroying the function of cell membrane by adhering to cell surface of bacteria

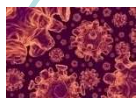
# G·SOL<sup>®</sup> can Kill New & Variant Seasonal Viruses

Need Preparation for the Post-Corona-Era ⇒ "LONG-TERM SURFACE  
DISINFECTANT, G·SOL<sup>®</sup> " to Prevent Various Infections



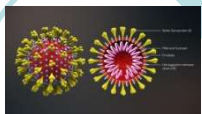
Coronavirus  
(SARS)

- PEDV(Porcine Epidemic Diarrhea Virus): 99.9%
- TGEV(Transmissible Gastroenteritis Virus): 99.9%
- ※ Tested by Korea Research Institute of Bioscience and Biotechnology



Variant Coronavirus  
(MERS)

- MERS Coronavirus(MERS-CoV): 99.9%
- ※ Tested by MicroBioTest (MBT), FDA-GLP, USA



New Coronavirus  
(COVID-19)

- Generic mutant from SARS Coronavirus
- COVID-19(SARS-CoV-2): 99.9%
- ※ Tested by Korea Zoonosis Research Institute, South Korea

G·SOL<sup>®</sup>



# Certificates of Virucidal Efficacy

1. SARS Coronavirus (PEDV, TGEV) – Apr. 2004  
✓ Efficacy: 99.9% (Korea Research Institute of Bioscience and Biotechnology)
2. Human Influenza Virus (H1N1) & Avian Influenza Virus (H9N2) – Nov. 2005  
✓ Efficacy: 99.9% (Biotechnology Center, Yonsei University, South Korea)
3. Swine Influenza Virus (New Flu, H1N1) – Oct. 2009  
✓ Efficacy: 99.8% (MicroBioTest (MBT) Inc., FDA-GLP, USA)
4. Viral Filtration Efficacy Test – Dec. 2009  
✓ Efficacy: 99.9% (Nelson Laboratories Inc., FDA-GLP, USA)
5. Avian Influenza Virus (H5N1) – Jan. 2010  
✓ Efficacy: 99.9% (MicroBioTest (MBT) Inc., FDA-GLP, USA)
6. Enterovirus Type 71 (Hand, Foot and Mouth Disease) – Jun. 2010  
✓ Efficacy: 99.8% (MicroBioTest (MBT) Inc., FDA-GLP, USA)
7. MERS Coronavirus (MERS-CoV) – Jul. 2015  
✓ Efficacy: 99.9% (MicroBioTest (MBT) Inc., FDA-GLP, USA)
8. New Coronavirus (COVID-19) – May, 2020  
✓ Efficacy: 99.9% (Korea Zoonosis Research Institute, Chonbuk National University)

※ All tests were performed under US FDA Good Laboratory Practice (GLP) requirements.

# Certificates of Bactericidal Efficacy

1. New Super Bacteria NDM-1 – Sep. 2010  
✓ Efficacy: 99.99% (MicroBioTest (MBT), Inc., FDA-GLP, USA)
2. Staphylococcus Aureus – Nov. 2009  
✓ Efficacy: 99.9% (FITI Testing and Research Institute, South Korea)
3. Salmonella Typhimurium – Nov. 2009  
✓ Efficacy: 99.9% (FITI Testing and Research Institute, South Korea)
4. Escherichia Coli – Nov. 2009, Sep. 2014  
✓ Efficacy: 99.9% (FITI Testing and Research Institute, South Korea)  
✓ Efficacy: 99.99% (Japan Food Research Laboratories)
5. Klebsiella Pneumoniae – Nov. 2009, Sep. 2014  
✓ Efficacy: 99.9% (FITI Testing and Research Institute, South Korea)  
✓ Efficacy: 99.99% (Japan Food Research Laboratories)

※ All tests were performed under International Standards by Authorized Laboratories.

## Certificates of Safety for G·SOL®

1. Single Dose(Oral) Toxicity Test\* ⇒ Non-Toxic (Category 5)

2. Acute Eye Irritation/Corrosion Test\* ⇒ Non-Toxic

3. Skin Irritation Test\* ⇒ Non-Irritant

4. Acute Inhalation Toxicity Test\*\* ⇒ Non-Toxic

5. Animal Cell Activity Test\*\*\* ⇒ Non-Toxic

※G·SOL® : Water-based Liquid Phase ⇒ No color, No odor, Non-flammable,  
No chlorine, No alcohol, No formaldehyde and Acid-free

\* Tested by Korea Testing & Research Institute (KTR)

\*\* Tested by Korea Institute of Toxicology (KIT)

\*\*\* Tested by Korea Research Institute of Bioscience and Biotechnology (KRIBB)



**“Safe for Human & Environment”**

# Certificates of Long-Term Surface Disinfection

## Long-Term Tests for Surface Disinfecting of G·SOL®

### 1. Long-Term Test I : **Cyclic-Laundry Test**

- ✓ Test Method: G·SOL® treated Fabric conducting 50 Cycles (wash ⇔ dry)
- ✓ Results: 99.9% of Efficacy against Bacteria\* after 50 Cycles
- ✓ Test Lab.: FITI Testing & Research Institute (Authorized in South Korea)
- \*Bacteria: Staphylococcus Aureus and Klebsiella Pneumoniae

### 2. Long-Term Test II : **Long-Term Field Test**

- ✓ Test Method: G·SOL® treated Carpet under monitoring during 12 months
- ✓ Results: 99.9% of Efficacies against Bacteria\* after Each of 3, 6, & 12 month
- ✓ Test Lab.: FITI Testing & Research Institute (Authorized in South Korea)

**※Unique Technology : Excellent Coating G·SOL® Particles to Surface  
⇒ “Long Lasting Surface Disinfection”**

# INNOVATIVE APPLICATIONS & INDUSTRIES

※ **G·SOL®** will change the game for Sanitary Life Pattern, Fabric & Clothing Industry and Home Care Industry from now on.

## **1. EPIDEMIC PREVENTION & SANITIZATION CARE**

⇒ **G·SOL® Liquid Bulk Solution offers**

- i) Worldwide Long-Term Prevention against Infectious Viruses and Disease**
- ii) Disinfection & Sanitization for Individual Care**

## **2. FABRIC & TEXTILE CARE**

⇒ **Dipping/Spraying G·SOL® Treatment on Fabric Surface offers Long-Term Hygienic Effect and Sanitary Life**

- i) Medical Wear, Medical Protective Clothing, Medical Raw Material Supplies**
- ii) Reusable & Washable Antiviral Mask (Disinfectant Mask)**
- iii) Outerwear, Sportswear, Footwear**

## **3. HOME & LIFE CARE**

⇒ **Products Compounded with G·SOL® (as an additive) offer Long-Term Virucidal/Bactericidal Efficacy to Home & Individual Care**

- i) Home & Laundry Products (Sanitary Coating Additives)**
- ii) Home Cleaning & Sanitizing Products**

# SALES & SUPPLY AGREEMENTS

## **G·SOL® Sales\***

- **Hospital: 5 Hospitals**
- **Public Facilities & Home: 24 Companies**
- **Fabric Coating: 12 Companies**

\* All these are Major Sales Performance

## **G·SOL® Supply Agreements\***

- **11 Companies (Total \$41.4 million USD for the last 10 years)**

\* The Agreements show just Primary Sales Contracts

# G·SOL® PRESS RELEASES

	Date	TV News	Technology
1	May 6, 2020	YTN	Long-Term Surface Disinfectant against COVID-19 Virus
2	Jul. 21, 2015	YTN	Innovative Sanitizing Material for Preventing MERS Corona Virus
3	Nov. 9, 2009	YTN	Inorganic Sanitizing Material for Preventing New Flu Influenza Virus
4	Nov. 8, 2009	MBC	Inorganic Sanitizing Material for Preventing New Flu Influenza Virus
5	Nov. 8, 2009	TJB (SBS)	Inorganic Sanitizing Material for Preventing New Flu Influenza Virus
6	Dec. 13, 2006	KBS	Sanitizing Material for Preventing Avian Influenza Virus
7	Dec. 13, 2006	YTN	Sanitizing Material for Preventing Avian Influenza Virus
8	Jan. 21, 2004	YTN	New Sanitizing Material for Preventing SARS Corona Virus
9	Jan. 19, 2004	KBS	New Sanitizing Material for Preventing SARS Corona Virus

	Date	Newspaper	Technology
1	May 19, 2020	HelloDD	Long-Term Surface Disinfectant for Preventing COVID-19
2		Medical Today	
3		Chungchong Today	
4	May 18, 2020	Seoul Economy	Innovative Sanitizing Material for Preventing MERS Corona Virus
5	Jul. 21, 2015	The Electronic Times	
6		Digital Times	
7		Joongdo Ilbo	
8	Nov. 10, 2009	The Chungchong Ilbo	New Inorganic Sanitizing Material for Preventing New Flu Influenza Virus & Avian Influenza Virus
7		Today Korea	
8		The Herald Business	
9	Nov. 9, 2009	The Daejeon Ilbo	
10		Digital Times	
11		Medical Today	
12		International Business Times	
13		Aju Business Daily	
14		Joongdo Ilbo	
15		The Chungchong Ilbo	
16		Chungcheong Today	
17		Today Korea	
18		Korea JK News	



# G·SOL® DONATION AND CONTRIBUTION

## ※ Global Efforts to Overcome the COVID-19

1. Donated \$10,000 USD to Daejeon City, South Korea (May 7, 2020)
2. Contributed 1 Ton of G·SOL® to Ethiopia Government (May 12, 2020)
3. Contributed 1 Ton of G·SOL® to Indonesia Government (May 14, 2020)
4. Contributed 100kg of G·SOL® & 2,000 Surgical Masks to Skyline (Mariner) Healthcare Center, San Jose, CA, USA (May 19, 2020)
5. Contributed 1 Ton of G·SOL® to Republic of South Africa Government (May 27, 2020)



## CONTACT US

### CONTACT US for Business and Contribution :

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# **NOVEL G·SOL® PRODUCTS**

# Novel G·SOL® Product – (I)

## 1. G·SOL® Surface Disinfectant (Bulk Solution Type): 1 ton

- Prevention of Epidemics for the Sanitation of Public Facilities such as Office, Governmental Facilities, Institutes, School, Theater, Hospital, Mart, and Home
  - ⇒ Spray it firmly in public facilities & home in order to kill Endemic Seasonal Viruses including COVID-19 and Bacteria
  - ⇒ Long-Term Blocking of the Infection Pathways and Preventing the Secondary Virus Infection more effectively (Long-Term Surface Disinfection up to 1 months)
- Application of Antiviral/Antibacterial Fabrics & Textiles Industries
  - ⇒ To treat G·SOL® Solution on Surfaces of Fabrics & Textiles (for Clothes, Towel, Carpet, Curtain, Blanket, Gown, Socks, Mask, Air Filter, Homecare, Footcare, and etc.) by spraying or dipping method
  - ⇒ Sanitizing Efficacy is sustained for Long-Term



<G·SOL® Surface Disinfectant>

## Novel G·SOL® Product – (II)

### 2. G·SOL® Antiviral Spray (Bottle Type): 60ml, 200ml, 450ml

- To Prevent Virus Infection for Personal Sanitation and Hygiene
  - ⇒ Spray it easily Home & Office to kill 99.9% harmful seasonal viruses and bacteria for the Long-Term Prevention of Epidemics
  - ⇒ For Preventing the Secondary Virus Infection



<G·SOL® Antiviral Spray, 60/200/450ml>

## Novel G·SOL® Product – (III)

### 3. G·SOL® Antiviral Wet-Wipes for Personal Care: 10, 30 Sheets

- Handy Sanitizing Product for Hygienic Daily Life
  - ⇒ Kill 99.9% of viruses and bacteria
  - ⇒ Effectively Usage for Hand Touching Surfaces: knob, cart handles, car handles, handlebars, toilet cover and etc.
- Not containing toxic ingredients & additives



<G·SOL® Antiviral Wet-Wipes>

## Novel G·SOL® Product – (IV)

### 4. G·SOL® Laundry Sanitizer: 1,000ml Bottle type

- Antiviral/Antibacterial solution for laundry
- Kill various kinds of viruses & bacteria 99.9% Efficacy in clothes
  - ⇒ Keep Antiviral/Antibacterial Efficacy until the next washing  
(Long-Term Efficacy Test of 50-Cycle Laundry Completed)



<G·SOL® Laundry Sanitizer>



## Novel G·SOL® Product – (V)

### 5. G·SOL® Antiviral Dispenser (Automatic Spraying Type): 230ml

- Preventing Infection Pathway by Continuously Killing Endemic Seasonal Viruses including COVID-19 and Bacteria in the Air
  - ⇒ Using it firmly at Office, School, Hospital, Institutes, Facilities, Buildings, Mart, Restaurant, Toilet, and etc. for Long-Term Sanitation and Hygiene
- Automatic Spraying Type on the Wall
  - ⇒ Time Interval Spraying: 15/30/60 minutes
  - ⇒ Time-Adjustable System
  - ⇒ G·SOL® Can Replaced-type



<G·SOL® Antiviral Dispenser>

# Novel G·SOL® Product – (VI)

## 6. G·SOL® Treated Facemasks: disposable

- Antiviral Facemasks for Flu and Corona Virus Infection
- For Preventing even the Secondary Virus Infection
  - ⇒ Kill 99.9% of Corona Viruses (including COVID-19) and Influenza Viruses (Seasonal, Pandemic, Avian, Swine, Equine and other) on the surface of mask
  - ⇒ Long-Term Antiviral/Antibacterial UNIQUE FACEMASKS!



<G·SOL® Treated Facemask>

# Novel G·SOL® Product – (VII)

## 7. G·SOL® Treated Antiviral/Antibacterial Medical Clothes

- Doctors Gown, Nurses Uniforms, Protective Clothing, and etc.
- Preventing the 2nd Infection of Viruses and Bacteria
  - ⇒ Kill 99.9% of Corona Viruses (including COVID-19), Influenza Viruses (Seasonal, Pandemic, Avian, Swine, Equine and other) and Bacteria (Pneumococcus, Staphylococcus Aureus and other) on the surface of cloth
  - ⇒ Long-Term Antiviral/Antibacterial UNIQUE CLOTHES!
  - ⇒ The Antiviral/Antibacterial Efficacy is maintained after 30 times laundry\*.

(\* The result of authorized testing lab. is attached.)



<G·SOL® Treated Antiviral/Antibacterial Medical Clothes>