

# Hydro-Matrix Rice PGA

INCI: Glycerin, Water, Sodium Hyaluronate Crosspolymer, Propanediol, Hydrolyzed Rice Bran Extract, Polyglutamic Acid

June 16, 2015 rev

DC3893

## Cross-linked HA Anti-Aging Scaffold

Keeping skin properly hydrated is essential for maintaining a healthy, vibrant complexion. As aging occurs, the skin loses key structural components and protective barrier properties. This results in dryness, irritation and the creation of fine lines and wrinkles. Resources Of Nature offers many unique and effective agents intended to prevent and treat dry skin, restoring the skin's natural protective barrier properties, enhancing softness and elasticity and improving skin tone and texture.



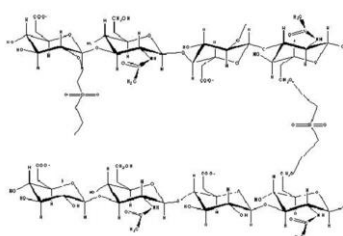
**Hydro-Matrix Rice PGA** is a liquid dermal delivery scaffold which provides maximum water binding capacity. It's prepared from fermentation products including cross-linked hyaluronic acid and polyglutamic acid. This hydro-scaffold is impregnated with natural rice peptides for a multi-collagen stimulatory gene expression. Hydro-Matrix Rice PGA (HMRP) offers unique benefits for anti-aging and moisturizing skin care applications.

### BENEFITS

- ◆ Hydrating
- ◆ Supports active delivery
- ◆ Stable in acidic formulations
- ◆ Free radical scavenging
- ◆ Soothing
- ◆ Multi-collagen stimulation
- ◆ Conditioning
- ◆ Moisture retention
- ◆ Soft skin feel
- ◆ Restructuring

With its water-binding capacity 5x greater than high molecular weight hyaluronic acid, HMRP is ideal in formulations wherever moisturizing and anti-aging functions are required.

### Sodium Hyaluronate Crosspolymer



Creates a hydrating 3-D scaffold

SAMPLE	WATER CONTENT Wc g/g
Cellulose	0.05
Carboxymethylcellulose	0.08
Xanthan	2.0
Hyaluronic Acid (HA)	3.0
<b>Cross-linked HA</b>	<b>15.75</b>

### APPLICATIONS

- ◆ Skin Care
- ◆ Hair care
- ◆ Treatment
- ◆ Sensitive skin
- ◆ Anti-aging
- ◆ Sun care

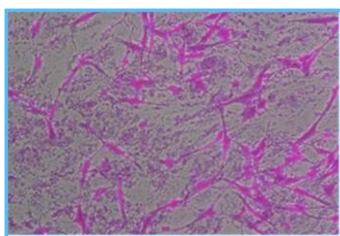
# Hydro-Matrix Rice PGA

INCI: Glycerin, Water, Sodium Hyaluronate Crosspolymer, Propanediol, Hydrolyzed Rice Bran Extract, Polyglutamic Acid

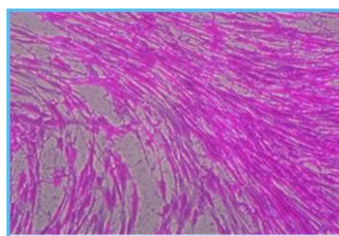
TYPICAL PROPERTIES	Appearance	Light brown liquid
	Odor	Characteristic
	pH	3.80 – 4.20
	Specific Gravity	1.00 – 1.30
	Loss of Drying	48.00 – 58.00

## ASSAY

**Protection Against Dehydration (In-Vitro):** Effect of Different Pre-Treatment Conditions on Fibroblast Morphology Following Dehydration



cells pre-incubated in air



cells pre-incubated in HMRP

The pre-treatment of fibroblasts with Hydro-Matrix Rice PGA (HMRP) resulted in a significant improvement of protection from dehydration; up to 67.4%.

**Anti-Aging Human Gene Expression (In-Vitro):** Multi-Collagen Stimulatory Activity

HUMAN GENE EXPRESSION BY HMRP AS COMPARED TO CTR1 (0.5% use level , CTR1 = water blank)			
Position on array	Symbol	Fold Regulation	Comments
A10	COL15A1	2.06	<b>Collagen XV</b> is a fibril-associated collagen with interrupted triple helix important for tensile strength of the skin. It localizes to the dermal-epidermal junctions and is important for skin, muscle and micro-vessel integrity.
A12	COL1A1	1.79	<b>Type I collagen</b> is the most abundant proteinaceous ingredient of ECM in the skin, responsible for many of its key physico-chemical properties. Aging is characterized by reduction of type I collagen amount and an increase in its degradation and glycation, leading to fragmentation of its fibers.
B04	COL6A2	2.21	<b>Type VI collagen</b> is a structural element of ECM juxtaposing blood vessels and basement membrane. It forms extensive micro-fibrillar networks, which intercalate between type I collagen fibers, playing major roles in establishing and maintaining the structural and mechanical integrity of the skin.
B05	COL7A1	2.37	The type <b>VII collagen fibril</b> is restricted to the basement zone beneath stratified squamous epithelia. It functions as an anchoring fibril between the external epithelia and the underlying stroma.
B06	COL8A1	7.18	The gene product is a <b>short chain collagen</b> and a major component of the basement membrane.

## FORMULATION GUIDELINES

Skin care recommended use level is 3-10%  
 HMRP can be added into emulsions and gels during processing or at the end during cool down mixing  
 Recommended formulation pH: 4.0- 8.0

# Hydro-Matrix Rice PGA

INCI: Glycerin, Water, Sodium Hyaluronate Crosspolymer, Propanediol, Hydrolyzed Rice Bran Extract, Polyglutamic Acid



## CC CUSHION MAKE UP Formula: RON24-75-2

PHASE	INGREDIENT	SUPPLIER	% BY WEIGHT
A	Water		q.s.
A	Glycerin		1.00
A	Disodium EDTA		0.05
A	Carbopol Aqua SF-1 OS Polymer	Lubrizol	2.00
<b>B</b>	<b>Distinctive® Moisture Soft 101</b>	<b>Resources of Nature, LLC</b>	<b>12.00</b>
C	Sodium Hydroxide 20% Solution		0.40
D	Water		25.00
D	Lecinol S-10	Barnet	0.30
D	Glycerin		3.00
<b>D</b>	<b>RON Ti-12</b>	<b>Resources of Nature, LLC</b>	<b>12.00</b>
D	Yellow Iron Oxide		1.60
D	Red Iron Oxide		0.52
D	Black Iron Oxide		0.28
<b>E</b>	<b>Granpowder USQ</b>	<b>RON/Grant Industries</b>	<b>3.00</b>
E	Sericite PHN	Presperse	2.00
F	Essachem™ SOW	ESSA Technologies™	3.00
<b>F</b>	<b>Distinctive® Squalane Butter 45</b>	<b>Resources of Nature, LLC</b>	<b>4.00</b>
F	Essachem™ O	ESSA Technologies™	4.00
F	Ritastearic	Rita Corporation	0.30
<b>F</b>	<b>Distinctive® Blueberry 5P</b>	<b>Resources of Nature, LLC</b>	<b>1.00</b>
G	Lincoserve™ CG-5	Lincoln Fine Ingredients™	1.00
H	Hydro-Matrix Rice PGA	Resources of Nature, LLC	2.00
H	Syntran® 5190CG	Interpolymer	<u>3.00</u>
			100.00

To the main vessel, add Water, Glycerin, and Disodium EDTA. Begin mixing with a propeller. mixer and heat to 80°C. Mix until uniform. Add remainder of Phase A. Mix until uniform. Add Phase B ingredient at 80°C. Mix for 30 minutes at 80°C. Add Phase C ingredient. Mix until uniform. For Phase D, in a side container, begin heating Water, Glycerin and Lecinol S-10 to 60°C. Mix until uniform with a propeller mixer. Add in the RON Ti-12, Yellow, Red and Black Iron Oxides to the side container. Switch to the Silverson for high speed mixing. Use the square screen at 4500 rpm. Check dispersion on slides to confirm it is uniform. Add Phase D to the main vessel. Mix until uniform. Maintain temperature at 73-75°C. Add Phase E ingredients separately. Mix until uniform. In a side container, combine Phase F ingredients and heat to 75°C. Add Phase F ingredients to main vessel and mix for 5 minutes. Switch to the Silverson for high speed mixing for 5 minutes. Use square screen at 4500 rpm. Switch back to propeller mixer and begin cooling batch. At 60°C, add Phase G ingredient. Mix until uniform. At 45°C, add Phase H ingredients separately in the order listed. Mix until uniform. Cool batch to 30°C.



# Hydro-Matrix Rice PGA

INCI: Glycerin, Water, Sodium Hyaluronate Crosspolymer, Propanediol, Hydrolyzed Rice Bran Extract, Polyglutamic Acid

Page 4 of 4

DC3893

## CC BOUNCY MAKE UP Formula: RON24-75-4

PHASE	INGREDIENT	SUPPLIER	% BY WEIGHT
A	Water		q.s.
A	Lecinol S-10	Barnet	0.10
A	Glycerin		5.00
A	<b>RON Ti-12</b>	<b>Resources of Nature, LLC</b>	<b>7.80</b>
A	Yellow Iron Oxide		1.04
A	Red Iron Oxide		0.34
A	Black Iron Oxide		0.14
B	Disodium EDTA		0.05
B	Sodium Hydroxide 20% Solution		0.50
B	Carbopol Aqua SF-1 OS Polymer	Lubrizol	3.00
B	<b>Granpowder USQ</b>	<b>RON/Grant Industries</b>	<b>3.00</b>
B	<b>Distinctive® Squalane Butter Mica P</b>	<b>Resources of Nature, LLC</b>	<b>4.00</b>
C	<b>Distinctive® Emul-Lipid BA</b>	<b>Resources of Nature, LLC</b>	<b>3.50</b>
C	<b>Distinctive® Emul-Lipid ST</b>	<b>Resources of Nature, LLC</b>	<b>1.00</b>
C	Cetiol® OE	BASF	3.00
C	<b>Distinctive® Squalane Butter 45</b>	<b>Resources of Nature, LLC</b>	<b>4.00</b>
C	Essachem™ O	ESSA Technologies™	3.00
C	<b>Distinctive® Blueberry 5P</b>	<b>Resources of Nature, LLC</b>	<b>2.00</b>
C	Cetyl Alcohol		2.00
D	Lincoserve™ CG-5	Lincoln Fine Ingredients™	1.00
E	Hydro-Matrix Rice PGA	Resources of Nature, LLC	2.00
E	Syntran® 5190CG	Interpolymer	<u>5.00</u>
			100.00

To the main vessel, add Water, Lecinol S-10, and Glycerin. Begin mixing with a propeller mixer and heat to 60°C. Mix until uniform. Add remainder of Phase A. Mix until uniform. Switch to the Silverson for high speed mixing. Use the square screen at 4500 rpm. Check dispersion on slides to confirm it is uniform. Switch back to propeller mixer. Heat to 73-75°C. Add Phase B Ingredients one at a time in the order listed. Mix until uniform. Maintain temperature at 73-75°C. In a side container, combine Phase C ingredients and heat to 75-77°C. Add Phase C ingredients to main vessel and mix for 5 minutes, until uniform. Switch to Silverson for high speed mixing for 5 minutes. Use square screen at 5000 rpm. Switch back to propeller mixer. Begin cooling batch. At 60°C, add Phase D. Mix until uniform. At 45°C, add Phase E ingredients separately. Mix until uniform. Cool batch to 30°C.

The information contained in this technical bulletin is presented in good faith, and to the best of our knowledge believed to be true and accurate. No representations or warranties, expressed or implied is made or intended. Information is supplied upon the condition that the persons receiving same will make their own determination as to its suitability for their purposes prior to use. No recommendation should be construed as an inducement to use a material in infringement of patents or applicable government regulations. In no event will Resources of Nature be responsible or liable for any loss of profits, lost goodwill, direct, special, indirect, incidental, or consequential damages of any nature whatsoever.