

# Syntran® Bimodal Polymer Technology

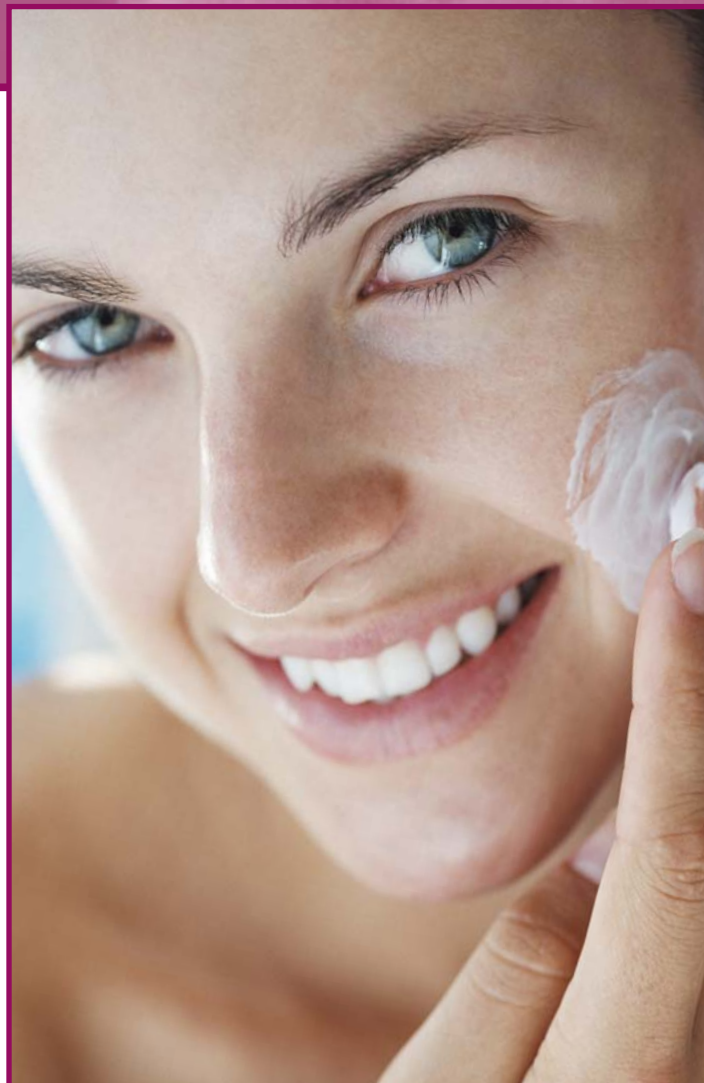
## Improving Cosmetic Formulations

Interpolymer introduces its unique new Bimodal technology for improving cosmetic and skin care formulations. Syntran® PC 5100 Bimodal Polymer's designed to provide formulators the ability to produce products with quick-setting films that actually tighten and firm, leaving the skin looking and feeling youthful. Superior flexibility, adhesion, rub or wear resistance, and ease of removability are additional attributes. The innovative bimodal technology employs a bimodal interpenetrating network engineered to achieve a hydrophobic and hydrophilic balance that delivers both cationic and anionic functions.

Bimodal polymers deliver a pleasant, natural feel without stiffness, flaking, or buildup.

## Benefits of Bimodal Polymers

- Excellent Tightening and Firming Attributes
- Superior Adhesion to Skin
- Excellent Film Flexibility
- Clear, Non-flaking Films
- Moisture Retention
- Easily Removable, Minimum Buildup



## Typical Physical Properties

| <b>Syntran® PC 5100</b> |   |
|-------------------------|---|
| INCI Name               | Polyacrylate - 21 (and) Acrylates/Dimethylaminoethyl Methacrylate Copolymer |
| Appearance              | Translucent Solution  |
| % Solids                | 25  |
| pH Value @ 22°C         | 8.0   |
| Viscosity @ 22°C, mPa.s | 120   |



## Technical Information and Starting Point Formulations

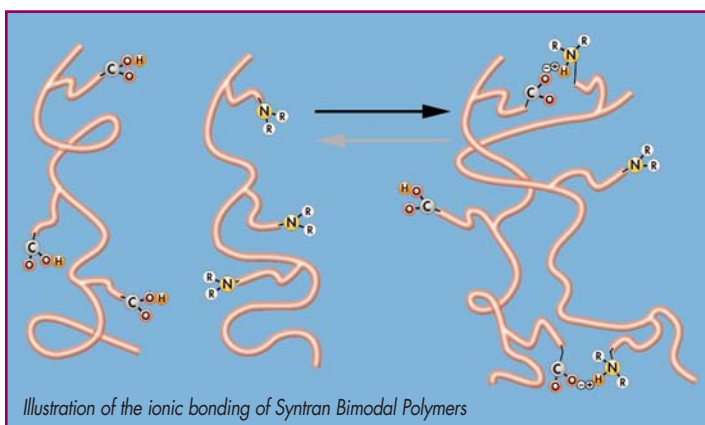
### SKIN-FIRMING SERUM

#### Formulation F-24-55

Unique film-forming properties of the patented Bimodal polymer technology provided by SYNTRAN® PC 5100 actually acts like shrink-wrap for the skin... tightening and firming the skin's surface.

|                                   | INCI Designation  | Weight % |
|-----------------------------------|---|----------|
| <b>Phase A-1 – Heat to 45°C</b>   |   |          |
| Distilled Water                   | Water   | 72.40    |
| Butylene Glycol                   | Butylene Glycol   | 2.00     |
| Structure XL<br>(National Starch) | Hydroxypropyl Starch Phosphate  | 5.00     |
| <b>Phase A-2 – Add at 45°C</b>    |   |          |
| <b>SYNTRAN® PC 5100</b>           | <b>Polyacrylate-21,<br/>Acrylates/Dimethylaminoethyl<br/>Methacrylate copolymer</b> | 20.00    |
| <b>Phase B – Add at 40°C</b>      |   |          |
| Mackstat DM                       | DMDM Hydantoin  | 0.40     |
| 0.10% Ext.                        |   |          |
| Violet No. 2                      | Ext. Violet 2   | 0.20     |
|                                   | YIELD:  | 100.00   |

**Procedure** – Combine Phase A-1 ingredients and begin heating to 45°C. Batch will thicken, adjust stirring to avoid aeration. Continue stirring until Structure XL is completely hydrated and a smooth, homogenous mixture is obtained. Add **SYNTRAN® PC 5100** and stir until smooth and homogenous. Cool batch to 40°C, add Phase B ingredients and stir until smooth and homogenous. Final pH to 7.5 +/- 0.5.



### SUPER INTENSIVE MOISTURIZING CRÈME

#### Formulation F-24-49

"Cold Cream" type texture moisturizing crème provides quick rub-in, elegant skin feel and lubricity. Non-greasy formula with no residual tackiness. Instantly makes dry skin more supple and hydrated. Unique film-forming properties of patented Bimodal polymer technology provided by **SYNTRAN® PC 5100** actually acts like shrink-wrap for the skin... tightening and firming the skin's surface while holding actives and emollients to skin.

|                                       | INCI Designation  | Weight % |
|---------------------------------------|---|----------|
| <b>Phase A-1 – Heat to 75°C</b>       |   |          |
| Distilled Water                       | Water   | 61.60    |
| Dissolvine Na2S (Akzo Nobel)          | Disodium EDTA   | 0.10     |
| Glycerin                              | Glycerin  | 4.00     |
| <b>Phase A-2 – Add at 75°C</b>        |   |          |
| Phenoxetol (Clariant)                 | Phenoxyethanol  | 1.00     |
| Structure 3001 (National Starch)      | Acrylates/Ceteih-20 Itaconate Copolymer   | 2.00     |
| <b>SYNTRAN® PC 5100</b>               | <b>Polyacrylate-21,<br/>Acrylates/Dimethylaminoethyl<br/>Methacrylate Copolymer</b> | 8.00     |
| <b>Phase B – Add at 75°C</b>          |   |          |
| Lipomulse 165 (LIPO)                  | Glyceryl Stearate, PEG-100 Stearate   | 3.00     |
| Petrolatum Snow White (Penreco)       | Petrolatum  | 4.00     |
| Cetyl Alcohol (Protameen)             | Cetyl Alcohol   | 2.00     |
| Finsolv G-2 (Finetex)                 | C 15-17 Alkyl Benzoate  | 1.00     |
| Protachem ISP (Protameen)             | Isostearyl Palmitate  | 1.00     |
| Ceraphyl 368 (ISP)                    | Ethylhexyl Palmitate  | 3.00     |
| Protachem SMO (Protameen)             | Sorbitan Oleate   | 0.20     |
| Lipovol A (LIPO)                      | Persea Gratissima (Avocado) Oil   | 1.00     |
| Super Steol Liquid (Croda)            | C 10-30 Cholesterol/Lanosterol Esters   | 1.00     |
| Procetyl AWS (Croda)                  | PPG-5-Ceteth-20   | 0.60     |
| TEA 99%                               | Triethanolamine   | 0.30     |
| <b>Phase C – Add at 55°C</b>          |   |          |
| DC 245 Fluid (Dow Corning)            | Cyclopentasiloxane  | 3.00     |
| DC 200 Fluid 200 cst<br>(Dow Corning) | Dimethicone   | 3.00     |
| <b>Phase D – Add at 45°C</b>          |   |          |
| Fragrance                             | Fragrance   | 0.20     |
|                                       | YIELD:  | 100.00   |

**Procedure** – Combine Phase A-1 ingredients and begin heating to 75°C. At 75°C individually add each Phase A-2 ingredient. Stir until homogenous. In a separate vessel add all Phase B ingredients and heat to 75°C. Add Phase B to Phase A @ 75°C. Cool batch to 55°C, add Phase C ingredients. Homomix batch until uniform. Cool batch to 45°C add Phase D. Adjust pH to 7.0 – 7.5.



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