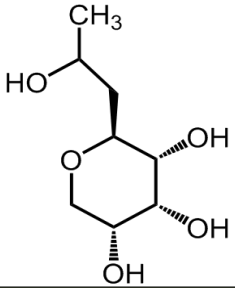
Introduction of Pro-Xylane

1. Pro-Xylane Overview

Pro-Xylane, also known as hydroxypropyl tetrahydropyrantriol, is a glycoprotein mixture derived from xylose. Since xylose exists in large quantities in beech trees, it has the ability to promote the production of glucosaminoglycans, namely mucopolysaccharides (GAGs). Also, xylose can provide binding sites for GAGs, start the generation and assembly of GAGs in the skin, and improve the deficiency of GAGs caused by skin aging. Studies have shown that Pro-Xylane is easy to biodegrade, does not accumulate in organisms, and has no toxicity.

Plamed develops 2 kinds of Pro-Xylane, 30% liquid and 98% powder. Both are water-soluble It can be used in skincare products for anti-aging.

Product Name	**CAS Number**	**INCI Name**	
Pro-Xylane	439685-79-7	HYDROXYPROPYL TETRAHYDROPYRANTRIOL	
Molecular Weight	**Molecular Formula**	**Molecular Structure**	
192.21g/mol	$C_8H_{16}O_5$		
Product ID	**Specification**	**Minimal Package**	**Minimal Order Quantity**
PMKZ2201	30% liquid	1kg	1kg

PMKZ2202	98% powder	1kg	1kg

2. Pro-Xylane Source

The inventor of Pro-Xylane, Dr. Maria DALKO-CSIBA, a scientist at the L'Oreal R&D and Innovation Center, is based on this characteristic of xylose, using a large number of beech and birch trees that exist in nature. In 1999-2000, he led the team to synthesize more than 200 kinds of xylose derivatives. Based on comprehensive consideration of factors such as efficacy, safety, stability and skin bioavailability, Pro-Xylane was finally successfully screened out. Nowadays, Pro-Xylane mainly obtained by chemical synthesis.

3. Pro-Xylane Manufacturer Specifications

98% Powder Specifications

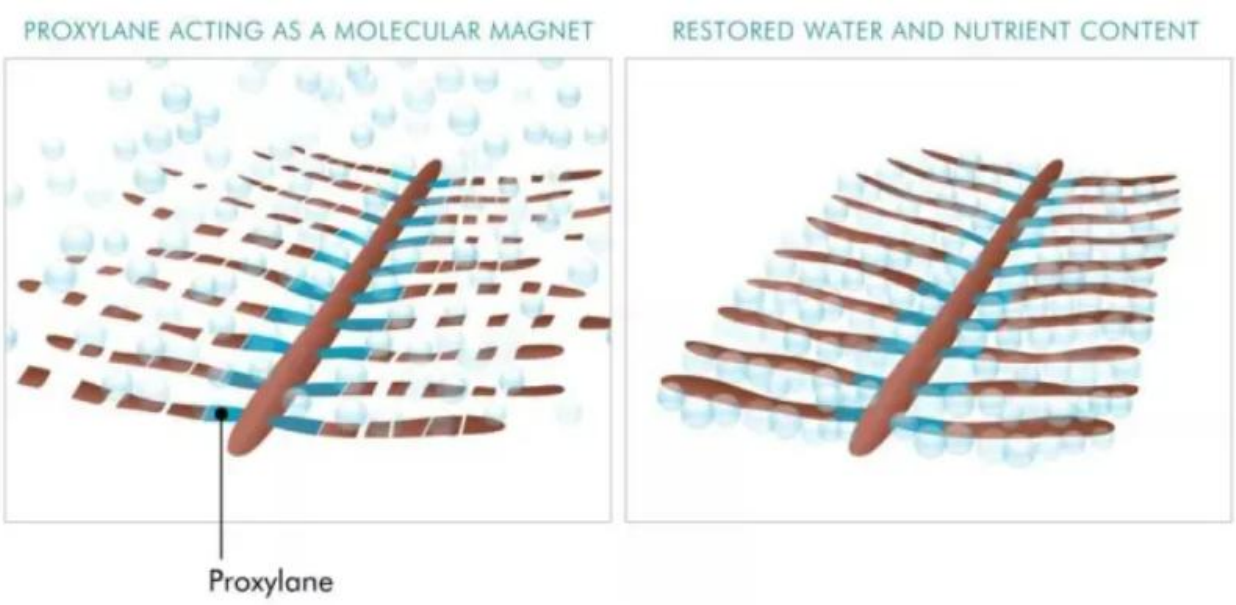
Items	**Specification**
Purity	≥99% HPLC
Appearance	White to off-white powder
Odor	Characteristic
Physical Characteristics	
Loss on drying	≤3.0%
pH (10% water solution)	4.0-8.0
Heavy Metals	
Pb	≤10ppm
As	≤2ppm
Hg	≤1ppm
Cd	≤5ppm
Microbiological Tests	
Total plate count	≤1000cfu/g
Yeast & mold	≤100cfu/g
Pseudomonas aeruginosa	Negative
Staphylococcus aureus	Negative
Heat-resistant escherichia coli	Negative

4. Pro-Xylane Benefits

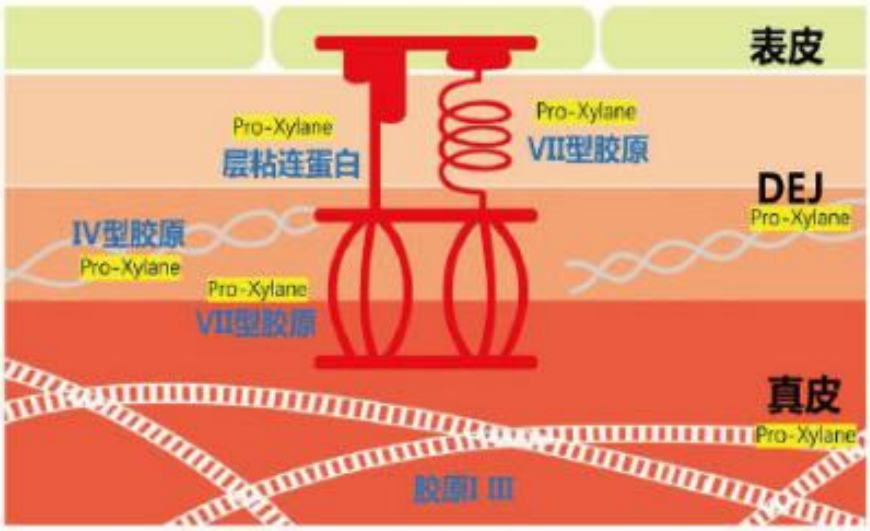
- **Anti-aging**

Studies have proved that Pro-Xylane can exert biological effects at different layers of the skin

- Acting on the epidermis, Pro-Xylane can promote the synthesis of various GAGs, and at the same time up-regulate the expression of hyaluronic acid receptor CD44 and syndecan, thereby activating the signal pathway mediated by GAGs. Clinical studies have shown that topical application of Pro-Xylane can effectively reduce transepidermal water loss, improve skin barrier function, and promote epidermal renewal, making the skin plump and radiant.



- At the Dermal-Epidermal Junction (DEJ), Pro-Xylane can up-regulate collagen type IV (the main component of the lamina densa), laminin, type VII collagen (the main component of anchoring fibrils) and other key proteins. Then it can induce the expression of proteoglycanperlecan, and strengthen the tightness and stability of DEJ structure. Clinical studies have shown that in aging skin samples, the ultra-microscopic structure of DEJ presents the aging characteristics in several areas. After local application of Pro-Xylane, the DEJ structure of aging skin can be made more uniform and clear, the re-duplication of lamina densa is significantly reduced, making the skin structure stronger.



- In the dermis, Pro-Xylane can promote the production of various GAGs such as hyaluronic acid and heparan sulfate. In addition, the up-regulation of the expression of type I procollagen and fibrillin-1 is observed, suggesting that the production of GAGs and collagen. They are both important dermal extracellular matrix components that maintain skin elasticity and firmness. Therefore, it has been proved in clinical research that topical application of Pro-Xylane can effectively improve the fine lines and wrinkles of the skin, and make the skin firm and elastic.

- **Skin Repair**

In vitro skin experiments, Pro-Xylane is able to reconstruct the complete structure of the epidermodermal layer, and it also had similar function as retinoic acid, enhancing the thickness of the stratum corneum and providing barrier function, but without irritation.

5. Plamed Pro-Xylane Characteristics

- No irritating odor, no toxicity, low content of acetic acid and borate, won't affect the formulation.
- Good water solubility and stability, not easy oxidation, easily absorbed by skin.

6. Pro-Xylane Application and Reference Dosage

Pro-Xylane is mainly used in anti-aging, skin repair, anti-wrinkle skincare products, such as serum, facial mask, emulsion, toner, essence, cream, etc.

Product	Reference Dosage
30% Pro-Xylane	0.2%-3% in leave-on cosmetics

	0.3-5% in wash-off cosmetics
98% Pro-Xylane	0.5%-2%

Pro-Xylane application cases in major cosmetic brands in the world:

Brand	Product
L'Oreal	RevitaLift Triple Power Eye Treatment Revitalift Triple Power Intensive Anti-Aging Moisturizer
SkinCeuticals	Hyaluronic Acid Intensifier Hydrating Serum A.G.E. Interrupter Moisturizer
Biotherm	Homme Force Supreme Lotion
La Roche-Posay	Substiane Serum Substiane [+] UV SPF 15 Hyalu B5 Hyaluronic Acid Eye Cream
Estee Lauder	RE-NUTRIV Ultimate Lift Regenerating Youth Serum
LANCOME	Absolue demaquillant gel ABSOLUE L'EXTRAIT ULTIMATE EYE CONTOUR COLLECTION ABSOLUE REVITALIZING EYE SERUM Absolue White Aura
KIEHL'S	Hydrating & Clarifying Treatment Masque KIEHL'S Clearly corrective dark spot solution
Vichy	Neovadiol Compensating Complex Night Cream Neovadiol complexe substitutif day cream IDEALIA DAY CARE

7. Pro-Xylane Safety

- CTFA has recognized HYDROXYPROPYL TETRAHYDROPYRANTRIOL as a raw material for cosmetics;
- *The International Catalogue of Chinese Cosmetic Raw Materials Standards* in 2018 issued by HYDROXYPROPYL TETRAHYDROPYRANTRIOL.
- *On the Announcement of Name List of Cosmetics Raw Material* published by CFDA in 2021 both include HYDROXYPROPYL TETRAHYDROPYRANTRIOL.

8. Package and Storage

Package: 1kg/bag.

Storage: Store in cool and dry place at room temperature, keep away from strong light.