HYUNDAI
BIOLAND

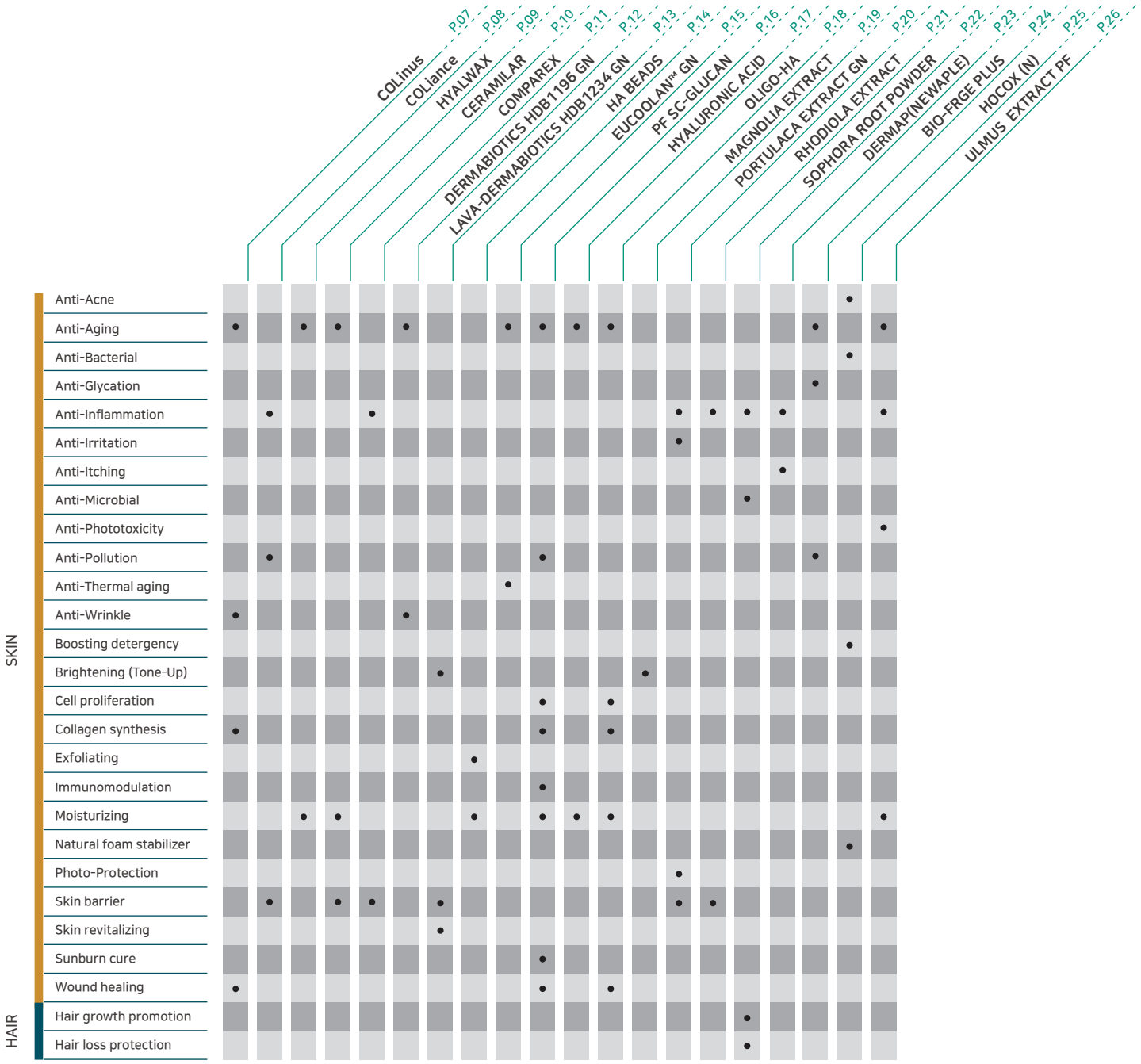
We make and share sustainable happiness.

NATURE, SCIENCE & LIFE



www.hyundaibioland.co.kr

HYUNDAI BIOLAND



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HISTORY

1995 -

Establishment

1995. 09 **Established Bioland Co., Ltd.**
1997. 10 Established biotechnology R&D center of Bioland

2001 -

Secured the base of active cosmeceuticals/ nutraceuticals business

2001. 01 Authorized for manufacturing APIs (Active Pharmaceutical Ingredients)
2001. 05 Listed on KOSDAQ
2004. 04 **Acquired Amore pacific's biochemistry department** and established Food R&D center

2005 -

Extension of new business and enhancement of R&D

2005. 01 Obtained tissue bank approval from KFDA (Korea Food and Drug Administration)
2005. 12 **Constructed Ochang factory of bio medical products**
2006. 01 Obtained GMP approval of Ochang factory for bio medical products
2006. 10 Established Shanghai R&D Center in China
2011. 11 **Constructed Osong factory for active ingredients for cosmeceuticals and pharmaceuticals**
2012. 05 Obtained BGMP approval of Osong factory for APIs
2012. 08 Obtained GMP approval of Ansan factory for health functional food ingredients

2013 -

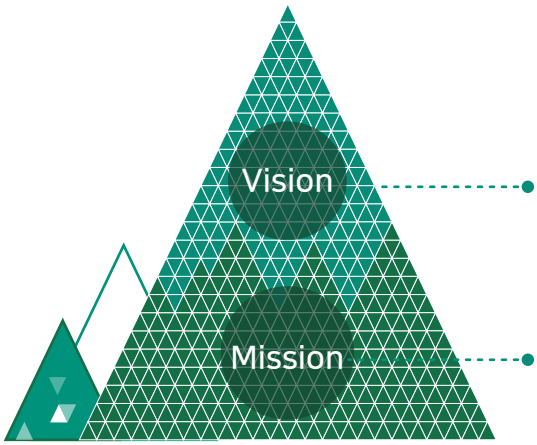
Global growth

2013. 12 Received $10 million export award
2014. 06 **Constructed Haimen factory in China**
2014. 11 **Acquired by SKC and incorporated in SK group**
2016. 06 **Constructed Jeju factory**
2016. 07 **Changed the company name to SK bioland**
2018. 06 **Constructed Haimen 2nd Factory (for Mask Packs)**
2018. 07 EcoVadis "Silver" Grade Acquisition
2019. 10 EcoVadis "Silver" Grade Acquisition
2020. 10 **Acquired by and Incorporated in Hyundai Department Store group**
2020. 10 **Changed the company name to HYUNDAI BIOLAND**

MISSION & VISION

To advance as a global leader in the field of Beauty & Healthcare specialty ingredients

Hyundai Bioland will proceed with the growth of the existing business and launching of new business to expand its product range, extend its value chain and advance to be a global leader.



Global Top Tier
Beauty & Healthcare specialty ingredient supplier

Create a Bountiful Life
Discover biological specialty ingredients

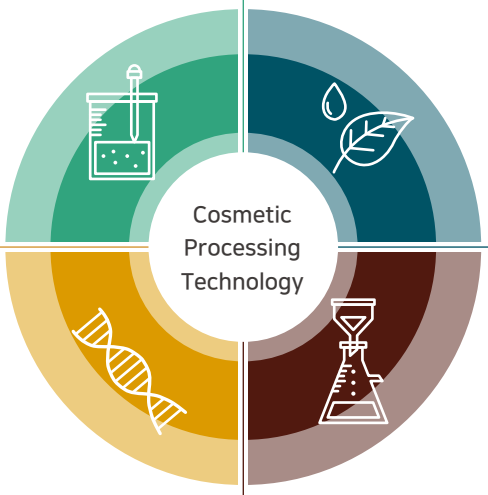
ADVANCED TECHNOLOGY

Processing Technology

- Gel Technology
- Phytoglycan Technology
- Oriental Medicine Concoct
- Germination

Extraction

- Extraction / Leaching
- Ultra High Pressure Extraction
- Standardization
- Steam Distillation
- Pulsed Electric Field Tech.
- Ultrasonification Extraction
- Deep Eutectic Solvent



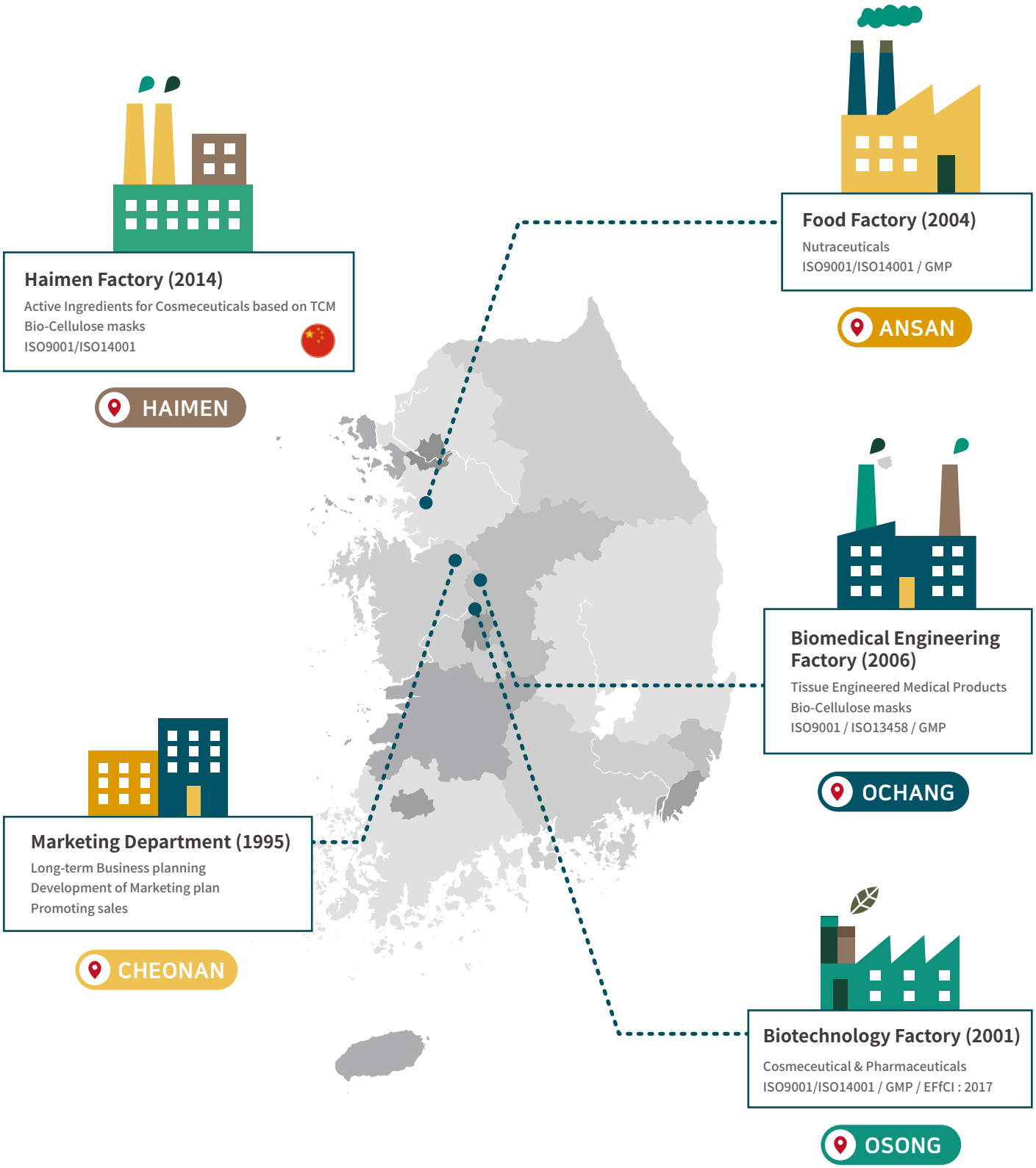
Conversion & Processing

- Chemical Transformation
- Bioconversion
- Fermentation
- Enzyme Processing
- Hydrolysis
- Usability

Separation & Purification

- Fraction
- Column Chromatography
- Deodorization
- Recrystallization
- Removal of Heavy Metal

R&D CENTER NETWORK



Haimen Factory (2014)
Active Ingredients for Cosmeceuticals based on TCM
Bio-Cellulose masks
ISO9001/ISO14001

HAIMEN

Food Factory (2004)
Nutraceuticals
ISO9001/ISO14001 / GMP

ANSAN

Biomedical Engineering Factory (2006)
Tissue Engineered Medical Products
Bio-Cellulose masks
ISO9001 / ISO13458 / GMP

OCHANG

Marketing Department (1995)
Long-term Business planning
Development of Marketing plan
Promoting sales

CHEONAN

Biotechnology Factory (2001)
Cosmeceutical & Pharmaceuticals
ISO9001/ISO14001 / GMP / EFfCI : 2017

OSONG

SUSTAINABILITY

We, Hyundai Bioland,

as a leading company in the personal care ingredients, medical devices, and food supplements industries, are following the advanced environmental safety management system to create a safe and sustainable society by selecting and implementing environmental safety goals.

Environmentally Sustainable Management

Top Priority

Environmental safety and health shall be selected as the top priority for management.

System Settlement

ESG policies shall be established, and action plans shall be systematically established and implemented.

Pre-emptive application

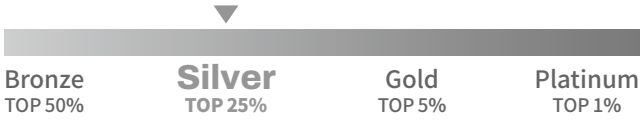
Sustainable environmental safety management shall be realized through preemptive application of global environmental regulations.

Emission redection

Efforts shall be made to reduce environmental pollutants and create a pleasant working environment.

Certificates

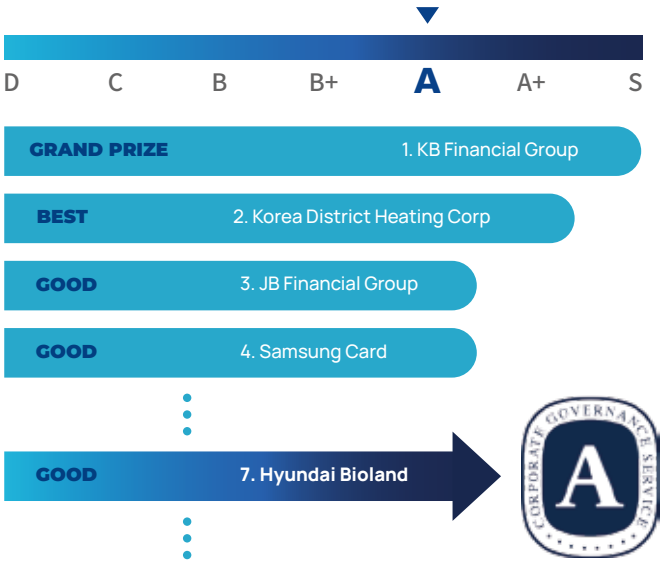
EcoVadis



The EcoVadis overall score (0-100) reflects the quality of the company's sustainability management system at the time of the assessment.

*3 points increased (2021 -> 2022)

KCGS



2022 Best ESG Companies
(Best Performers among 974 companies)

SUSTAINABILITY

To Sustainability for Our Planet

	Target	Detailed promotion plan
Airpollutants	Will reduce scope 1,2 Co2 emission intensity **90%** by 2050	In order to reduce the concentration of air pollutants (dust, sulfur oxides, THC), Bag Filter Dust Collector System are established to manage the concentration of air pollutants generated in the workplace below 50% of the legal emission standards.
Waste	Will reduce waste amount **59%** by 2050	In order to reduce the amount of waste, We are studying and developing zero-waste extraction technology such as productiz-ing whole part of plants into cosmetics active ingredients. (Plante-gel ginseng, etc.)
Water	Reduced wastewater generation by **1,700tons** year-on-year	In order to save the amount of water, We are constructing the new system that reusing the purified (Electro-deionized) concentrated water as cooling water during the manufacturing process.

To Sustainability for Our People

Environmental safety proposal system

Hyundai Bioland is conducting preventive activities against risks by operating an environmental safety proposal system to discover and improve harmful hazards at all times.

Risk assessment &emergency evacuation Drill

Risk assessment and emergency response training are conducted to derive and improve risk factors and snow · material risks for hazardous · risk work, and to respond to non-living accidents in the event of fire / explosion / leakage accidents.

Job Safety Analysis (JSA)	**Hazard & Operability Analysis** (HAZOP)	**Korea Risk Assessment System** (KRAS)	**Areal Locations of Hazardous Atmospheres** (ALOHA)

Health promotion activities

Potential health risks are minimized by creating a health care culture through various health promotion activities of executives and employees.

Support for customized comprehensive health medical examination	**Operation of a psychological counseling program linked to professional counselors**	**Special Health Medical Examination Working Environment Measurement Musculoskeletal Injury Investigation**

MICROORGANISM | BIO-SYNTHETIC | ANTI-WRINKLE | WOUND HEALING

NEW

COLinus [Collagen in us]

'Collagen in us' is the third generation of Collagen beyond marine, porcine, bovine collagen in the market. Hyundai Bioland bio-Synthesized the most effective collagen chain (COL1A2) safely to give anti-wrinkle effect.



- ✓ **INCI NAME**
  WATER (and) BUTYLENE GLYCOL or PROPANEDIOL (and) HYDROLYZED COLLAGEN (and) ARGININE
- ✓ **CHINA COMPLIANT**
- ✓ **PRESERVATIVE SYSTEM** : Preservative Free
- ✓ **ISO16128** : Natural (origin) index 0.99

CHINA COMPLIANT

Cruelty free

ISO 16128

PRODUCT DESCRIPTION

Collagen is the main structural protein in the extracellular matrix found in the body's various connective tissues. Collagen consists of amino acids bound together to form a triple helix of elongated fibril known as a collagen helix.

With age, the ability to replenish collagen naturally decreases by about 1.0-1.5% per year, over 50, collagen levels start to decline rapidly, the collagen structure becomes more fragile and brittle leading to a weakening of the skin's structural support.

COLinus is a bio-mimetic collagen, DNA sequence matches with the specific chain of Human COL1A2*.
It undergoes a division of the triple-helix collagen molecule into smaller chain, a screening process for efficacies each chains have, then duplicated the most efficient anti-aging part.

*COL1A2 : Collagen type 1 alpha 2

SUGGESTED APPLICATIONS

- ✓ **Anti-aging**
- ✓ **Topical wrinkle care**
- ✓ **Body care**
- ✓ **Night care**

EFFICACY SUMMARIZATION

WOUND HEALING

- Is associated with the cell proliferation of wound closure (in-vitro)

SKIN WRINKLE

- Increases the Elastin mRNA expression (in-vitro)
- Is associated with the modulation of mRNA expression related to collagen synthesis (in-vitro)
- Helps to accelerate collagen type I & III expression (in-vitro)
- Proven by showing an excellent effect on crow's feet wrinkle reduction after 4 weeks (Clinical test)

TECHNICAL INFORMATION

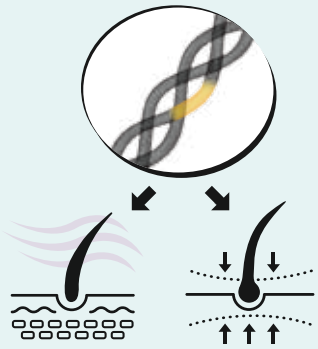
RECOMMENDED LEVEL	0.1-1%
APPEARANCE	Pale yellow liquid
PH LEVEL	6.5-8.5
COMPATABILITY	Water soluble
STABLE UP TO	40°C
SAFETY DATA	Ocular irritation 3D skin irritation test

MICROORGANISM | BIO-SYNTHETIC | SCALP ELASTICITY | SCALP SOOTHING

NEW

COLiance [Collagen makes hair elegance]

'COLiance' is the product that protect your hair scalp from chemicals and make hair bulb strong.



- ✓ **INCI NAME**
  WATER (and) BUTYLENE GLYCOL (and) HYDROLYZED COLLAGEN
- ✓ **CHINA COMPLIANT**
- ✓ **PRESERVATIVE SYSTEM** : Preservative Free
- ✓ **ISO16128** : Natural (origin) index 0.6997

CHINA COMPLIANT

Cruelty free

ISO 16128

PRODUCT DESCRIPTION

Collagen is the main structural protein in the extracellular matrix found in the body's various connective tissues. Collagen consists of amino acids bound together to form a triple helix of elongated fibril known as a collagen helix.

Also, collagen is one of the main structure of hair bulb but the collagen content decreases quickly as we get old or due to change of life style and environmental factors. Especially, frequent hair style changes with exposure to chemicals will also damage hair bulb and decrease scalp elasticity.

Hyundai Bioland developed COLiance which is a biomimetic collagen, DNA sequence matches with the specific chain of human COL1A2*, and it is the most effective sequence for hair care.

COLiance is applied to various hair product with scientific data.

*COL1A2 : Collagen type 1 alpha 2

EFFICACY SUMMARIZATION

ANTI-INFLAMMATORY

- Inhibits expression of COX-2 (Cyclooxygenase-2) and IL-8 which are inflammatory factors (in-vitro)

HAIR SCALP SOOTHING

- Reduces scalp redness after using shampoo containing COLiance (Clinical test)

HAIR BULB STRENGTH

- Promotes β-Catenin for regeneration of hair follicles and VEGF (Vascular Endothelial Growth Factor) to provide nutrients (in-vitro)

HAIR SCALP ELASTICITY

- Hair scalp elasticity test for 4 weeks after using shampoo containing COLiance (Clinical test)

SUGGESTED APPLICATIONS

Hair Care Products

- ✓ **Scalp Strengthening Shampoo**
- ✓ **Hair Scalp Mist**
- ✓ **Post treatment of hair dye and perm**

TECHNICAL INFORMATION

RECOMMENDED LEVEL	1-5%
APPEARANCE	Colorless ~ Light yellow liquid
PH LEVEL	6.5-8.5
COMPATABILITY	Water soluble
STABLE UP TO	40°C
SAFETY DATA	Ocular irritation 3D skin irritation test

ANTI-BACTERIAL | MOISTURIZING | FERMENTATION | UNIQUE TEXTURE

NEW

HYALWAX

Oil Soluble Hyaluronic Acid.



- ✓ **INCI NAME**
  RICINUS COMMUNIS (CASTOR) SEED OIL (and)
  HYDROGENATED CASTOR OIL (and) HYALURONIC ACID
- ✓ **CHINA COMPLIANT**
- ✓ **PRESERVATIVE SYSTEM** : Preservative Free
- ✓ **PALM** : Free
- ✓ **ISO16128** : Natural origin index 1.0

CHINA COMPLIANT

Cruelty free

ISO 16128

JSQI Listed

PRODUCT DESCRIPTION

Sustainability is attracting worldwide attention and is a challenge that needs to be done. Today, cosmetic consumers are starting care about sustainability, and they pursue eco-friendly & ethical beauty. Until now, waterless cosmetics are oil-based formulations which can prevent water loss from outer layer of skin but do not help moisturizing from inner layer.

Hyundai Bioland has developed oil-soluble hyaluronic acid (HYALWAX) in order to create an active that can be easily applied into W/O type or waterless formulation from solubilized low molecular weight hyaluronic acid in oil. This low molecular weight hyaluronic acid itself has valid data based on the stable HA content in HYALWAX.

EFFICACY SUMMARIZATION

ANTI-AGING

- Promotes production of HAS-2 (Hyaluronic acid biosynthesis) in the dermis (in-vitro)
- Helps to inhibit MMP-1 and MMP-3 (Collagenase) expression (in-vitro)
- Clinically proven anti-aging with excellent effect on crow's feet wrinkle reduction after 4 weeks and 8 weeks (Clinical test)

FORMULATION TIP

- HYALWAX contains hyaluronic acid as an active component, it is not recommended to be exposed to the high temperature for long time. Therefore, we recommend to add it with the additives (colorant, frangrance etc.) at the end of formulation process.

SUGGESTED APPLICATIONS

- ✓ **Waterless Formulation**
- ✓ **Color Cosmetics**

TECHNICAL INFORMATION

RECOMMENDED LEVEL	0.05-0.3%
APPEARANCE	Light Yellow Wax
HA CONTENT	Not less than 20%
COMPATABILITY	Oil soluble
MELTING POINT	75-85°C
SAFETY DATA	-

MICROORGANISM SUSTAINABLE SKIN-BARRIER MOISTURIZING

NEW

CERAMILAR

'Ceramilar rice bran' is a pseudo-ceramide derived from sustainable raw material; rice bran oil.
Its superior skin barrier recovery & strengthening activities than ceramide have been clinically proved.



- ✓ **INCI NAME**
  SACCHAROMYCES/RICE FERMENT FILTRATE (and)
  ORYZA SATIVA (RICE) BRAN WAX
- ✓ **CHINA COMPLIANT**
- ✓ **PRESERVATIVE SYSTEM** : Preservative Free
- ✓ **PALM** : Free
- ✓ **ISO16128** : Natural (origin) index 1.0

CHINA COMPLIANT
Cruelty free
ISO 16128
PLANT ORIGIN

PRODUCT DESCRIPTION

Ceramides are a family of waxy lipid molecules, play an essential role in structuring and maintaining the water permeability barrier function of the skin.

Unfortunately, ceramide levels decline as we get older, expose to the external stress, Irradiation etc., The upper layers of the skin become noticeably thinner and dry. With these unavoidable changes, there are endless interest on ceramides in personal care market.

CERAMILAR is a pseudo-ceramide derived from sustainable oil that is essentially upcycled from the waste product of the rice industry. Using the plant oil's chemical structural features and highly controlled fermentation steps, reformulated different length of rice bran derived pseudo-ceramide structure to enhance skin moisture barrier.

EFFICACY SUMMARIZATION

MOISTURIZING

- Promotes production of pro-filaggrin (Individual filaggrin (NMF) monomer) mRNA (in-vitro)
- Promotes production of HAS-2 (Hyaluronic acid biosynthesis) mRNA (in-vitro)

SKIN BARRIER ENHANCEMENT

- Helps to express Tgase-1 (Transglutaminase enzymes which create barriers and stable structures) mRNA (in-vitro)
- Helps to express SPT (Enzymes, responsible for increased ceramide generation) mRNA (in-vitro)
- Increases BLMH (Bleomycin hydrolase enzymes produce natural moisturizing factors) protein expression (in-vitro)
- Skin moisture barrier recovery after IR damage (Clinical test)
- Skin stratum corneum cohesion increase (Clinical test)

SUGGESTED APPLICATIONS

- ✓ **Barrier strengthening cream**
- ✓ **Body care**
- ✓ **Daily facial care**

TECHNICAL INFORMATION

RECOMMENDED LEVEL	1-3%
APPEARANCE	Yellow ~ Yellow brown wax
ACID VALUE	≤ 1.0
COMPATABILITY	Oil soluble
SAFETY DATA	-

BOTANICAL COMPLEX ANTI-INFLAMMATION

NEW

COMPAREX

COMPAREX is a triple combination therapy to maximize anti-inflammatory effect for skin.



- ✓ **INCI NAME**
  WATER (and) BUTYLENE GLYCOL (and) PORTULACA OLERACEA EXTRACT (and) RHODIOLA ROSEA ROOT EXTRACT (and) ARTEMISIA PRINCEPS LEAF EXTRACT
- ✓ **CHINA COMPLIANT**
- ✓ **PRESERVATIVE SYSTEM** : Preservative Free
- ✓ **PALM** : Free
- ✓ **ISO16128** : Natural (origin) index 0.70

CHINA COMPLIANT

Cruelty free

ISO 16128

PLANT ORIGIN

PRODUCT DESCRIPTION

COMPAREX is an ingredient blended with Portulaca Extract, Rhodiola Extract and Artemisia Leaf Extract.

Portulaca Oleracea Extract is one of the most widespread horticultural plants. It has been eaten as a salad and vegetable all around the world and used medicinally for a variety of conditions. ***Rhodiola Rosea Root Extract*** is known as adaptogen which increases the ability of an organism to adapt to environmental factors, and to avoid damage from such factors. ***Artemisia Princeps Leaf Extract*** has been used as Traditional Korean Medicine (TKM) for long time. Artemisia can be applied for sensitive skin care.

Hyundai Bioland developed COMPAREX by blending with the most powerful anti-inflammation materials in order to maximize its efficacy.

SUGGESTED APPLICATIONS

- ✓ **Sensitive skin care**
- ✓ **Skin soothing products**
- ✓ **Daily facial care**

EFFICACY SUMMARIZATION

ANTI-INFLAMMATION

- Inhibits of inflammatory factors such as iNOS (Nitric oxide synthase), IL-6, TNF-α and COX-2 (Cyclooxygenase-2, a key mediator of inflammatory pathways) (in-vitro)

SKIN BARRIER PROTECTION & RECOVERY

- Skin protection effect from irritation caused by Sodium Dodecyl Sulfate (Clinical test)
- Skin recovery effect for the damaged skin barrier function due to irritation caused by Sodium Dodecyl Sulfate (Clinical test)

TECHNICAL INFORMATION

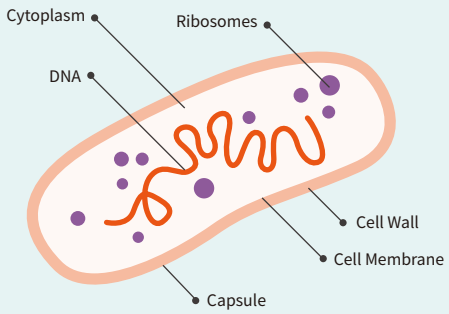
RECOMMENDED LEVEL	1-3%
APPEARANCE	Colorless ~ light yellow liquid
PH LEVEL	4.0 - 6.0
COMPATABILITY	Water soluble
STABLE UP TO	40°C
SAFETY DATA	24 hours human patch test

MICROBIAL FERMENTATION ANTI-WRINKLE

MAIN

DERMABIOTICS HDB 1196 GN

DERMABIOTICS makes it available to have a high purity of probiotic active substances, excluding irritant materials. GRAS strain probiotics – post-fermented with Hyaluronic Acid- penetrate and care the skin from inside.



- ✓ **INCI NAME**
  GLYCERINE (and) LACTOBACILLUS FERMENT LYSATE (and) SODIUM HYALURONATE
- ✓ **CHINA COMPLIANT**
- ✓ **PRESERVATIVE SYSTEM** : Preservative Free
- ✓ **PALM** : RSPO Compliant
- ✓ **ISO16128** : Natural (origin) index 1.0

Verified by ECOCERT COSMOS APPROVED

CHINA COMPLIANT

Cruelty free

ISO 16128

PRODUCT DESCRIPTION

Hyundai Bioland has created a probiotic skin care solution with active components of probiotics bacteria cells that are essential to cell growth.

DERMABIOTICS is only made up of cytosol of GRAS probiotic bacteria cells, which features no cell walls, low molecular weights and post-fermenting process with hyaluronic acid to concentrate and enrich its active ingredient 20% high.

With this, Hyundai Bioland maximizes the skin penetration of active ingredients and minimizes the irritant substances usually present in probiotic lysate which can bring up immune response.

Hyundai Bioland has its own probiotic cell bank to manage the strain cells by efficacy, aiming to set up skin microbiome.

EFFICACY SUMMARIZATION

ANTI-WRINKLE

- Contributes to reduce collagen degradation induced by UVA stress (in-vitro)
- Is associated with the modulation of mRNA expression related to collagen synthesis (in-vitro)

SKIN MOISTURIZING BARRIER

- Improves transepidermal waster loss from stratum corneum (Clinical test)

MOISTURIZING

- Improves skin hydration as increasing corneometer (Clinical test)

SUGGESTED APPLICATIONS

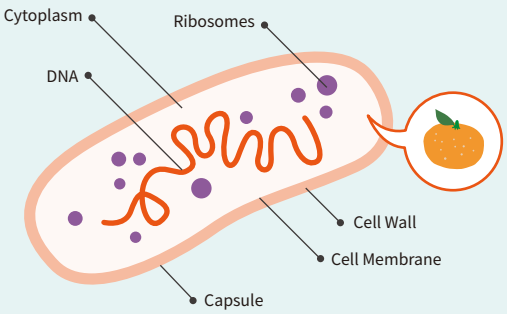
- ✓ **Skin rebalancing ampoule**
- ✓ **Skin microbiome serum/ cream**
- ✓ **Skin barrier restoring night mask**

TECHNICAL INFORMATION

RECOMMENDED LEVEL	1-3%
APPEARANCE	Light yellow liquid
PH LEVEL	5.0-6.5
COMPATABILITY	Water soluble
STABLE UP TO	40°C
SAFETY DATA	Phototoxicity Ocular irritation 24 hours human patch test

LAVA-DERMABIOTICS HDB 1234 GN

LAVA-DERMABIOTICS – the probiotics isolated from the plants of Jeju Island in Korea- makes the synergistic effect after post-fermentation with Jeju Lava Sea Water rich in minerals.



- ✓ **INCI NAME**
  GLYCERINE (and) LACTOBACILLUS FERMENT LYSATE
- ✓ **CHINA COMPLIANT**
- ✓ **PRESERVATIVE SYSTEM** : Preservative Free
- ✓ **PALM** : RSPO Compliant
- ✓ **ISO16128** : Natural (origin) index 1.0

COSMOS APPROVED

CHINA COMPLIANT

Cruelty free

ISO 16128

PRODUCT DESCRIPTION

LAVA-DERMABIOTICS is a probiotic skin solution made with the probiotic bacteria cells isolated from the plants of Jeju Island in Korea.

Based on the same technical platform of DERMABIOTICS, it features a different post-fermentation process that makes use of the minerals in Jeju Lava Sea Water.

The probiotic strains for LAVA-DERMABIOTICS are registered at NCBI and cultivated with lava sea water which is rich in natural minerals. This is designed to give a synergistic effect for skin care, as the minerals enrich and increase the probiotic active substance 35% more.

EFFICACY SUMMARIZATION

SKIN (MOISTURIZING) BARRIER

- Stimulates the gene expressions of intercellular tight junction protein on keratinocyte (in-vitro)
- Contributes to activating the gene expressions of ceramide synthesis-related enzyme on keratinocyte (in-vitro)
- Improves transepidermal waster loss from stratum corneum (Clinical test)

SKIN LIGHTENING

- Alleviates melanogenesis in melanoma cells treated with α-MSH (in-vitro)
- Suppresses the activities of melanogenesis enzymes in melanocytes treated with α-MSH (in-vitro)
- Inhibits the transport of melanosome to melanocyte dendrites and keratinocyte (in-vitro)

TECHNICAL INFORMATION

RECOMMENDED LEVEL	2-5%
APPEARANCE	Light yellow liquid
PH LEVEL	5.0-6.5
COMPATABILITY	Water soluble
STABLE UP TO	40°C
SAFETY DATA	Phototoxicity Ocular irritation 24 hours human patch test

SUGGESTED APPLICATIONS

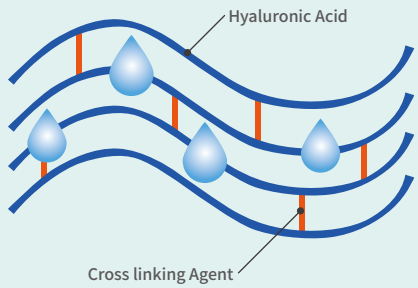
- ✓ **Skin rebalancing ampoule**
- ✓ **Skin microbiome serum/ cream**
- ✓ **Skin barrier restoring night mask**

MICROBIAL FERMENTATION EXFOLIATING

MAIN

HA BEADS

Be environmentally conscious, save the oceans.
Natural bio-degradable exfoliator made with Hyaluronic Acid.



- ✓ **INCI NAME**
  WATER (and) PEG-9 DIGLYCIDYL ETHER / SODIUM HYALURONATE CROSSPOLYMER (and) 1,2-HEXAENDIOL
- ✓ **CHINA COMPLIANT**
- ✓ **PRESERVATIVE SYSTEM** : Preservative Free
- ✓ **PALM** : Free
- ✓ **ISO16128** : Natural (origin) index 0.97

CHINA COMPLIANT
Cruelty free
ISO 16128

PRODUCT DESCRIPTION

As a colony of transparent, small and gentle granules in 500-1500μm composed of cross-linked hyaluronic acid, it is expected to be an innovative biodegradable microplastic alternative in facial scrub and cleansing market.

Biodegradation test (OECD 301F) classifies it to be readily biodegradable as it takes only 8 days to be degraded 60%, and shows more than 90% of degradation in 20 days.

While exfoliating, cross-linked hyaluronate granules provide skin moisturization.

EFFICACY SUMMARIZATION

SKIN EXFOLIANT

- Contributes to reducing dead skin cells after scrubbing (Clinical test)

SKIN MOSITURIZING

- Increases the hydration level of the skin epidermal layer (Clinical test)

SUGGESTED APPLICATIONS

- ✓ **Gentle scrub gel for sensitive skin**
- ✓ **Ultra mild moisturizing exfoliator**

TECHNICAL INFORMATION

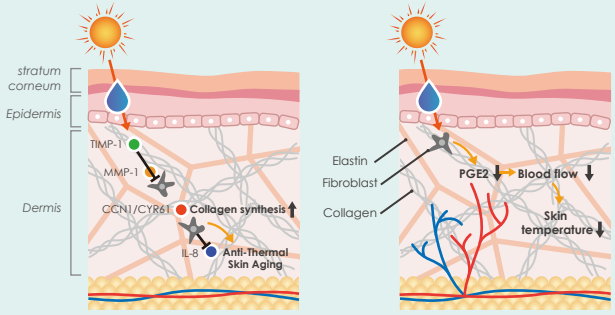
RECOMMENDED LEVEL	Varies with formulation
APPEARANCE	Transparent amorphous particle community
PARTICLE SIZE	500-1,500 μm
PH LEVEL	5.0-8.0
COMPATABILITY	Water soluble
STABLE UP TO	40°C

BOTANICAL EXTRACTION ANTI-AGING

MAIN

EUCOOLAN™ GN

Keep your skin cool from thermal aging.



- **INCI NAME**
  GLYCERIN (and) WATER (and)
  EUCOMMIA ULMOIDES BARK EXTRACT
- **CHINA COMPLIANT**
- **PRESERVATIVE SYSTEM** : Preservative Free
- **PALM** : RSPO Compliant
- **ISO16128** : Natural (origin) index 1.0

ECOCERT COSMOS APPROVED
CHINA COMPLIANT
Cruelty free
ISO 16128
PLANT ORIGIN
IFSCC

PRODUCT DESCRIPTION

EUCOOLAN GN is a new innovative ingredient that enables a new active claim for people who enjoy outdoor activities and are more exposed to changing climate. EUCOOLAN GN is COSMOS-approved ingredient.

When it comes to solar aging, the relation of sun exposure and skin damage has long been discussed with a focus on photo-aging by UV, but thermal aging by the heat has been unnoted.

Based on the investigation on the contribution of the heat to skin aging, Hyundai Bioland has developed a natural botanical ingredient, using the barks of Eucommia Ulmoides trees - a large deciduous tree originated in China, Japan and Korea. It prevents the skin's thermal aging from progressing further and keeps the skin temperature in balance.

SUGGESTED APPLICATIONS

- ✓ **Daily skin temperature balancing cream**
- ✓ **Skin care products for in-between season**
- ✓ **UV filtering Sunblocks**
- ✓ **Sun protective spray**

EFFICACY SUMMARIZATION

SKIN THERMAL REGULATORY EFFECT

- Contributes to alleviation of skin surface temperature and blood flow increased in response to heat treatment (Clinical test)
- Suppresses the increased production rates of fever-mediating PGE2, Heat Shock Protein 70 and MMP1 gene on heat-stressed artificial human skin model (in-vitro)

ANTI-PHOTO AGING

- Helps to inhibit upregulation of TRPV4 mRNA expressions after exposure of human fibroblast to UVB (in-vitro)

SKIN ELASTICITY

- Increases the downregulated levels of elastic fibers, a major microfibril component and collagen type 1 gene by the heat (in-vitro)

TECHNICAL INFORMATION

RECOMMENDED LEVEL	1-5%
APPEARANCE	Yellow brown ~ dark brown liquid
PH LEVEL	3.5-6.0
COMPATABILITY	Water soluble
STABLE UP TO	40°C
SAFETY DATA	Phototoxicity Ocular irritation

BOTANICAL EXTRACTION ANTI-POLLUTION

MAIN

PF SC-GLUCAN

Purified beta-glucan extracted from cultivated mycelium liquid of a mushroom 'Schizophyllum commune'.



- ✓ **INCI NAME**
  WATER (and) GLYCERIN (and) PROPANEDIOL (and) PHENOXYETHANOL (and) BETA GLUCAN (and) ETHYLHEXYLGLYCERIN
- ✓ **CHINA COMPLIANT**
- ✓ **PRESERVATIVE SYSTEM** : Phenoxyethanol
- ✓ **PALM** : Free
- ✓ **ISO16128** : Natural (origin) index 0.99

CHINA COMPLIANT

ISO 16128

PLANT ORIGIN

PRODUCT DESCRIPTION

Beta glucan is a polysaccharide which can be obtained from many food sources such as oats, barley, mushrooms and yeasts. Mushroom-derived Beta-glucan has been used in Asia for centuries for health purposes. Recently, independent studies have proved the therapeutic properties of mushroom beta glucan that it supports human immune function and stimulates tumor necrosis factor.

PF SC-GLUCAN is a purified beta glucan obtained from liquid cultivated mycelium of mushroom species 'schizophyllum commune'. PF SC-GLUCAN is a highly water-soluble polymer 'b-1,6-branched-b-1,3-glucan'.
It is generally known that the glucan with β-(1,3) linkages has much more potent macrophage stimulating activity than any other linkage type.

EFFICACY SUMMARIZATION

ANTI-POLLUTION

- Cytoprotective activity against heavy metals, such as Ocular irritation, Potassium dichromate and Cadmium chloride (in-vitro)

IMMUNOMODULATION

- Helps to control secretion of various typical immunostimulating genes such as TNF-α and interleukins induced by dectin-1 (in-vitro)

ANTI-AGING

- Expected to anti-aging efficacy by filling dermal layer
- Proven by showing an excellent effect on dermal fibroblast cell proliferation (in-vitro)

SUGGESTED APPLICATIONS

- ✓ **Mild moisturizer for city people**
- ✓ **Cream to build strong skin barrier**
- ✓ **Anti-aging**
- ✓ **Body care**
- ✓ **Night care**

TECHNICAL INFORMATION

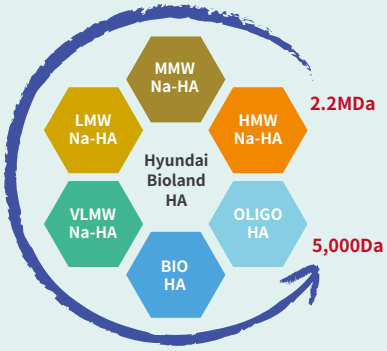
RECOMMENDED LEVEL	1-10%
APPEARANCE	Colorless ~ light yellow liquid
PH LEVEL	6.2-8.2
COMPATABILITY	Water soluble
STABLE UP TO	40°C
SAFETY DATA	Acute oral toxicity (1997) Acute dermal toxicity (1997) Ocular Irritation (1997) Skin irritation (1997) Skin sensitization (1997) Human patch test (1997)

MICROBIAL FERMENTATION MOISTURIZING

MAIN

HYALURONIC ACID

Ultimate for skin.



- ✓ **INCI NAME**
  SODIUM HYALURONATE
  HYALURONIC ACID
- ✓ **CHINA COMPLIANT**
- ✓ **PRESERVATIVE SYSTEM** : Preservative Free
- ✓ **PALM** : Free
- ✓ **ISO16128** : Natural (origin) index 1.0

PRODUCT DESCRIPTION

Hyaluronate - a constituent of all living organisms- is widely distributed in the skin of the body. As the amount of hyaluronate production has decreased since the age of 25, it has been regarded to be a major cause of skin wrinkle formation.

For the past decade, Hyaundai Bioland has been a reliable supplier of hyaluronate with various grades of molecular weights in the global market as the largest Korean manufacturer. Hyaluronate is made through microbial fermentation using the bacteria strain from barley. COSMOS-approved.

PRODUCT GRADES

SODIUM HYALURONATE

GRADE	MOLECULAR WEIGHT
BIO-SODIUM HYALURONATE HMW	1.8 – 2.5 MDa
BIO-SODIUM HYALURONATE MMW	1.3 – 1.8 MDa
BIO-SODIUM HYALURONATE LMW	0.5 – 1.3 MDa
BIO-SODIUM HYALURONATE VLMW	0.15 – 0.6 MDa

HYALURONIC ACID

GRADE	MOLECULAR WEIGHT
HYALURONIC ACID	10 – 200 kDa
OLIGO-HA	3.0 – 10.1 kDa

SUGGESTED APPLICATIONS

- ✓ **Water bomb cream**
- ✓ **Skin hydrating foundation**
- ✓ **Moisturizing cream for eye contour**
- ✓ **Lip stick/ Lip moisture balm**
- ✓ **Hand/Toe care products**

TECHNICAL INFORMATION

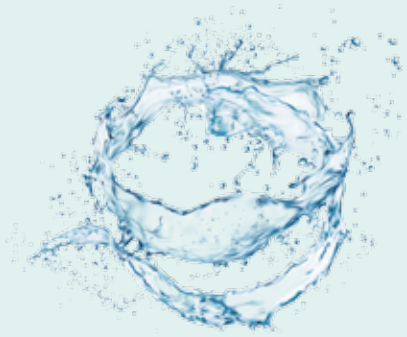
RECOMMENDED LEVEL	Sodium	0.01-0.30%
	Acid	0.05-0.30%
APPEARANCE	Sodium	White powder
	Acid	White ~ light yellow powder
HYALURONATE	Sodium	93-100 %
	Acid	88-100%
COMPATABILITY	Water soluble	
SAFETY DATA	Sodium	24 hours human patch test Bacterial riverse mutation test Chromosome aberration test

MICROBIAL FERMENTATION ANTI-AGING

MAIN

OLIGO-HA

Ultimate for skin.



- ✓ **INCI NAME**
  HYALURONIC ACID
- ✓ **CHINA COMPLIANT**
- ✓ **PRESERVATIVE SYSTEM** : Preservative Free
- ✓ **PALM** : Free
- ✓ **ISO16128** : Natural (origin) index 1.0

PRODUCT DESCRIPTION

Hyaluronate – a constituent of all living organisms – is widely distributed in the skin of the body. As the amount of hyaluronate production has decreased since the age of 25, it has been regarded to be a major cause of skin wrinkle formation.

For the past decade, Hyundai Bioland has been a reliable supplier of hyaluronate with various grades of molecular weights in the global market as the largest Korean manufacturer. Hyaluronate is made through microbial fermentation using the bacteria strain from barley.

Hyundai Bioland has developed oligomeric hyaluronic acid (OLIGO-HA) in order to maximize the beneficial properties of hyaluronate for the skin. OLIGO-HA is COMOS approved.

EFFICACY SUMMARIZATION

ANTI-AGING

- Promotes production of HAS-2 (Hyaluronic acid biosynthesis) in the dermis (in-vitro)
- Helps to inhibit MMP-1 and MMP-3 (Collagenase) expression (in-vitro)
- Clinically proven anti-aging with excellent effect on crow's feet wrinkle reduction after 4 weeks and 8 weeks (Clinical test)
- Increases skin elasticity after 4 weeks and 8 weeks (Clinical test)

EPIDERMIS REGENERATION & STEMNESS MAINTENANCE

- Helps to increase epidermis thickness, p63 (Putative stem cell marker) and PCNA (Cell proliferation marker)

TECHNICAL INFORMATION

RECOMMENDED LEVEL	0.05-0.3%
APPEARANCE	White ~ Light yellow powder
MOLECULAR WEIGHT	3.0-10.1Kda
COMPATABILITY	Water soluble
STABLE UP TO	40°C
SAFETY DATA	Mutagenicity 24 hours human patch test Ocular irritation

SUGGESTED APPLICATIONS

- ✓ **Anti-aging cream**
- ✓ **Anti-wrinkle eye contour cream**
- ✓ **Night care**

BOTANICAL EXTRACTION BRIGHTENING

MAIN

MAGNOLIA EXTRACT

Magnolia Extract is a flower/branch extract of Magnolia sieboldii developed for skin brightening.



- ✓ **INCI NAME**
  BUTYLENE GLYCOL (and) WATER (and) MAGNOLIA SIEBOLDII EXTRACT
- ✓ **CHINA COMPLIANT**
- ✓ **PRESERVATIVE SYSTEM** : Preservative Free
- ✓ **PALM** : Free
- ✓ **ISO16128** : Natural (origin) index 0.40

CHINA COMPLIANT
Cruelty free
ISO 16128
PLANT ORIGIN

PRODUCT DESCRIPTION

Magnolia sieboldii also known as Oyama Magnolia boasts its elegant looking white flowers with pleasing beautiful scents. Due to its elegant figure, the flower has been called as '天女花' in Korea which means 'The Flower of Angels'.

Magnolia sieboldii is a species of Magnolia native to China, Japan and Korea which habitats deep in the mountain valley. Hyundai Bioland developed MAGNOLIA EXTRACT which inhibits UV induces pigmentation and post-inflammatory hyper-pigmentation.

MAGNOLIA EXTRACT is registered as a functional whitening cosmetic ingredient in Korea.

EFFICACY SUMMARIZATION

ANTI-OXIDANT

- Promotes free radical scavenging activity (in-vitro)

SKIN BRIGHTENING

- Inhibits UV-induced pigmentation (ex-vivo)
- Inhibits post-inflammatory hyperpigmentation (Clinical test)
- Associated with melasma improvement (Clinical test)

SUGGESTED APPLICATIONS

- ✓ **Tone-up cream**
- ✓ **Night intensive ampoule**
- ✓ **Daily facial care**

TECHNICAL INFORMATION

RECOMMENDED LEVEL	1-3%
APPEARANCE	Light yellow liquid
PH LEVEL	4.5-6.5
COMPATABILITY	Water soluble
STABLE UP TO	40°C
SAFETY DATA	-

BOTANICAL EXTRACTION ANTI-INFLAMMATION

MAIN

PORTULACA EXTRACT GN

An extract of Portulaca Oleracea developed for sensitive and troubled skin.



- ✓ **INCI NAME**
  GLYCERIN (and) WATER (and)
  PORTULACA OLERACEA EXTRACT
- ✓ **CHINA COMPLIANT**
- ✓ **PRESERVATIVE SYSTEM** : Preservative Free
- ✓ **PALM** : RSPO compliant
- ✓ **ISO16128** : Natural (origin) index 1.0

Verified by ECOCERT

CHINA COMPLIANT

Cruelty free

ISO 16128

PLANT ORIGIN

JSQI Listed

PRODUCT DESCRIPTION

Portulaca Oleracea is a nutritious edible plant widely distributed around the world. The plant is famous in Korean traditional medicine to treat skin wounds caused by insects or snake bites. PORTULACA EXTRACT GN is ECOCERT-approved ingredient.

The plant is a great source of omega-3 fatty acids, polysaccharides, amino acids, vitamins A/C/E and antioxidant compounds such as glutathione. Due to its nutritional properties, modern studies have found portulaca oleracea has great potential as an anti-aging and anti-inflammatory ingredient.

Recently PORTULACA EXTRACT GN is used for cosmetic preparation because of its efficacy on soothing sensitive skin.

EFFICACY SUMMARIZATION

SKIN BARRIER PROTECTION & RECOVERY

- Prevents skin irritation caused by Sodium Dodecyl Sulfate
- Recovers skin barrier damaged by Sodium Dodecyl Sulfate (Clinical test)

ANTI-INFLAMMATION & ANTI-IRRITATION

- Reduces irritation of skin stimulated by Sodium Lauryl Sulfate (Human patch test)
- Inhibits the release of IL-1α induced by Sodium Lauryl Sulfate (Tested on human artificial skin)

ANTI-PHOTOTOXICITY

- Prevents cell damage and inhibits the release of IL-1α induced by UVA (In-vitro)

CELL PROTECTION AGAINST UV

- Contributes to protect mitochondria damage and to prevent cell damage caused UV rays (JC-1 staining)

SUGGESTED APPLICATIONS

- ✓ **Sensitive skin care**
- ✓ **Skin soothing agent**
- ✓ **Cosmetics to reduce skin redness**
- ✓ **General skin care in summer season**
- ✓ **Toiletries**

TECHNICAL INFORMATION

RECOMMENDED LEVEL	1-5%
APPEARANCE	Colorless ~ light yellow liquid
PH LEVEL	4.0-6.0
DRY RESIDUE	0.2-0.6%
STABLE UP TO	40°C
SAFETY DATA	Acute oral toxicity (1997) Chromosome aberration test (2003) Ocular irritation (1997) Skin irritation (1997) Skin sensitization (1997) Mutagenicity (2003) 24 hours human patch test

BOTANICAL EXTRACTION ANTI-INFLAMMATION

MAIN

RHODIOLA EXTRACT

RHODIOLA EXTRACT opens the door to the new science of neurogenic inflammation and comforts impaired skin damaged by various stress factors.



- ✓ **INCI NAME**
  CYCLODEXTRIN (and)
  RHODIOLA ROSEA ROOT EXTRACT
- ✓ **CHINA COMPLIANT**
- ✓ **PRESERVATIVE SYSTEM** : Preservative Free
- ✓ **PALM** : Free
- ✓ **ISO16128** : Natural (origin) index 0.25

CHINA COMPLIANT
Cruelty free
ISO 16128
PLANT ORIGIN

PRODUCT DESCRIPTION

Adaptogen is a metabolic regulator which increases the ability of an organism to adapt to environmental factors, and to avoid from such factors.

Rhodiola rosea is a plant in the Crassulaceae family that grows in cold regions of the world, and has long been known to have an adaptogenic effect that increases body's resistance to stress in non-specific ways.

Hyundai Bioland developed active ingredient, RHODIOLA EXTRACT, from Rhodiola rosea, and makes the active ingredient water soluble to be applicable to various applications.

EFFICACY SUMMARIZATION

ANTI-INFLAMMATION

- Inhibits neurogenic inflammation by reducing the release of Histamine in mast cells and Substance P in sensory neurons (in-vitro)

REPAIRS SKIN BARRIER

- Renegerates damaged skin barrier and calming down an erythema (Clinical test)

SUGGESTED APPLICATIONS

- ✓ **Night repair serum**
- ✓ **Daily facial care**

TECHNICAL INFORMATION

RECOMMENDED LEVEL	0.05-0.5%
APPEARANCE	Pale brown powder
ROSAVIN CONTENT	5.0-7.5mg/g
COMPATABILITY	Water soluble
STABLE UP TO	40°C
SAFETY DATA	-

BOTANICAL EXTRACTION HAIR GROWTH

MAIN

SOPHORA ROOT POWDER

SOPHORAR ROOT POWEDER is an active ingredient for hair growth promotion and hair loss protection.



- ✓ **INCI NAME**
  SOPHORA ANGUSTIFULIA ROOT EXTRACT (and) HYDROXYPROPYL CYCLODEXTRIN
- ✓ **CHINA COMPLIANT**
- ✓ **PRESERVATIVE SYSTEM** : Preservative Free
- ✓ **PALM** : RSPO Compliant
- ✓ **ISO16128** : Natural (origin) index 0.50

CHINA COMPLIANT
Cruelty free
ISO 16128
PLANT ORIGIN

PRODUCT DESCRIPTION

Sophora roots are the roots of sophora angustifulia, a hardy deciduous shrub native to China, Japan and Korea. It is a green plant with 80-90cm height growing at the sunny places.

Sophora roots have been used for centuries for Traditional Chinese Medicine(TCM) to treat eczema and pruritus.

Hyundai Bioland developed SOPHORA ROOT POWDER with sophora roots containing various types of alkaloids and flavonoids, and d-matrine, d-oxymatrine and kurarinone are known for the main active ingredients which have been reported to be associated with hair growth, anti-aging and anti-inflammatory effect.

EFFICACY SUMMARIZATION

HAIR GROWTH & STRENGTHEN HAIR BULB

- Up-regulates the gene expressions of hair growth factors on hair matrix cell (in-vitro)
- Strengthens the gene expressions of hair bulb strength-related factors on dermal papilla (in-vitro)

ANTI-HAIR LOSS

- Inhibits hair loss factors caused by stress, androgen and pollution (in-vitro)

HAIR GROWTH PROMOTION & HAIR LOSS PROTECTION

- Clinical test for hair growth promotion and hair loss protection (Clinical test)

SUGGESTED APPLICATIONS

- ✓ **Hair shampoo**
- ✓ **Hair treatment**
- ✓ **Anti-hair loss booster**

TECHNICAL INFORMATION

RECOMMENDED LEVEL	0.04-0.1%
APPEARANCE	Yellow brown powder
LOSS ON DRYING	Not more than 5%
COMPATABILITY	Water soluble
STABLE UP TO	40°C
SAFETY DATA	-

BOTANICAL EXTRACTION ANTI-INFLAMMATION

MAIN

DERMAP(NEWAPLE)

New anti-inflammatory Artemisia leaf extract with a novel active marker than conventional one.



- ✓ **INCI NAME**
  WATER (and) BUTYLENE GLYCOL (and)
  ARTEMISIA PRINCEPS LEAF EXTRACT
- ✓ **CHINA COMPLIANT**
- ✓ **PRESERVATIVE SYSTEM** : Preservative Free
- ✓ **PALM** : Free
- ✓ **ISO16128** : Natural (origin) index 0.7

CHINA COMPLIANT
Cruelty free
ISO 16128
PLANT ORIGIN

PRODUCT DESCRIPTION

Artemisia Princeps, also called Korean/Japanese wormwood or mugwort, is a medicinal herb cultivated in East Asia, and is widely used in cuisine as well as traditional medicine for treatment of inflammation, diarrhea, bacterial infection, circulatory disorders, bleeding, etc.

DERMAP(NEWAPLE) has Isosecotanapartholide (ISTP) as the active ingredient, out of the major active flavonoid compounds such as eupatilin, jaceosidin and apigenin, present in Artemisia Princeps Leaves.

The efficacy studies on DERMAP(NEWAPLE) indicate it has an inhibitory effect against the novel cytokine-signaling pathway associated with pruritus and inflammation in atopic skin. DERMAP(NEWAPLE) is a recommendable solution to relieve the itch and inflammation which is a major symptom of chronic skin disorders such as atopy.

SUGGESTED APPLICATIONS

- ✓ **Daily lotion for sensitive skin**
- ✓ **Soothing cream for all ages**
- ✓ **Gentle cleanser**
- ✓ **Spot treatment serum**
- ✓ **Skin relief toner**

EFFICACY SUMMARIZATION

ANTI-ALLERGY

- Contributes to inhibiting degranulation of beta-hexoaminidase on mouse mast cell treated with allergy-inducing PMACI (in-vitro)

ANTI-INFLAMMATION

- Associated with downregulation of the activities of inflammatory cytokines and iNOS on mouse macrophage treated with Lipopolysaccharide (in-vitro)
- Decreases the expressions of proteins of atopic dermatitis-related cytokines on keratinocyte treated with TNF-α/IFN-γ (in-vitro)
- Contributes to relieving the level of stinging on the face treated (Clinical test)

TECHNICAL INFORMATION

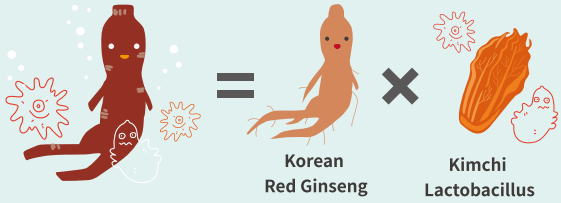
RECOMMENDED LEVEL	1-5%
APPEARANCE	Light yellow liquid
PH LEVEL	3.5-5.5
COMPATABILITY	Water soluble
STABLE UP TO	40°C
SAFETY DATA	Mutagenicity Ocular irritation Skin irritation Phtotoxicity

BOTANICAL FERMENTATION ANTI-AGING

MAIN

BIO-FRGE PLUS

Maximization of biological activity of ginsenosides in Korean Red Ginsengs by fermentation with Kimchi probiotics.



- ✓ **INCI NAME**
  WATER (and) GLYCERIN (and) CAPRYLYL GLYCOL (and) 1,2-HEXANEDIOL (and) LACTOBACILLUS/PANAX GINSENG ROOT FERMENT FILTRATE
- ✓ **PRESERVATIVE SYSTEM** : Preservative Free
- ✓ **PALM** : RSPO Compliant
- ✓ **ISO16128** : Natural (origin) index 0.99

Cruelty free

ISO 16128

PLANT ORIGIN

PRODUCT DESCRIPTION

BIO-FRGE PLUS is the extract of Korean red ginseng fermented with probiotics which are present in kimchi - a Korean traditional dish.
Korean red ginseng is generally made by consecutive steaming and drying process of the fresh ginseng in a Korean traditional method, and ginseng has been used as an adaptogen because of the ginsenosides-the saponins characteristic to ginseng. However, a large number of natural ginsenosides in ginseng have low absorption in body, so the heat treatment and the fermentation process helps to increase the content of the rare ginsenosides which have more pharmacological benefits.

Likewise, BIO-FRGE PLUS enables to improve the body's absorption and bio-availability of the ginsenosides through microbial fermentation, as it converts the chemical composition of natural ginsenosides (Rb1, Rb3) to be more biologically-active ginsenosides (Rg3, Rk1).

EFFICACY SUMMARIZATION

ANTI-AGING

- Involved in activation of the gene expressions of SIRTUIN3, the cellular regulator of aging process on human fibroblast (in-vitro)
- Contributed to inhibiting the gene expressions of iNOS & COX-2 induced by LPS (in-vitro)

ANTI-GLYCATION

- Suppresses UVA-induced RAGE gene expressions on human fibroblast (in-vitro)

ANTI-POLLUTION

- Associated with inhibiting Benzopyrene-induced AhR & CYP1A1 gene expressions on HacaT (in-vitro)

SKIN RHYTHMN OPTIMIZATION

- Activates the gene expressions of Bmal-1 -skin homeostasis and integrity controller – on human keratinocyte (in-vitro)

SUGGESTED APPLICATIONS

- ✓ **Prestige anti-aging cream**
- ✓ **Prestige age-defying eye cream**
- ✓ **Heritage skin care solution for natural aging**

TECHNICAL INFORMATION

RECOMMENDED LEVEL	0.1-5.0%
APPERANCE	Dark brown liquid
PH LEVEL	3.0-6.0
COMPATABILITY	Water soluble
STABLE UP TO	40°C
SAFETY DATA	Phototoxicity Ocular irritation Skin sensitization Human patch test

BOTANICAL EXTRACTION ANTI-BACTERIAL

MAIN

HOCOX (N)

Natural botanical detergency & foaming booster with anti-bacterial function.



- ✓ **INCI NAME**
  WATER (and) BUTYLENE GLYCOL (and) HOUTTUYNIA CORDATA EXTRACT
- ✓ **CHINA COMPLIANT**
- ✓ **PRESERVATIVE SYSTEM** : Preservative Free
- ✓ **PALM** : Free
- ✓ **ISO16128** : Natural (origin) index 1.0

CHINA COMPLIANT
Cruelty free
ISO 16128
PLANT ORIGIN

PRODUCT DESCRIPTION

Houttuynia cordata, also called fishwort or fish mint, is the herb that has an unusual fishy smell. As the medicinal herb in Asia, it was also used to treat SARS during its outbreak in 2002, and used as antibiotics at Japanese army.

HOCOX (N) - houttuynia cordata extract - is the natural botanical foaming & detergency booster that has the additional functions such as anti-microbe, anti-acne, anti-sebum and anti-inflammation.

Houttuynia cordata used in HOCOX (N) is being sourced from agricultural community located in Korea which is known for dairy farming with fresh air and clean water.
The crop is harvested by respective local farmers through the contract farming which helps us to provide the sustainable market and value chain to local farmers.

SUGGESTED APPLICATIONS

- ✓ **Natural foaming facial cleanser**
- ✓ **Hand sanitizer**
- ✓ **Cleansing foam oil**
- ✓ **Body soap**

EFFICACY SUMMARIZATION

ANTI-BACTERIAL/ ANTI-ACNE

- Suppresses the number of P.acne and C.albicans (in-vitro)
- Inhibits the gene expression of TLR2 on human sebocyte cell treated with LPS (in-vitro)

ANTI-INFLAMMATION

- Contributes to inhibiting the gene expressions of SDS-induced IL-6 & IL-1α on human keratinocyte (in-vitro)

DETERGENCY & FOAMING BOOSTER

- Comparative experiment on foaming stability with other foam boosters and stabilizers (Clinical test)

TECHNICAL INFORMATION

RECOMMENDED LEVEL	1-5%
APPEARANCE	Brown liquid
PH LEVEL	4.0-6.5
COMPATABILITY	Water soluble
STABLE UP TO	40°C
SAFETY DATA	Mutagenicity Ocular irritation Skin irritation 24 hours human patch test

BOTANICAL EXTRACTION ANTI-INFLAMMATION

MAIN

ULMUS EXTRACT PF

ULMUS EXTRACT PF is a natural polysaccharide extracted from Ulmus Davidiana Root with excellent anti-aging, moisturizing and anti-inflammatory effects.



- ✓ **INCI NAME**
  WATER (and) BUTYLENE GLYCOL (and) ULMUS DAVIDIANA ROOT EXTRACT (and) PHENOXYETHANOL
- ✓ **CHINA COMPLIANT**
- ✓ **PRESERVATIVE SYSTEM** : Phenoxyethanol
- ✓ **PALM** : Free
- ✓ **ISO16128** : Natural (origin) index 0.97

CHINA COMPLIANT

ISO 16128

PLANT ORIGIN

PRODUCT DESCRIPTION

ULMUS EXTRACT PF is extracted from the roots of Ulmus Davidiana which is a small deciduous tree widely distributed across China, Japan and Korea.

In China and Korea, Ulmus Davidiana has been used as a traditional oriental medicine for the treatment of difficulty in urination, skin inflammation, etc.

Hyundai Bioland developed ULMUS EXTRACT PF based on its traditional usages and identified main components such as Glucose, Rhamnose and Galactose which make ULMUS EXTRACT PF a great skin moisturizer.

EFFICACY SUMMARIZATION

ANTI-AGING

- Inhibits the activity of hyaluronidase - the enzyme that degrades hyaluronic acid (in-vitro)

SKIN MOISTURIZING BARRIER

- Decreases the amount of water vapor evaporating from the skin surface (Clinical test)

ANTI-INFLAMMATION

- Inhibits the activities of IL-1α, PEG2, IL-6 and IL-8 on human fibroblast cell (in-vitro)

SUGGESTED APPLICATIONS

- ✓ **Facial moisturizing serum**
- ✓ **Eye cream**
- ✓ **Body cream**

TECHNICAL INFORMATION

RECOMMENDED LEVEL	1-5%
APPEARANCE	Yellow viscous liquid
PH LEVEL	5.0-7.0
COMPATABILITY	Water soluble
STABLE UP TO	40°C
SAFETY DATA	Acute oral toxicity (2006) Skin irritation (2006) Skin sensitization (2006) Eye irritation (2006) Mutagenicity (2006) Chromosome aberration test (2006)

HYUNDAI

BIOLAND

