



Technical Information

Super protective anti-virus mask

JAPAN99 MASK

BR-p³
Barriere
Perfect Protection Powder

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Concept

The face mask has been used to maintain humidity and body temperature as well as to prevent from the pollen, PM2.5 and intrusion of coughing and virus. The pandemic of Spanish Influenza in 1918 caused death of over 40 million lives worldwide. And now, even after 100 years, the human society has to still keep monitoring occurrence of the new type flu and establish prevention program as well as development of remedy system against another pandemic.

The inventor has successfully developed the anti-virus and anti-bacteria material through the joint research programs with Tottori University, Tokyo Medical and Dental University, Kyoto Sangyou University, Biomedical Science Association and others since 2004 and has proven anti-virus effectiveness of BR-p3 non-woven material against the Coronavirus, SARS, MRSA as well H5N1 Highly Pathogenic Avian Influenza and Smallpox Virus. At time of the New Type Influenza occurred in 2009, more than 50 million BR-p3 masks were shipped out.

While occurrence of the “Second wave of New Coronavirus infection” with long duration is anticipated, **this new mask can germicide 99.999% of the virus being penetrated inside the mask in one minute, which is backed up by the animal test indicating significant reduction of pneumonia compared with the popular masks.**

This mask is manufactured in the clean room of our associated company, located at Chizu City, Tottori, Japan, under high quality control environments.

Our motto is to develop the reliable mask of high performance with superior quality, which is suited for both retail and medical markets. We are planning to apply this anti-virus mask to the FDA approval in USA, which is the world standard, this fall.

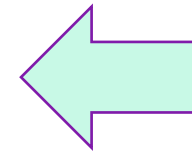
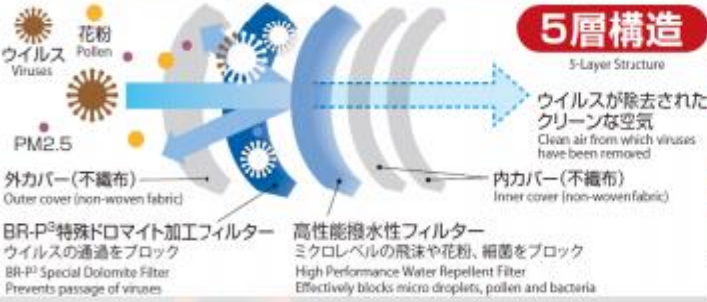
Best Life Saving Mask

JAPAN99

Super functional mask

① 特殊フィルターで高致死性ウイルスでも1分間で99.999%以上殺滅

- インフルエンザウイルス (H3N2、H5N1) ヒト分離株
- サーズ (SARS-CoV) ヒト分離株
- インフルエンザウイルス (H1N1、H2N2、H3N9、H5N3) トリ分離株
- 鶏伝染性気管支炎ウイルス (コロナウイルス) ポーデッド42株



- Made in Japan/Tottori
- 1 box contains 20 masks wrapped individually for long storage
- 15 years storage guarantee

Full autonomous production line



② 5層構造、BFE > 99%、PFE > 99%フィルター使用

③ 複数国立大学等の共同研究で効果が実証済み

What is "BR-P³" anti-virus material ?

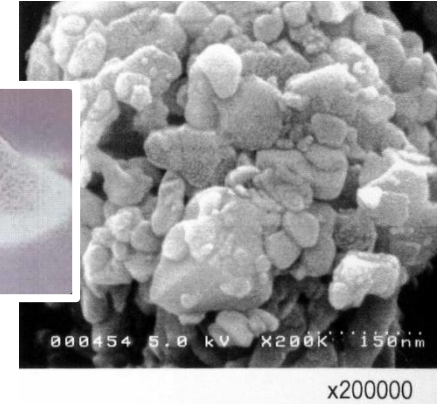
Dolomite
natural mineral



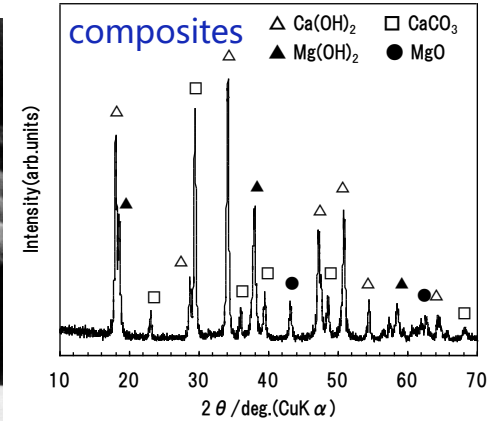
Super functions
enacted through
special process



"Active" dolomite **BR-P³**
Barriere Perfect Protection Powder



FE-SEM photo

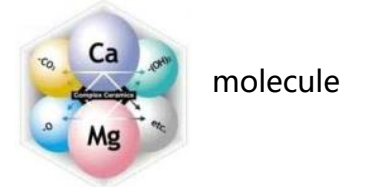


Natural Dolomite

- Composites: $\text{Ca} \cdot \text{Mg}(\text{CO}_3)_2$
- Inactive in nature
- Used for cement and food additives

Special granule process to activate anti-virus function

- Mar. 1999 qualified by MITI "Specified New Business Development Program"
- May 2003 Commencement of "anti-virus" project with Tottori University
- Sep. 2003 News release of the anti-virus material
- Aug. 2004 qualified by MEXT "Innovative Technology Development Research Program"
- Dec. 2005 Joint news release of BR-p3 non-woven material with Daiwabo
- July 2020 Joint improvement of BR-p3 non-woven material with major textile company



Electron microscopic observation at the Tokyo Medical and Dental University has confirmed that the hydroxyl radicals generated by the reactive oxygen species completely destroy HA proteins and Envelop, which are involved in viral infection.

Profile of main researchers for anti-virus material development program



Professor Emeritus Koichi Otsuki

Professor Emeritus, Tottori University

- Former Director of Avian Influenza Research Center, Kyoto Sangyo University; Specially Appointed Professor, Tottori University
- Graduated from the Faculty of Veterinary Medicine, Hokkaido University
- Researcher, Shionogi & Co.
- Professor, Department of Veterinary Medicine, Faculty of Agriculture, Tottori University
- Minister of Education, Culture, Sports, Science and Technology, Science and Technology Award



Professor Norio Yamamoto

- Professor, Tokai University School of Medicine
- Formerly Associate Professor, Department of General Medicine, Juntendo University School of Medicine
- Former head of Room 5, Influenza Virus Research Center, Infectious Disease Research Institute
- Lecturer, Graduate School of Medicine, Tokyo Medical and Dental University



Toshihiko Komatsu

Renowned in the field of “Bio security” field, Ex-National Institute of Health Bio Security Chief Officer, Animal test of Dolomite was conducted

Bio Medical Science

Non-profit organization consisting of the members from Medical Science, Pharmacy, Veterinary Medicine, Agriculture and others at the national institutes and universities, specialized at bio-security field



認定特定非営利活動法人(Certified NPO)
バイオメディカルサイエンス研究会
Biomedical Science Association (BMSA)

Test Data of Anti-Virus material, BR-P³ --- summary

Effectiveness

A. Tested by: Tottori University Agriculture Dept. Veterinary medicine
(Method: Red blood cell aggression capacity of embryonated chicken egg)

Virus type	Result
Influenza (H3N2) virus, Human isolation strain	Disinfection of >99.99% in 10min
Influenza (H1N1, H2N2, H3N9, H5N3) virus, Chicken isolation strain	Disinfection of >99.99% in 10min
Infectious Bronchitis virus (Coronavirus) Beaudette strain, 42 strains	Disinfection of >99.99% in 10min
Newcastle disease virus, Lasota strain	Disinfection of >99.99% in 10min

B. Tested by: Tokyo Medical and Dental University & National Institute of Health

Virus type	(Method) & Result
Influenza (H5N1), Vietnam	(Plaque method) Disinfection of >99.9% in 10min
Influenza (H5N1), Hong Kong	(Real time RT-PCR method) Disinfection of >99.9% in 24 hours
SARS - CoV	(Immunofluorescent antibody method) No positive indicator

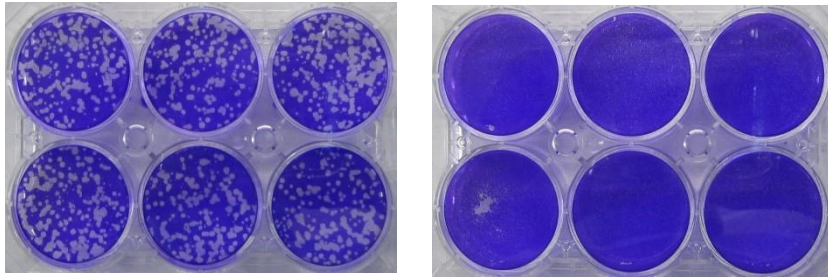
Safety

Tested based upon GLP of 2006 and “Chronic Toxicity Testing Guideline”
by Ministry of Health

	Test type	Result	Tested by
1	Characteristic	Within safety range	Institute of Analytical Sciences
2	Stability	No problem found	Institute of Analytical Sciences
3	Acute toxicity	No death case. LD ₅₀ Value was >1500mg/kg/day (rat)	Japan Institute of Biological Sciences
4	28 days repeated oral toxicity	Non-toxic up to 167mg/kg/day (rat)	
5	Micronucleus	Negative (rat)	Mitsubishi Chemical Safety Institute Ltd.
6	Skin sensitization	Negative (Guinea pig)	
7	Reverse mutation	Negative (Salmonella typhimurium strain and E. coli strain)	
8	Nasal inhalation single dose toxicity	Negative (rat, 2.08mg/L/h)	
9	Nasal inhalation 2 weeks repeated toxicity	Negative on rat of which weight is up to 0.21mg/l, female and 0.70mg/L, male.	

“in vitro” & “in vivo” tests

Bird-flu, H5N1 test



Regular 3 layers non-woven

BR-P3 3 layers non-woven

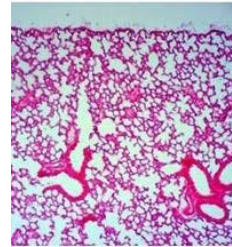
Bird-flu, H5N3 test

	Virus density (EID ₅₀ /0.2ml)	
	1min	10min
Regular		10^{8.25}
BR-P3	10^{3.67}	10^{3.50}

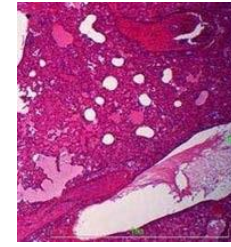
Inactivated >99.999% in 1 min.
after contact to BR-P3



Pathological comparison of Lung tissue of mouse infected with H1N1, contacting to various cloth masks

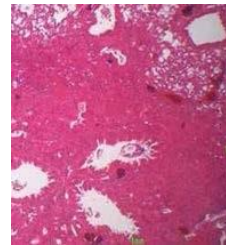


BEFORE infection
Normal cells of mouse

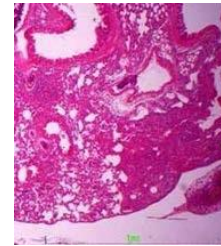


AFTER infection
Severe lung inflammation

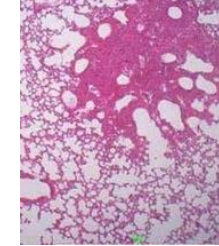
Regular non-woven cloth mask
Severe lung inflammation



Surgical non-woven mask:
Lung inflammation



BR-P3 non-woven mask:
Normal cells even after infection



< Testing Institution >
NPO
Bio Medical Science Association

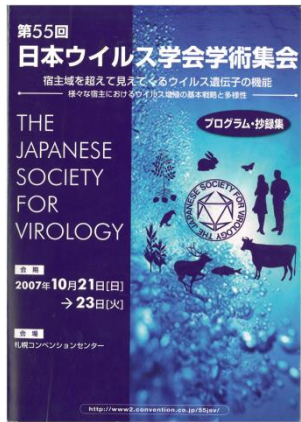


ABSL-2 Level, Virus: A/Puerto Rico/8/34 Mouse: C57BL/6Jc1

BR-P³ was effective to all virus tested



H5N1 Highly Pathogenic Avian Influenza
SARS coronavirus infectious capacity was reduced to the level of “less than detection”.



Membrane	DNA virus	RNA virus
Yes	Avian infectious laryngotracheitis Aujeszky's disease virus	Avian infectious bronchitis virus (Bird coronavirus) Avian influenza virus (H1,H2,H3,H4,H5,H7,H9,H10,H11,H12,H13) Human influenza virus (A/H3N2Hong Kong, B) Newcastle disease virus
No	Chicken adenovirus	Avian reovirus

- Powerful anti-virus characteristic
 < SARS virus reduced to less than 1/1,000,000 in 10 min. >
 (PCR) (MTT assay)
 (Immunofluorescent antibody method)
 (CPE Cytopathic effect) (Plaque reduction assay) (others)
- Human Influenza (H5N1),(Vietnam)
 < H5N1 virus reduced to less than 1/100,000 in 10 min. >
 < Tested on H5N1 Highly Pathogenic Avian Influenza >

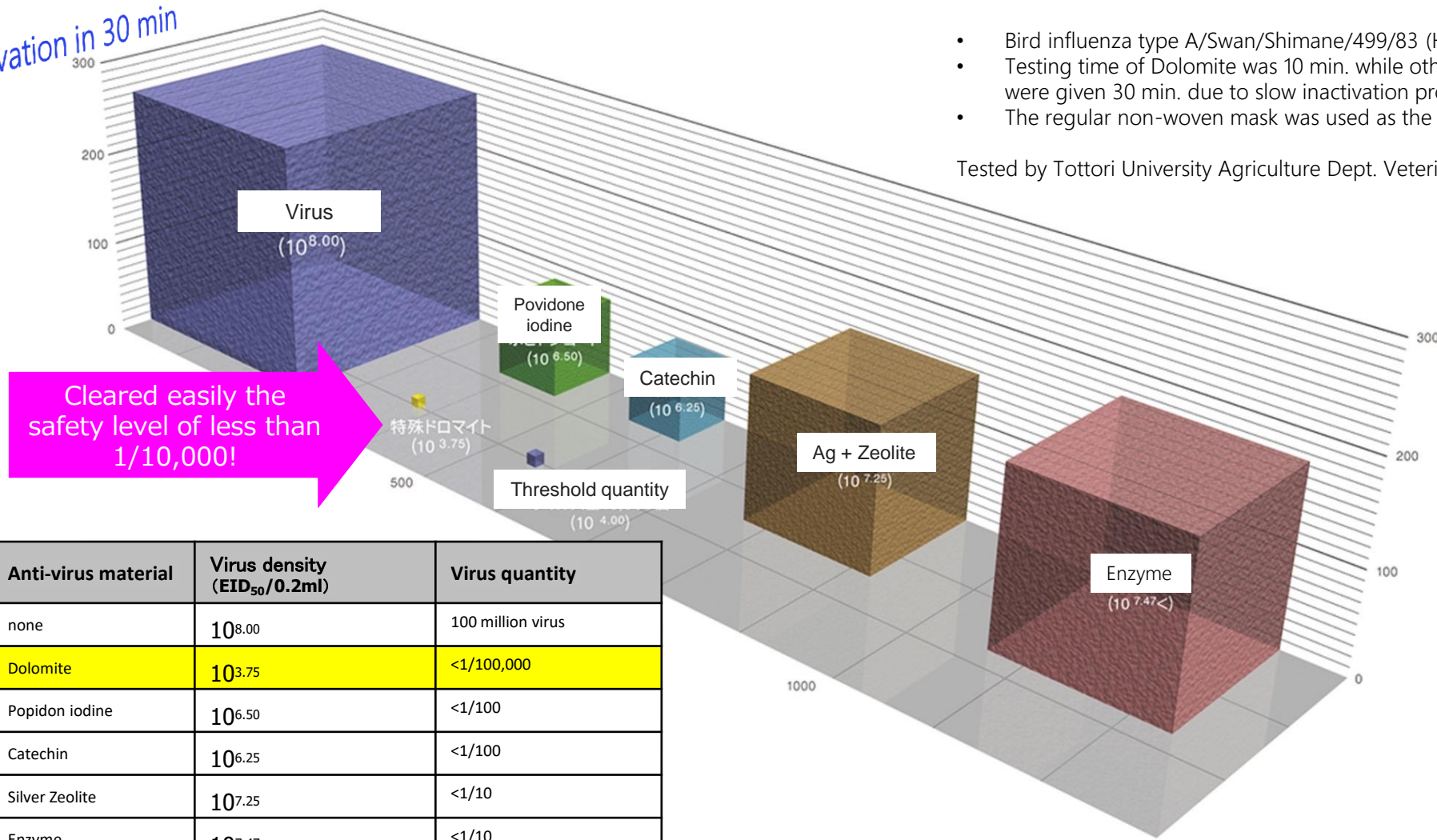
Effective to H1N1,H2N2,H3N9,H4N6,H7N7,H9N2,H10N7,H11N6,H12N5,H13N6 tested



(Tottori University, Faculty of Agriculture, Department of Biomedical Sciences,
Department of Biomedical Sciences, Public Health Classroom、tested on slurry state)

Comparison of Viral Inactivation Materials

Viral Inactivation in 30 min



- Bird influenza type A/Swan/Shimane/499/83 (H5N3) strain was used.
- Testing time of Dolomite was 10 min. while other comparison materials were given 30 min. due to slow inactivation process.
- The regular non-woven mask was used as the base substrate material.

Tested by Tottori University Agriculture Dept. Veterinary medicine

Client List (Dolomite Mask)



< Financial institutions. >

Bank of Japan, Sumitomo Mitsui Banking Corporation, Mizuho Corporate Bank, Mizuho Financial Group, Mizuho Capital, Mizuho Otemachi Health Insurance Association, Mitsubishi UFJ Trust and Banking Corporation, The Eighteenth Bank, Kobe Bankers Association, Sanin Godo Bank, Tottori Shinkin Bank, The Bank of Tottori, Tottori Credit Guarantee Association, Fukushima Credit Guarantee Association, Akagiya Securities, Shinko Securities, etc.







< Government agencies and schools. >

Ministry of Defense, Tokyo Metropolitan Government, Tokyo Nakano Ward Office, Tokyo Minato Ward Office, Tottori Prefectural Government, Karatsu City Hall, Koshigaya City Hall, Sano City Hall in Saitama Prefecture, Koshigaya City in Saitama Prefecture, Buzen City Hall, Tottori City Hall, Hokuto City Hall in Yamanashi Prefecture, Osaka Regional Taxation Bureau, Water Supply and Sewerage Bureau in Tosu City, Fukui Agricultural Policy Office, Tottori Prefectural Police Department, Community Development Foundation, Tottori Prefecture. Sakaiminato-shi Mutual Aid Association, Tottori City Employee Mutual Aid Association, Tottori Prefectural Police Mutual Aid Association, Sakaiminato Tourist Association, Sakaiminato Trading Promotion Association, Japanese Red Cross Society, Tottori University, Tottori City Minami Junior High School, Sozo Gakuen, Sozo-Sha Design College, etc.

< Companies >

Ltd., KDDI Corporation, Dentsu Inc., Nihon Keizai Shimbun, NKK Corporation, AEON Co. LTD, Nagase & Co., Ltd., Biscath Corporation, Menard Cosmetics, Inc., Yagami Corporation, ITOCHU CHEMICAL FRONTIER Corporation, Century Leasing Corporation, Coop Coalition, Sharp Corporation, Ministop Corporation, Aeon Credit Service Co. Ltd., AEON Bisty, Inc., Yamaya Corporation, AEON FANTASY, Sunday Headquarters, Institute for Quality of Life Sciences, Max Value Nishinippon Co. Max Value Central Corporation, Max Value Tokai Corporation, AEON Kyushu Corporation, Megapetro Corporation, AEON Marché Corporation, Laura Ashley Japan, Network Service Co. Komatsu Electronics Co., etc.

Regular mask and N95 mask are insufficient at the infection hot spots

	Regular 3 layers mask  	N95 mask  	Anti-virus JAPAN99 mask  
Merit	The purpose is to suppress dispersion of coughing droplet from the patient. Most of the droplet is trapped at the mask.	Guaranteed performance/SPEC as "particulate respirator" established by NIOSH of USA More than 95% of 0.075 μ size particles should be trapped, so that the influenza virus of 0.050 ~ 0.200 μ size can be prevented.	The droplet containing the virus landed at the shall be immediately inactivated so that the virus not cause infection even if such droplet is dried. (There are many evidence available.) Fitting to the face skin is almost same as N95. (more than 99.999% virus is inactivated in 1 min!)
Demerit	If the droplet is dried, there is a that the virus may get into the body, that infection may occur. The ear rubber band is deteriorated in about 3 years.	Breathability is of main problem. For some people it would be very difficult to breath for more than 30 min 120 min at max) if any strenuous work is engaged. To wear this mask, 1-week training is necessary. However, is still risky to wear this mask for long period although this mask is mandatory at the frontline sites. The ear rubber band is deteriorated in about 3 years.	The inactivation working period should be carefully monitored. (Japan N99 mask has 8 working hours.) The ear rubber band is guaranteed for 15 years.
Overall	Although positive prevention of infection is limited, dispersion of by the patient can be restricted to certain degree.	This mask would be necessary for the medical who are constantly exposed to the virus. However, this mask is not suited for the ordinary people in the daily to prevent infection.	If the package is kept closed, effectiveness can be maintained for about 15 years, so that this is ideal even for emergency use.

The **best mask** should be able to **actively prevent infection** as well as to keep wearing for long time.