

NEOTENY



Introduction

ACLIV Anti-Virus Film Products

Oct. 2021

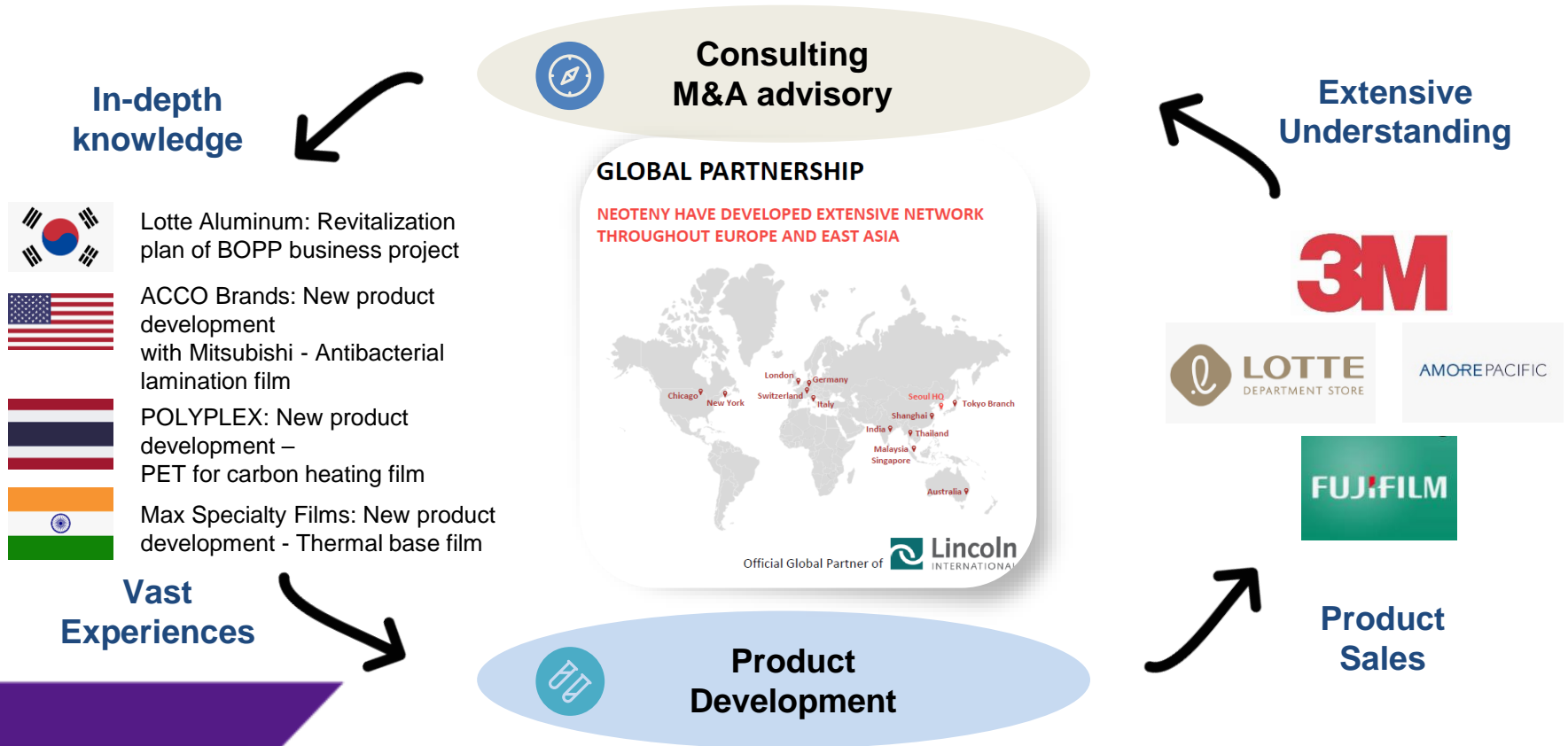
www.acliv.co.kr



1. Introduction of Neoteny

About NEOTENY

NEOTENY is a **COMPREHENSIVE SOLUTION PROVIDER** IN THE **CHEMICALS SECTOR** AT A **GLOBAL LEVEL** BY **GLOBAL PARTNERSHIP**.



Based on the broad experiences of consulting in the film industry, NEOTENY develops market innovative and eco-friendly special film products that solve the current major issues in the global society.

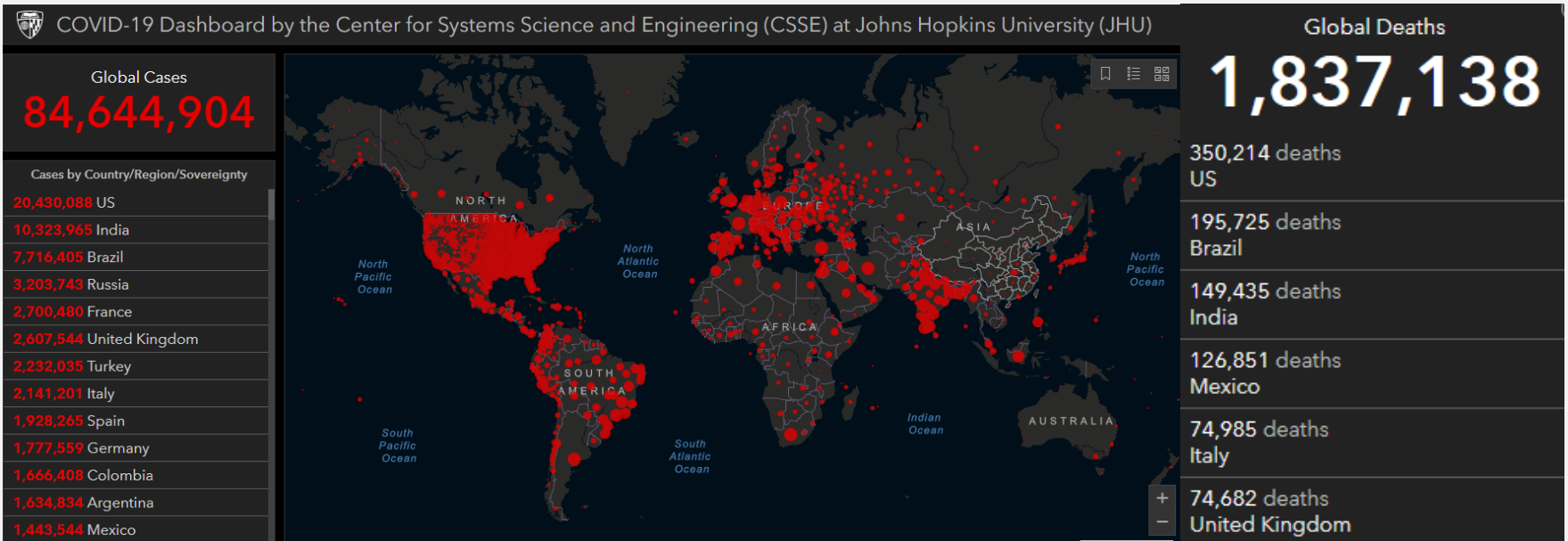


2. Disruptions by COVID-19

Unprecedented experiences

COVID-19 has been disrupting businesses and individual life significantly.

COVID Heat Map (3 January 2021)



<https://coronavirus.jhu.edu/map.html>

Not only deaths, but COVID-19 causes many unprecedented issues..

Social distancing
Mental health crisis



Unsustainable
businesses



Souring
unemployment



Low income
Sluggish economy



International
disputes



Social polarization
Disparities



3. Transmission of Virus (COVID-19)

Routes of transmission

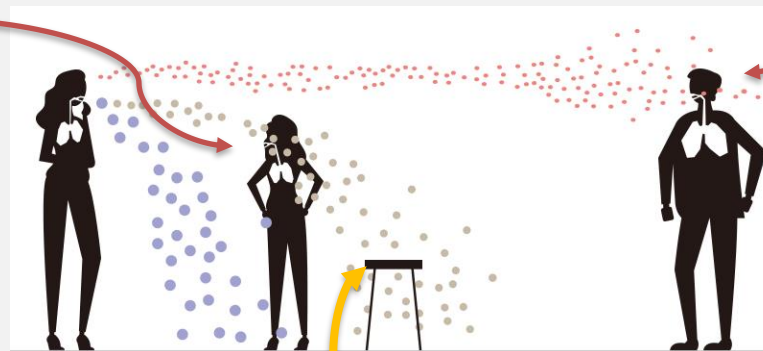
Humans are the hosts of virus. A cough makes 3,000 droplets of saliva and a sneeze spreads 100,000 droplets of saliva in the air at a speed of 140km/h.

It requires only a few minutes that the droplets spread widely like the fog.

Direct transmission

(Droplets): Droplets over $5\mu\text{m}$ can spread up to 2m and contact with human skin.

Wearing a mask is recommended.



Airborne transmission (Droplets):

Droplets less than $3\mu\text{m}$ can spread extensively by forming an aerosol.

Wearing a mask is recommended.

! **Indirect transmission (Contact):** Droplets less than $5\mu\text{m}$ can spread more than 4m and fall on objects. Additional solutions are required!!

BBC News on 11 October 2020

“The research from **Australian agency CSIRO found the virus was “extremely robust,” surviving for 28 days** on smooth surfaces such as glass found on mobile phone screens and both plastic and paper banknotes, when kept at 20C (68F), which is about room temperature, and in the dark.”

<https://www.bbc.com/news/health-54500673>

✓ These results highlight the need to wash hands as well as “cleanse contaminated objects regularly”.

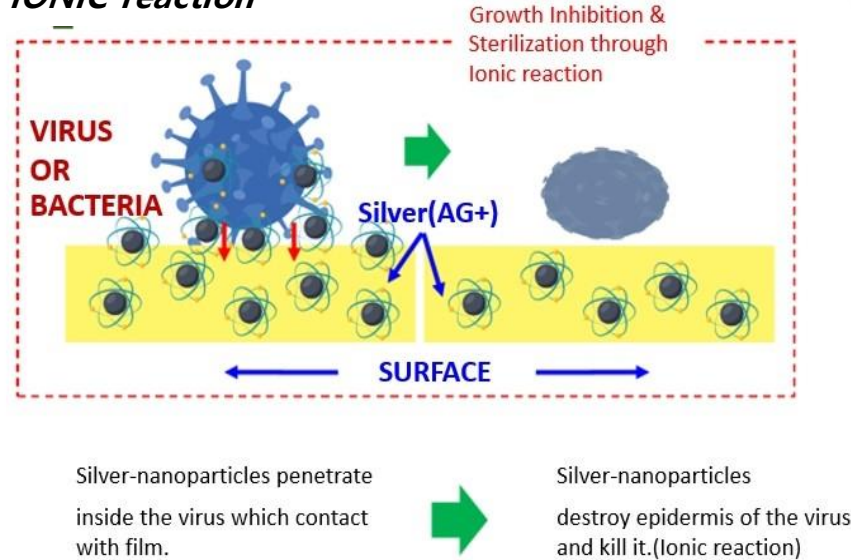
4. ACLIV?

Development of ACLIVs

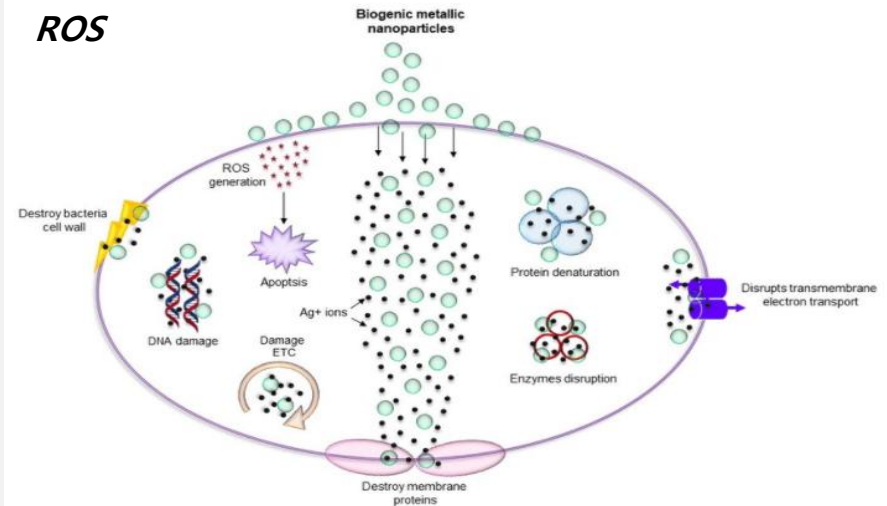
ACLIVs have been developed to reduce indirect transmissions and become the world-first Silver and PET-based Anti-Virus (COVID-19) films certified by **ISO 21702** (internationally single accredited test report for antiviral)

Mechanism of Anti-microbial activities

IONIC reaction



ROS



Silver-ion-mediated reactive oxygen species (ROS) generation reduces bactericidal activity.

Fact checking

- ACLIVs are the only certified PET products to eradicate both viruses and bacteria effectively.
- ACLIVs eradicates **99.9%** of BACTERIA in **10mins** & VIRUS such as COVID-19, SARS, MERS in **30mins**.

5. Why ACLIV & Neoteny?

Front-runner in every aspect

The anti-virus films certified by ISO 21702

- Tested at Fonderephar in France and Japan Textile Products Quality and Technology Center in Japan
- France and Japan are of 6 permanent members of the ISO

Exceptional certifications

- Globally only the product that has all the major international antiviral certifications: ISO21702, CE, FDA

Made in Korea

- Fully made in Korea for quality & hygiene control
- All the materials come from Korea and the U.S.
- Korea has the best infrastructure for IT devices and IT screen protectors

Excellent durability

- Protected from external shocks and scratches effectively
- Surfaces are processed coating with hardness of 3H

High transparency and anti-glare

- The high transmissivity assures excellent transparency and vividness.

Effective anti-fingerprint and anti-shatter


- The special coating eases removal of fingerprints or oil stains and protects users from damages

One and only PET-based anti-virus film

- PET is eco-friendly, safe to humans and recyclable while PVC emits dioxin when it is incinerated.
- PET maintains clear and clean status, but PVC becomes decolourised.

6. ACLIV ZONE

Awareness & Trust



ACLIV ZONE
ALWAYS CLEAN LIVE

ACLIV antiviral films kill 99.9% of viruses including **coronavirus** within 30 mins and kill 99.9% of bacterias within 10 mins.

ISO 27001 CE FICBI FDA

ACLIV ZONE
ACLIV ZONE Stickers are adhered to the places where ACLIV products are installed to increase awareness and trust.

Medical centre

Hotel reception

Shop Front door or Exterior wall



7. Specifications

Comparison with competitors

Supplier/Brand	ACLIV	HEXIS(PureZone)	Dr.Cu	Clean CU	Unilever
<i>Origin</i>	Korea	France	Korea	Korea	UK
<i>Type</i>	Silver	Silver	Copper	Copper	Disinfectant(Spray & Powder)
<i>Thickness (MIC)</i>	60, 200, 105	60	150	150	1-2
<i>Base Material</i>	PET	PVC	PE	PE	N/A
<i>ISO21702 (Antiviral Certi.)</i>	Yes	Yes	Yes	No	Yes
<i>Performance (Time to kill 99.9% of viruses)</i>	Less than 30 min	More than 1 hour	24 hour	N/A	1 min
<i>Lifespan of Antiviral Properties (at high touch surface)</i>	1 Year	More than 3 months	More than 2 months	More than 2 months	Less than 1 day
<i>CE Mark</i>	Yes	No	No	No	Yes
<i>FDA Certi.</i>	Yes	No	No	No	Yes
<i>Color</i>	Clear, Silver	Clear	Translucent	Translucent	N/A
<i>Anti-Scratch & Anti-Fingerprint</i>	Yes	No	No	No	No
<i>Anti-Color Shift at Outdoor</i>	Yes	No	No	No	N/A

8. Business(B2B) Products

Display Protection Film



Key Features

- Designed for **kiosks** and large displays
- Combination with Korea's world's best infrastructure for IT devices and IT screen protectors
- **Hardcoating** Treated
- Self-adhesive and easy installation
- Durability of antiviral efficacy after installation: **1 year**
- Can be cleaned by cleaning chemical & agents
- Fully made in Korea

PRODUCT SIZE

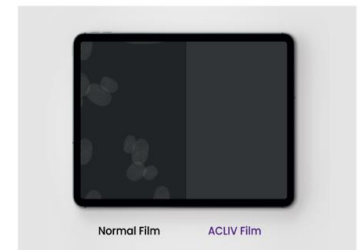
- 1270mm x 50m / 635mm x 10m
- Cut Films : 5,7,13,24,32,43,49,55 inch
- Custom-made size



Shock Proof & Shatter Resistant



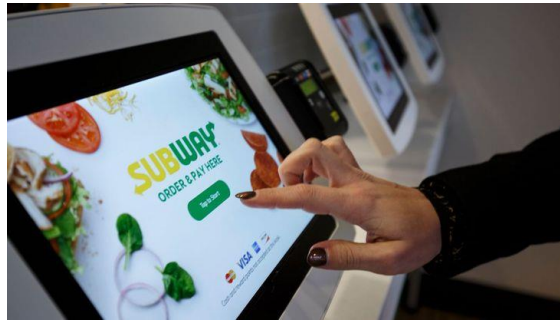
Anti-Scratch



Anti-Fingerprint

9. Examples of Application

Display Protection Film



10. Business Products

Surface Protection Film



60 Clear

- ✓ **Thickness: 60MIC**
- ✓ **Color: Clear**

- **Adhesive:** Acrylic adhesive with strong adhesion
- **Applications:** Generic use except for touchscreens
- **Adhesive & Non-adhesive type available**



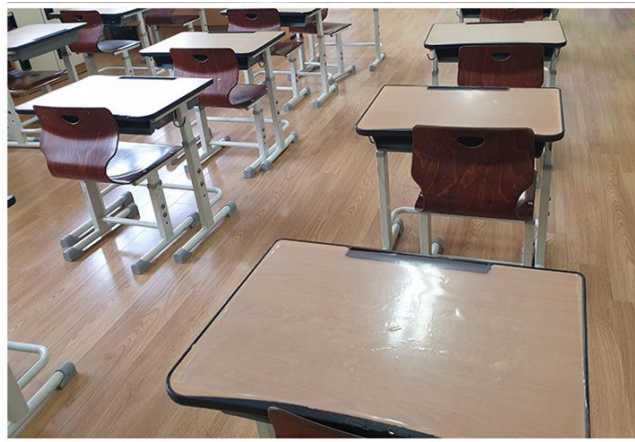
200 Silver Color

- ✓ **Thickness: 200MIC**
- ✓ **Color: Silver**

- Designed for **non-flat** surfaces such as round-shape: Far more flexible than other films
- Best suitable for **handles** and **doorknobs**
- **“Luxurious” effect**
- Specially designed to remove air-bubble easily
- **Adhesive:** Acrylic adhesive with strong adhesion

11. Examples of Application

Surface Protection Film _ Public facilities



12. Examples of Application

Surface Protection Film _ Medical facilities



13. Examples of Application

Surface Protection Film _ Hotels & Shopping Malls

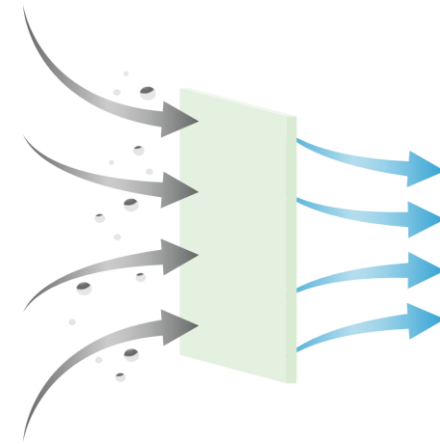
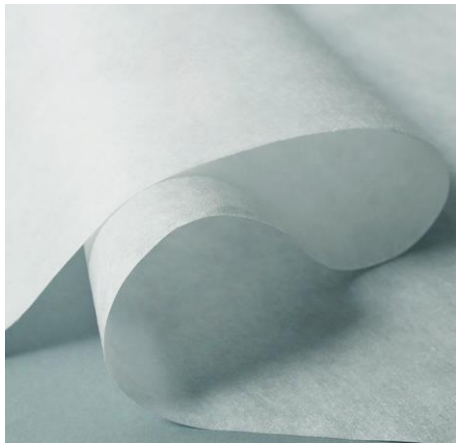


14. Business & Consumer Products

ACLIV Air-Filter

- **Verified efficiency of 99.9% against the coronavirus**
- **Catches and Kills viruses and bacteria**
- **Easy, quick and safe installation**
- **Smart air filter solution for building, house, air-craft, car and rail**

Air-conditioners are the proven source of virus transmission.



**CLEAN AIR
With ACLIV Antiviral Filter**

Where does it Used?



15. Consumer Products

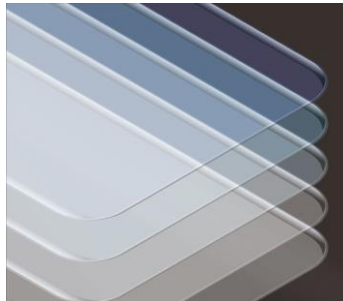
Mobile Screen Protectors



iPhone Screen Protectors



iPad Screen Protectors

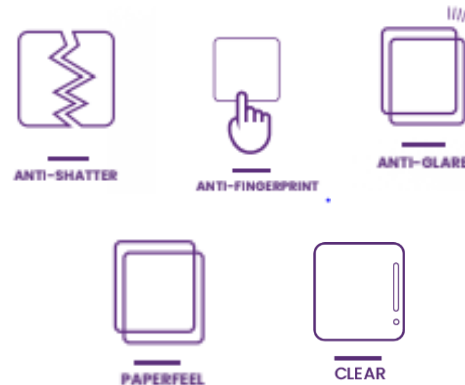


Unique Film Construction

1. Surface Protection PET Liner ($58\pm 3\mu\text{m}$)
**mainly 30-40 μm in the market*
2. Anti-Virus & Hard Coating ($4\pm 1\mu\text{m}$)
3. Optical grade PET Film ($100\pm 1\mu\text{m}$)
4. IT Grade Silicone Adhesive ($25\pm 2\mu\text{m}$)
**mainly 15 μm in the market*
5. Logo Printed PET Liner ($50\mu\text{m}$)

Key Features

- Combination with Korea's world's best infrastructure for IT devices and IT screen protectors
- **Hardcoating** Treated
- **Premium grade silicone adhesive** from Dow Chemical
- **Optical grade PET** (polyester) base film
- Self-adhesive and easy installation
- Durability of antiviral efficacy after installation: **1 year**



16. Examples of Application

Mobile Screen Protectors - Smartphones, Tablet PCs



17. Consumer Products

Pouch

Product Description



Key Benefits

- Kills 99.9% of virus in less than 30min under the standards of ISO 217012:2019
- Kills 99.9% of bacteria under the standards of JIS Z 2801
- Charcoal ingredient offers deodorization
- Zippered Pocket – Water Repellent & Washable

Specification

- Easy to Clean
- Material: PE
- Product Types: Envelop & Zipper
- Dimensions: 33cm x 41cm x 25cm
- Product Origin: Korea
- Warranty: Limited 1 year global warranty

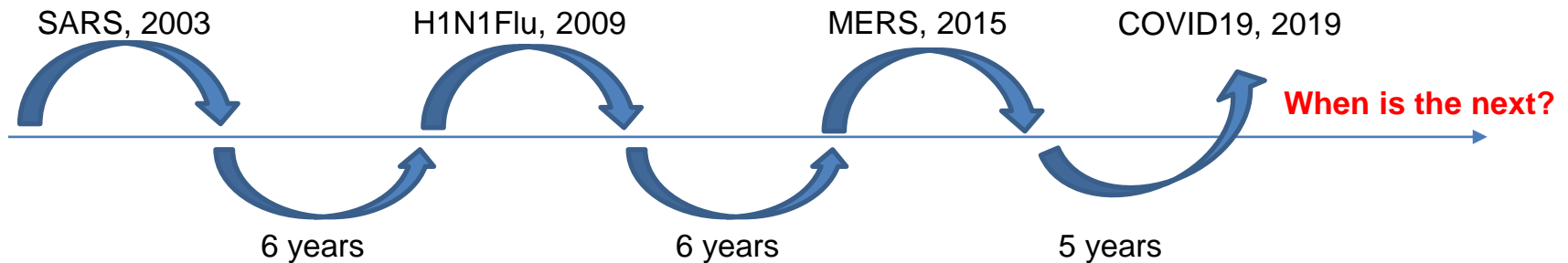
Application Examples



18. Potentials of ACLIV

Increasing Demand & Continuous Development

- **Increasing awareness of the product:** Due to the outbreak of COVID-19, **hygiene standard** has been much higher than past. Demand is expected to increase going forward even after COVID-19.
- Infectious diseases are cyclical, and the recent epidemics have occurred every 5-6 years.



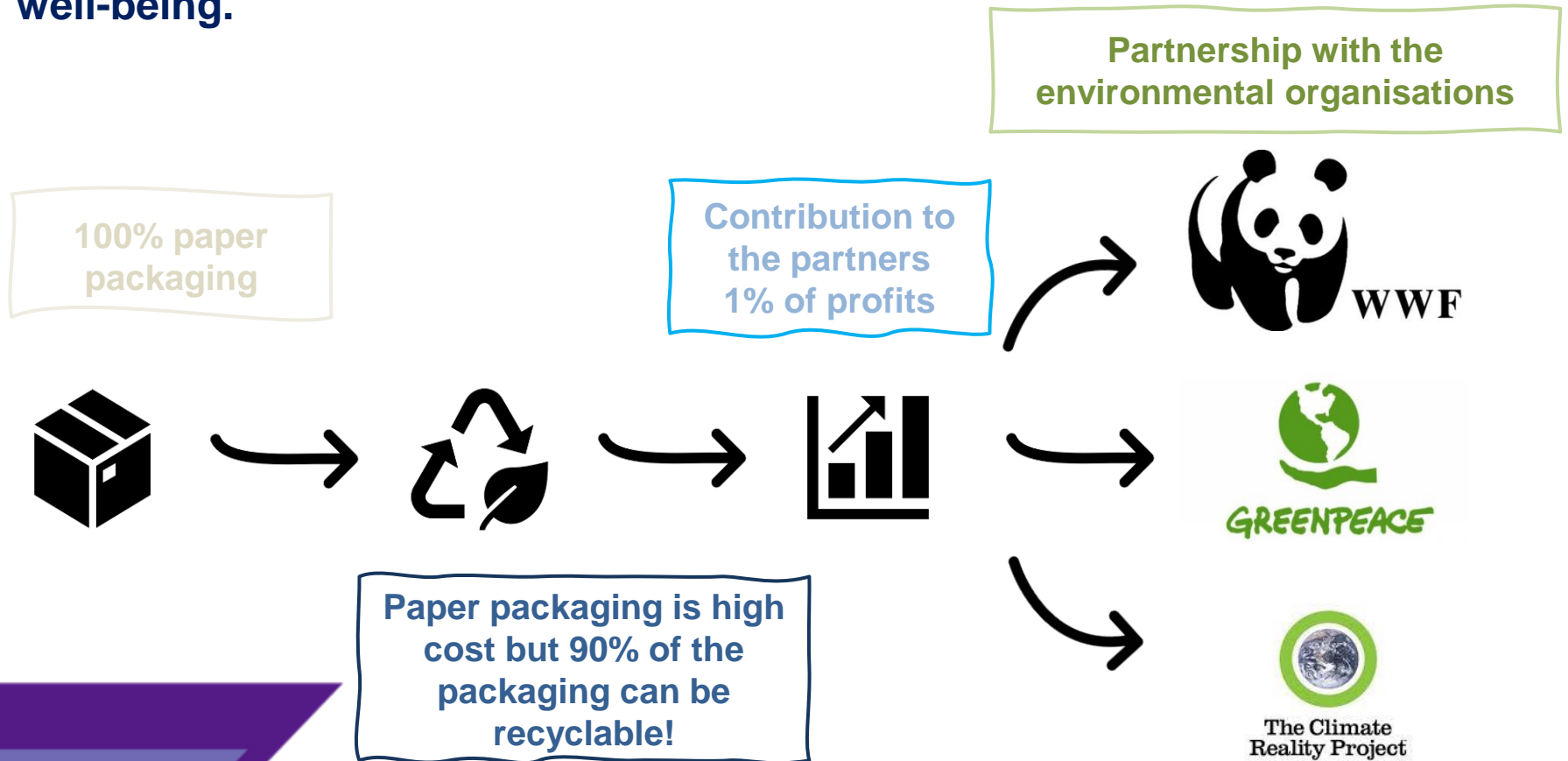
- **Variety of application:** Applications for the products are increasing in many different ways, and the usages are getting extended to office buildings, hospital equipment, public facilities, means of transportation, schools, restaurants, IT devices, etc.

To reduce the spread of the current and next epidemics, continuous development and applications of products are required.

19. NEOTENY's CSR

Corporate Social Responsibility

NEOTENY practices social responsibility to maximise environmental well-being.



20. Press Release



“ACLIV Wins Certification for Killing COVID-19 Virus by 99.9% Within 30 Minutes From Antiviral Testing

NEOTENY, a chemical company specializing in film making, announced that it **Sponsored by Businesswire** has received ISO 21702 certification (Certification No.: 21-1634) from an antiviral testing agency in France, confirming that its antiviral film **ACLIV** can kill COVID-19 virus by 99.9% within 30 minutes.

ISO 21702 is an antimicrobial surface test that performs the measurement of antiviral activity on plastics and other non-porous surfaces. Among around 50 antibacterial and antiviral film brands across the world, only five including NEOTENY have obtained ISO 21702 certification.

At the test conducted targeting the COVID-19 virus, ACLIV antiviral film killed 99.9% of the virus within 30 minutes. This is by far the most outstanding result among those of antiviral tests conducted on the COVID-19 virus so far. Previously, Hexis of France had produced the best result of killing the virus in approximately one hour. The viral extinction time of most ISO 21702-certified products is around 24 hours.

In August 2020, ACLIV of NEOTENY has been certified ISO 21702 in Japan with its performance against Influenza A virus recognized by an international standard research center of Japan. Recently, it also won the European certification, CE (Conformité Européene), for antiviral and antibacterial effects.

Collaborating with the World's Top-five Pharmaceutical Company Based in Europe

Having won recognition for its antiviral film technological power, NEOTENY entered into a confidentiality agreement with the world's top-five pharmaceutical company based in Europe. NEOTENY is currently collaborating with this company in applying the antiviral film ACLIV to medical devices.

It is unprecedented for this multinational pharmaceutical company, which is notorious for being strict about partner and product selection, to collaborate with a Korean company.

“There are numerous antiviral products in the world. But, it is not easy to find one that comes with reliable certification data or satisfactory performance,” said a senior engineer from the multinational pharmaceutical company in charge of the collaboration project. “We have confidence in NEOTENY's ACLIV because it is one of few products that obtained certification from two ISO research centers in France and Japan and also provides excellent performance.”

<https://www.silicon.co.uk/press-release/acliv-wins-certification-for-killing-covid-19-virus-by-99-9-within-30-minutes-from-antiviral-testing-agency-in-france>



“Meet Neoteny – The Global Leading Company For Anti-Viral Solutions!”

Below is our recent interview with **Stewart Kim**, the Founder & CEO of [Neoteny](#):



Q: Could you provide our readers with a brief introduction to Neoteny?

A: As a chemical company specializing in films, NEOTENY is broadening its business areas by developing and distributing film and chemical products in addition to providing management consulting and M&A consulting services for the chemical industry. [ACLIV](#) is NEOTENY's business division in charge of the antiviral

product group.

NEOTENY is based in Korea and all the products are fully designed and made in Korea too.



Recommended: [Meet Ironclad – The #1 Contract Lifecycle Management Platform For Innovative Companies](#)

<https://www.techcompanynews.com/meet-neoteny-the-global-leading-company-for-anti-viral-solutions/>

21. Certificates

ISO21702_ISO Test Report in France (ANTI-VIRUS)



Report N°21-1634 Study 20-2818/3

Toulouse, February 4th 2021

STUDY 20-2818/3
REPORT 21-1634

EVALUATION OF THE VIRUCIDAL ACTIVITY OF ON PLASTICS AND OTHER NON-POROUS SURFACES AGAINST HUMAN CORONAVIRUS 229E ACCORDING TO THE METHODOLOGY OF STANDARD ISO 21702 MAY 2019

Client RuKaInnovation B.V.
Zuidendijk 393,
3317 NS, Dordrecht,
Netherlands

NEOTENY / (주)네오테니
8th Floor, Seoul Finance Center,
136, Sejong-daero, Jung-gu,
04520 Seoul, Republic of Korea

Test laboratory FONDEREPHAR
Faculté des Sciences Pharmaceutiques
35 Chemin des Maréichers
31062 TOULOUSE cedex 9
FRANCE

Dr Laila HADDIOUI
Study Manager

Dr Jocelyne BACARIA
Quality Manager

I- TEST LABORATORY IDENTIFICATION

FONDEREPHAR
Faculté des Sciences Pharmaceutiques
35 Chemin des Maréichers
31062 TOULOUSE cedex 9
FRANCE

II -SAMPLE IDENTIFICATION

- Name of support: PROMAXSILVER-ACLIVSilver PET
- Batch number: 200606-04
- Date of receipt: 26/11/2020
- Internal code: 20-2818-3

- Name of support: TEMOIN PET
- Batch number: not communicated
- Date of receipt: 26/11/2020
- Internal code: 20-2818-6

- Supplier: RuKaInnovation b.v. - NEOTENY

- Period of testing: January 2021

III - TEST METHOD

III-1 VIRUS

Name: Human Coronavirus 229E
Origin: ATCC
Reference: VR-740
Supplier batch number: 58505270
Internal batch number: SS-2-210920 (Passage N°2)

III-2- Recipient cells

Name: Vero Cells
Origin: ATCC
Reference: CCI-81
Supplier batch number: 3372621
Internal batch number: WCB-090708 (Passage N°20 et 27)

Report N°21-1634 Study 20-2818/3

Report N°21-1634 Study 20-2818/3

Test 24 hours

- Assay 1 : lg TCID₅₀ = 2.13
- Assay 2 : lg TCID₅₀ = 2.00
- Assay 3 : lg TCID₅₀ = 2.25

lg TCID₅₀ Assay average = 2.13

R = lg TCID₅₀ control 24 hours average - lg TCID₅₀ Test 24 hours average = 3.46 log

VII-CONCLUSION

According to the methodology of the ISO 21702 standard (May 2019), contact of treated support PROMAXSILVER-ACLIVSilver PET with the strain of Human Coronavirus 229E induces a reduction of the viral titer of 2.12 lg at contact time 30 minutes, 2.62 lg at contact time 1 hour, and 3.46 lg at the contact time 24 hours

The treatment of supports PROMAXSILVER-ACLIVSilver PET induces a reduction of the viral load of 99.24% at contact time 30 minutes, 99.76% at contact time 1 hour, and 99.97% at contact time 24 hours.

1/9

FONDEREPHAR

FONDEREPHAR

9/9

22. Certificates

Test Report_Japan Textile Products Quality and Technology Center (ANTI-VIRUS)

Report No. : 20KB-060860-2

 Japan Textile Products Quality and Technology Center

TEST REPORT

4th September 2020

APPLICATION

Test applicant :
 Test sample : Anti-Bacteria Film
 (①Transparent : untreated test material, ②Transparent : treated test material)
 Test item : Antiviral Activity Test for non porous surfaces
 Date of application : 8th June 2020

TEST METHOD

Antiviral activity of each sample is tested mainly based on ISO21702

「Measurement of antiviral activity on plastics and other non-porous surfaces」

- The Summary of Antiviral Activity Test for non porous surfaces
 - Virus strain : *Influenza A virus* (H1N1);
A/PR/8/34;TC adapted ATCC VR-1469
 - Host cell : MDCK cell ATCC CCL-34
 - Contacting time : 24 h at the temperature of 25 °C
 - Wash-out solution : SCDLP medium
 - Measurement of viral infectivity titer : Plaque assay

TEST RESULT

○Result of antiviral activity test

Test Virus : *Influenza A virus* (H1N1)

A/PR/8/34;TC adapted ATCC VR-1469

Test virus suspension : 1.5×10^7 PFU/ml

Test Sample		Common logarithm average of Infectivity titer(PFU/cm ²) (Note 2)	Antiviral activity value [R] (Note 3)
①Anti-Bacteria Film (Transparent : untreated test material) (Note 1)	Immediately after inoculation [U ₀]	5.48	—
	After contacting for 24h [U ₁]	4.44	
②Anti-Bacteria Film (Transparent : treated test material)	After contacting for 24h [A ₁]	< 0.80	≥ 3.6

(Note 1) Anti-Bacteria Film (Transparent : untreated test material) is used for "untreated test specimen".

(Note 2) PFU : plaque forming units (Note 3) Antiviral activity value $R = U_1 - A_1$

○Result of control test

Test Virus : *Influenza A virus* (H1N1)

A/PR/8/34;TC adapted ATCC VR-1469

Test virus suspension : 4.2×10^4 PFU/ml

Test Sample	Cytotoxic effect	Cell sensitivity to virus		Judgement of control test
		Common logarithm average of Infectivity titer (PFU/mL) (Note 2)		
①Anti-Bacteria Film (Transparent : untreated test material)	negative	[S ₀]	2.54	satisfied
②Anti-Bacteria Film (Transparent : treated test material)	negative	[S ₁]	2.59	satisfied
SCDLP medium (Note 4)	negative	[S ₂]	2.65	

(Note 4) SCDLP medium is used for "negative control".

【Conditions for control test】

Cytotoxic effect : negative

Cell sensitivity to virus : $|S_0 - S_1| \leq 0.5$

$|S_0 - S_2| \leq 0.5$



Sayaka Ogo

Microbial Testing Laboratory Kobe Testing Center
 Japan Textile Products Quality and Technology Center

23. Certificates

Test Report_SGS [ANTI-BACTERIA]

Test Report(Reference) No. F690101/LF-CTSAYFN20-39272 Issued Date : 2020. 10. 22 Page 1 of 6

NEOTENY CO., LTD.
21F, S-Tower, 82, Saemunan-ro Jongno-gu
Seoul,
KOREA

The following sample(s) was/were submitted and identified by/on behalf of the client as:-
This report is not related to the Ministry of Food and Drug Safety 「ACT ON TESTING AND INSPECTION IN THE FOOD AND DRUG INDUSTRY」

SGS File No. : AYFN20-39272
Sample Description : ACLIV Antimicrobial silver film - matt type
Item no./Lot No. : NACS-R002M
SGS Ref No. : AYHA20-13173
Test Period : 2020. 10. 08 to 2020. 10. 22
Purpose of Test Report : Data for reference
Test Results : For further details, please refer to following page (s)
Report Comments : The test results are limited to the requested product(sample name, item no.), and the sample don't have food Labeling information of Korea regulation.
This test report is not related to Korea Laboratory Accreditation and KS Q ISO/IEC 17025.
Verify for authenticity and validity in web site : <https://eecloud.sgs.com/index.aspx>.
This report cannot be used differently from the test purpose

Test Report(Reference) No. F690101/LF-CTSAYFN20-39272 Issued Date : 2020. 10. 22 Page 2 of 6

Results:

Antimicrobial Activity (JIS Z 2801:2010E)						
Test microorganisms	Initial bacteria number (CFU/film)	Control (CFU/film)	Result(s)			
			Sample (CFU/film)		Antimicrobial activity	
					R	Percentage (%)
<i>Escherichia coli</i> ATCC 8739	1.9 x 10 ⁵	5.8 x 10 ⁷	1st	<25	6.4	>99.9%
			2nd	<25	6.4	>99.9%
			3rd	<25	6.4	>99.9%
<i>Staphylococcus aureus</i> ATCC 6538P	1.7 x 10 ⁵	8.0 x 10 ⁷	1st	<25	6.5	>99.9%
			2nd	<25	6.5	>99.9%
			3rd	<25	6.5	>99.9%
<i>Klebsiella pneumoniae</i> ATCC 4352	2.0 x 10 ⁵	1.1 x 10 ⁸	1st	<25	6.7	>99.9%
			2nd	<25	6.7	>99.9%
			3rd	<25	6.7	>99.9%

<Remark>

- Inoculum Concentration :
Escherichia coli : 1.9 x 10⁵ CFU/film
Staphylococcus aureus : 1.7 x 10⁵ CFU/film
Klebsiella pneumoniae : 2.0 x 10⁵ CFU/film
- Method: JIS Z-2801 methods- Pour plate method
- Dilution Medium : 1/500 Nutrient broth (BD)
- Inoculations : 35 °C, 24 hr
- Incubation : 35 °C, 48 hr
- Material : Polyester based film

24. Certificates

CE Compliance (ANTI-VIRUS)

CE COMPLIANCE

Certificate of Compliance

This certificate of compliance is here by issued to the below applicant

Applicant — NEOTENY CO., LTD.
Address — 21F., S-tower, 82 Saemunanro, Jongro-gu, Seoul - 03161, Korea
Manufacturer — Same as above
Product — ACLIV antiviral and antibacterial film: Adhesive and Non-Adhesive Type
Applicable Directive(s) — Medical Device Directive 93/42/EEC
Testing laboratory — Japan Textile Products Quality and Technology Center (ISO21702) SGS (Antibacterial test)
Test report Number — ISO21702 - 20KB-060860-2 & SGS - AYFN20-39272
Test Standard — Antiviral test - ISO21702 & Antibacterial test - JIS Z-2801



This Certificate of Compliance is issued under following conditions:

- 1 - The product is declared by the applicant as complying with the applicable directives.
- 2 - EA has performed a review of the technical information of the product.
- 3 - The applicant is required to inform EA of any changes to its product design and technical documentation.
- 4 - The CE mark may be used by the applicant, for this product, under the sole responsibility of the applicant*.

Certificate Number: 21496

Initial Registration Date : 03/01/2021
Date of Certificate Issue : 06/01/2021
Certificate Expiry* : 05/01/2024


Lavanya Raj
(Certification Manager)

EURO ASSESSMENTS & CERTIFICATION LTD
Kemp House, 160 City Road, London, ECTV 2NX, United Kingdom

*Validity of the certificate is subjected to successful completion of surveillance audit on or before of due date (in case surveillance audit is not allowed to be conducted, this certificate shall be suspended/withdrawn).

Certificate Verification: Please verify certificate at <https://www.euroassessments.co.uk>
This certificate is the property of Euro Assessments & Certification Ltd and shall be returned immediately when demanded.

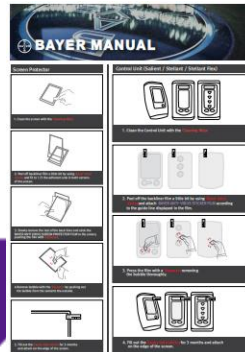
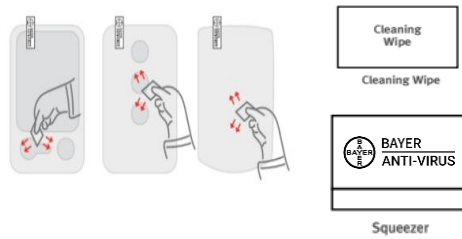
*The product liability rests with the manufacturer in accordance with their committed specifications and contractual obligations, including applicable standards. The CE mark shown above is for reference only and does not indicate accreditation. Euro Assessments does not accept any liability arising out of this certificate.



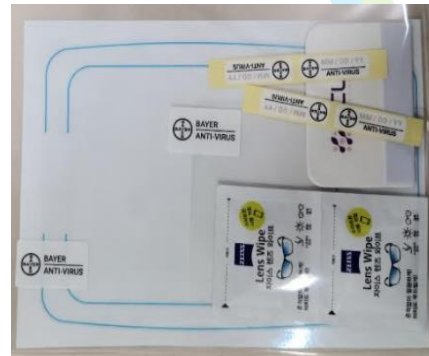
25. Partnership - Bayer



Expiration Tag



IFU



Customization to fit Bayer devices:

- Size
- Thickness
- Release film construction
- Printing
- Packaging
- User manual

26. Applications



Salient



Stellart



Centargo



Thank
You

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