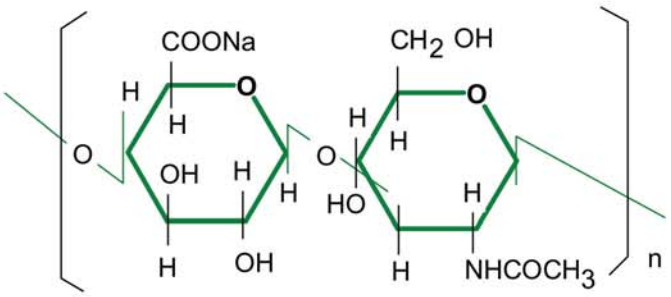
SPEC CHEM IND

SPEC CHEM IND is a specialist company of hyaluronic acid and sodium salt by fermentation. It has a specialized R&D team, GMP standard workshops, modern extraction and purification facilities, international standard analysis instruments and research equipments. Strict all-process-control management makes the quality of our products reliable and stable.

Sodium Hyaluronate

The quality of Sodium hyaluronate has fully come up to world standards, and has exported to Japan, Korea, USA, Brazil, Canada, EU, Taiwan, and other countries and areas, and received extremely high praise from all the countries and areas where it has been used.
Hyaluronic acid is the natural mucopolysaccharide formed by bonding N-acetyl-D-glucosamine with glucuronic acid. The commercial HA is commonly a sodium salt, called sodium hyaluronate.



Chemical Structure of Sodium Hyaluronate

What does sodium hyaluronate do in the body?

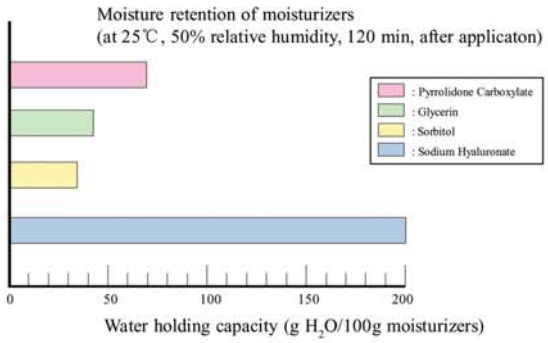
Hyaluronate supports the structure of connective tissue by acting as a water magnet to maintain extracellular fluidity. HA forms a viscous fluid with exceptional lubricating properties necessary for the vital functions of many parts of the human body including the skin, heart valves, aqueous/ vitreous humor of the eye and synovial fluid (joint lubricant). The skin contains over 50% of the bodies HA. Considering that skin is over 70% water and renews itself more readily than most other bodily tissues HA is absolutely vital for it' s structure and daily maintenance. It' s constantly involved in cellular renewal and repair because of daily exposure to solar radiation, pressure, heat, trauma and wound healing.

Main Functions of Sodium Hyaluronate

- Moisturizing
  HA holds more water than any other molecule in the body and is necessary to keep collagen hydrated and youthful.

1) Water holding capacity

The water holding capacity of sodium hyaluronate is extremely high compared to other moisturizers as shown below:



2) Water retention

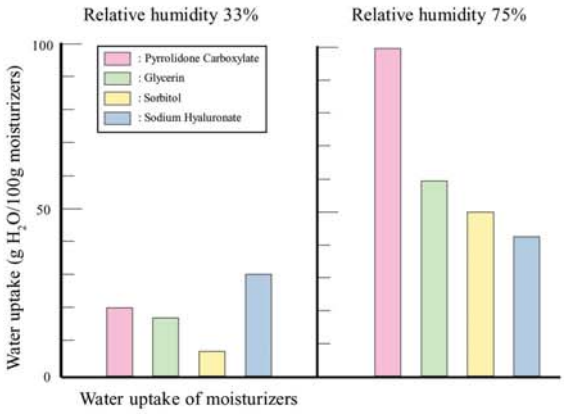
The chart below illustrates that the moisture evaporation rate constant of sodium hyaluronate is less than that of other moisturizers. This indicates that it possesses strong water retention properties.

Moisture evaporation rate constant of moisturizer solutions

sample	Moisture evaporation rate constnt(min^{-1})
Sodium hyaluronate	$8.0\pm 0.1\times100^{-2}$
Prryolidone Carboxylate	$9.7\pm 0.1\times100^{-2}$
Glycerin	$9.8\pm 0.2\times100^{-2}$
Sorbitol	$9.8\pm 0.2\times100^{-2}$
Distilled water(reference)	$10.0\pm 0.2\times100^{-2}$

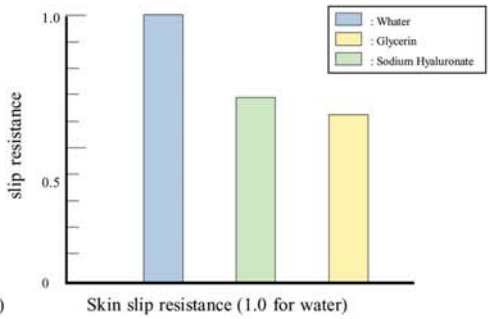
3) Water uptake(hygroscopic property)

At low humidity (33%), sodium hyalutrate has the highest moisture absorbing ability. While at high humidity (75%), it is lowest.



- Lubrication and film formation

Sodium hyalurate is a high molecular weight polymer with strong lubricating and filming. When it is smeared on the skin it can form a film and make the skin feel lubricating. Film formed on the surface of the hair can moisturize and lubricate the hair and eliminate static electricity. The hair becomes soft and easy to comb.



Sodium hyaluronate's low skin slip resistance maintains excellent skin lubricity (1.0 for water)

- Injured-skin repairing and preventing

1) Accelerate the skin regeneration of injury by promoting proliferation and division of cuticle cells, and clear away oxygen free radical.
2) When formulated with EGF and Heparin, it can accelerate the regeneration of cuticle cells, keep skin delicate, smooth and elastic.
3) Prevent skin from being injured, relieve pain and accelerate wound healing of scald and burn. Low molecular weight sodium hyalurate is significant helpful for the healing of erythema and trauma on the skin.

- Nutrition

Low molecular weight sodium hyalurate can reach the corium layer so as to improving the content of water, nourishing skin and expanding blood capillary, improving microcirculation and promoting absorption of nutriment. So the skin will be smooth, elastic and not easy to age.

Product Characteristic

Safety

1) Acute oral toxicity to rat: LD50 > 2000MG/KG.BW, belong to low toxic
2) Acute exposure toxicity to cavy: LD50 (24 hours) > 2000MG/KG.BW, belong to low toxic.
3) Acute dermal irritation: no irritation.
4) Acute eye irritation to rat: no irritation

Molecular Weight

We have a few different molecular weights available for the powder as well as the 1% solution.

Powder type

Product Name	Molecular Weight
Sodium Hyaluronate HA 1	≤0.1 x 10^6 Da
Sodium hyaluronate HA7	0.6~~0.8 x 10^6Da
Sodium hyaluronate HA14	1.3~~1.5 x 10^6 Da
Sodium hyaluronate HA16	1.5~~2.0 x 10^6 Da
Sodium hyaluronate HA20	≥2.0 x 10^6 Da

Specifications of sodium hyaluronate

Hyaluronic Acid (Sodium Salt)

Items	Standards	Method
Appearance	White, fine powder, slight odor	
D-glucuronic Acid	≥46%	Bitter-Muir method
Transparency	≥98%(0.1% Solution)	Spectrophotometer method
Molecular weight	Not less than 2.0 x 10^6Da	CP(Chinese pharmacopeia)
Protein	≤0.1%	Dye binding method
PH(0.1% Solution)	5.5~7.5	CP
Loss on drying	≤10%	Dry at 105! till constant weight
Heavy metal(As Pb)	≤2 x 10-5 g/g	CP
Total amount of Bacteria	≤10count /g	CP
Pyocyanine	None	CP

Applications in cosmetics

HA is a high effective moisturizer and nutrient functional additive in cosmetic. It' s application in cosmetics are as follows:

Product	Recommended dose
1.skin cleansing product	
Face cleaning milk	0.05—0.3%
Shower lotion	0.05—0.3%
2.skin care product	
Cosmetic lotion	0.05—0.3%
Moisturizing oil	0.05—0.5%
Skin care cream	0.05—0.5%
Moisturizing milk	0.05—0.5%
3.skin nutrient product	
High moisture cosmetic	0.1—1.0%
Preventing ageing cosmetic	0.05—0.5%
Beauty and whitening cosmetic	0.05—0.3%
Special cosmetic	
Sun-proof cosmetic	0.05—0.5%

Packaging and storage

1) Packaging:
   100g/bottle, 1kg Alu.Foil Bag
2) Storage:
   Keep in low temperature(4℃) or atmospheric temperature(25℃) and dry place; protect from light and seal up.
3) Shelf life:
   Keep in atmospheric temperature(25℃), the shelf life is two years.
   Keep in 4℃, the shelf life is five years.