TRIspire Vitalize
QUATERNIZED PANTHENOL FOR ENHANCED SUBSTANTIVITY & CONDITIONING
TRIspire Vitalize is a hair and skin care ingredient for rinse-off and leave-on personal care products. By combining pro-vitamin B-5 (Panthenol) with a long chain quaternary, TRIspire Vitalize delivers a multitude of benefits in a variety of applications.

In hair care, TRIspire Vitalize enables the formulation of high performance shampoos, conditioners, styling and treatment products which impart all the characteristics of healthy hair including easy combing, body, shine and manageability.

For skin care products, TRIspire Vitalize moisturizes and delivers a soft after-feel, which makes skin look and feel younger. Due to its substantivity, TRIspire Vitalize is especially effective in rinse-off products such as liquid soaps and body washes.

RESEARCH METHODS:
• In vitro efficacy testing
• Consumer in vivo studies

INCI:
Panthenyl Hydroxypropyl Steardimonium Chloride

RECOMMENDED USAGE LEVEL:
1-5%

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<tr>
<th>PRODUCT FEATURES</th>
<th>KEY BENEFITS</th>
<th>SUGGESTED APPLICATIONS</th>
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<tr>
<td>• Wide pH range</td>
<td>• Imparts shine &amp; silkiness to hair</td>
<td>Hair:</td>
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<tr>
<td>• Non-irritating</td>
<td>• Provides added manageability &amp; body to hair</td>
<td>• Shampoos</td>
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<td>• Peroxide stability</td>
<td>• Delivers intense moisturization to skin &amp; hair</td>
<td>• Conditioners</td>
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<td>• Excellent surface activity</td>
<td>• Helps decrease damage from harsh chemical treatments</td>
<td>• Hair Color Products</td>
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<td>• Compatible with wide range of ingredients including anionic surfactants</td>
<td>• Can improve combing &amp; hair appearance</td>
<td>• Hair Treatment Products</td>
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<td>• Non-GMO</td>
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<td>• Hair Relaxers</td>
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<td>• Pesticide-free</td>
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<td>Skin:</td>
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<tr>
<td></td>
<td></td>
<td>• Facial moisturizers, serums &amp; creams</td>
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<tr>
<td></td>
<td></td>
<td>• Facial cleansers</td>
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<tr>
<td></td>
<td></td>
<td>• Hand &amp; body lotions</td>
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<td></td>
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<td>• Liquid soaps &amp; body washes</td>
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HAIR CARE BENEFITS

Extraordinary shine & silkiness
The polar head of TRIspire Vitalize is derived from pro-vitamin B-5, a material well-known for imparting shine and soft after-feel to hair. By quaternizing Panthenol to increase its substantivity, the shine enhancing benefits are optimized and last longer in leave-on and rinse-off products. Hair treated with TRIspire Vitalize looks and feels healthier.

Better wet & dry combing
The quaternary amine and long chain stearyl group add slip and lubricity to hair. Detangling after shampooing or conditioning becomes easier, minimizing damage and split ends. When dry, hair is easy to comb and style.

Manageability, body & bounce
The anti-static and volume-building properties of TRIspire Vitalize impart excellent body to hair. Frizz is under control, curls snap back after retouching, restyling is easy.

SKIN CARE BENEFITS

Moisturization
The humectant properties of the pro-vitamin B-5 head group enable TRIspire Vitalize to act as a moisture reservoir to supply skin with the vital water molecules it needs to look younger and feel soft and supple.

Better after-feel
The lubricity properties of TRIspire Vitalize impart a smooth, soft feel from skin creams and lotions. Due to the compatibility with anionic surfactants and its substantivity, TRIspire Vitalize delivers these tactile benefits from cleansers and liquid soaps.
PROVEN PERFORMANCE

TRIspire Vitalize is made by reacting the well-known pro-vitamin B-5 (Panthenol) with a long chain quaternary amine. Therefore, many chemical functionalities are combined into a single molecule: polar pro-vitamin B-5 structure, quaternary amine cationic charge and hydrophobic stearyl group.

The multifunctional nature of TRIspire Vitalize enables the product to offer many benefits in personal care applications.

CHEMICAL STRUCTURE OF TRISPIRE VITALIZE

TECHNICAL INFORMATION

<table>
<thead>
<tr>
<th>Typical Properties</th>
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<tbody>
<tr>
<td>Appearance @ 25°C</td>
<td>Clear liquid*</td>
</tr>
<tr>
<td>Color (Gardner)</td>
<td>2 maximum</td>
</tr>
<tr>
<td>pH (5% aqueous solution)</td>
<td>5.0 – 7.5</td>
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<tr>
<td>Solids</td>
<td>Minimum 40%</td>
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<tr>
<td>Odor</td>
<td>Slight to no odor</td>
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*Because TRIspire Vitalize may stratify below 25°C, the ingredient must be warmed and mixed until uniform before sampling and using.

Classification
CAS # 132467-76-6
EINECS # 428-640-1
TEST RESULTS

D-Panthenol vs. TRIspire Vitalize (in vivo)

Objective:
The purpose of this study was to determine if the daily use of a shampoo and conditioner containing TRIspire Vitalize would cause cumulative buildup on the hair in either Caucasian or African American hair.

Study:
• Mannequin heads of Caucasian and African American medium length hair
• Test Vehicles:
  o Shampoo & conditioner (placebo)
  o Shampoo & conditioner formulated with 0.3% TRIspire Vitalize

The test was conducted over the course of 20 days, which comprised of 10 shampoo applications, followed by 10 conditioner applications. Each application was performed every other day and the evaluation was done the following day. Hair was divided into halves. Placebos were applied to the right side of the head, while the formulations with TRIspire Vitalize were applied to the left side. Hair was rinsed with luke-warm water after each application and left to air dry.

Results:
The analysis confirmed there was no residual buildup remaining on either the Caucasian or African American hair. In addition, ease of combing wet hair was observed after applying both shampoo and conditioner containing TRIspire Vitalize.
STUDY 3

Conditioning Performance of TRIspire Vitalize (in vivo)

Objective:
To determine the efficacy of TRIspire Vitalize as a conditioning agent.

Study:
- 16 panelists
- Test Vehicles:
  - Shampoo (placebo)
  - Shampoo formulated with 1.0% TRIspire Vitalize

In order to determine the efficacy of TRIspire Vitalize as a conditioning agent, a very simple shampoo formulation without any other conditioning agents was developed. The test was conducted over a period of two weeks. Panelists were instructed not to use a conditioner during this time frame. Half the panelists received the shampoo formulated with TRIspire Vitalize during week one, while the other half used the placebo. During week two, the panelists tested the alternative product so that all panelists tested both the placebo and TRIspire Vitalize in a single blinded fashion.

After the two week application, panelists were asked to rate each shampoo on a scale of 1 to 5 (1 showing little or no improvement to 5 showing the most improvement) according to the following parameters:

- Wet & Dry Combability
- Feel
- Shine
- Body & Bounce
- Manageability
- Overall Performance

Results:
Based on the sixteen consumer evaluations, TRIspire Vitalize outperformed the placebo and was preferred by more than 2/3 of the panelists overall.
TRIspire Vitalize
QUATERNIZED PANTHENOL FOR ENHANCED SUBSTANTIvITY & CONDITIONING

KEY BENEFITS

• Imparts shine & silkiness to hair
• Provides added manageability & body to hair
• Delivers intense moisturization to skin & hair
• Helps decrease damage from harsh chemical treatments
• Can improve combing & hair appearance

SUGGESTED APPLICATIONS

Hair:
• Shampoos
• Conditioners
• Hair Color Products
• Hair Treatment Products
• Hair Relaxers

Skin:
• Facial moisturizers, serums & creams
• Facial cleansers
• Hand & body lotions
• Liquid soaps & body washes