COLOR TECHNIQUES

Inorganic Colors, Fillers & Surface Treatments

Enhancing the Performance of Your Products

A Brief Overview

- Has supplied the Personal Care Industry since 1979
- Relocated to the South Plainfield, NJ. location in 1992: Corporate office, R&D Lab, Manufacturing & Warehousing
- Global agency outside of the NE United States
- Expansion project in 2002 doubled the facility to 26,000 sq. ft. with increased production capabilities
- Updated and improved website launched in 2018
- ISO 22716:2007 Cosmetics, Good Manufacturing Practices (GMP) Certified

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Manufacturing Capabilities

- 2 Dedicated “White Rooms” with 180 cubic ft jacketed blenders & mills
- Color Room #1 : 180 cubic ft. jacketed blender & mill
- Color Room #2: 75 cubic ft. jacketed blender & mill
- Color Room #3: 45 cubic ft. jacketed blender & mill
- Two smaller pilot jacketed blenders

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Color Techniques Products

- Inorganic Colors
- *Primarily used in pigmented face powders, foundations, blushers, nail lacquer, and eye area cosmetics*
- Synthetic Iron Oxides
- Ultramarines
- Manganese Violets
- Greens: Chromium & Chromium Hydroxide
- Titanium Dioxide
- Mica & Sericite
- Kaolin

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Synthetic Iron Oxides

- Largest single volume of inorganic pigments sold
- Three basic shades: Black, Red and Yellow
- By using these shades in combination with titanium dioxide, all shades of brown and skin tone can be matched.
- Excellent light stability and stable under normal pH ranges
- Shade characteristics of an iron oxide is known as undertone.
- The red and black oxides may have either a yellow or blue undertone. Yellow oxides have either green or red undertone.
- By tinting with titanium dioxide, a formulator can easily determine the undertone of an iron oxide.

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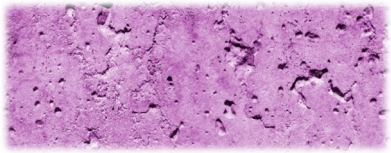
Ultramarines

- This family of colors include blue, pink and violet
- Ultramarine blues are synthetically produced sodium alumino silicates
- Further oxidation of one of the finer particle size red shade blue produces violet.
- An ion exchange with violet produces pink
- Easily dispersed in aqueous media, have excellent light stability and are very stable in alkali(pH 7 or higher) compounds.
- Extremely acid sensitive and will release hydrogen sulfide in acid conditions.
- “Acid resistant” grade available that resists mild acid conditions.
- Primary use- eye products, bar soaps



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Manganese Violets

- This strong violet pigment is a complex of manganese ammonium pyrophosphate.
- Stronger violet than ultramarine.
- Used primarily in eye products.
- Decomposes in water and cannot be used in hydrated emulsion systems.
- Relatively stable in acid pH ranges.
- Along with our standard grade, a red shade is also available.

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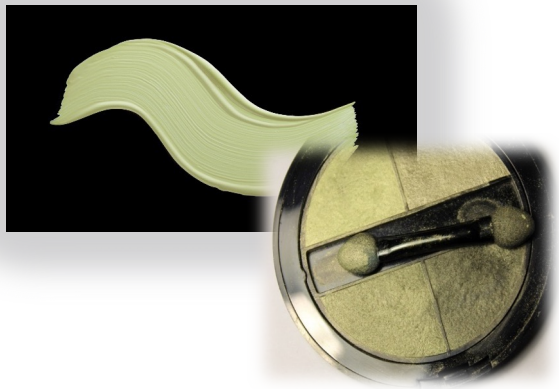
Inorganic Greens:
Chromium Oxide & Chromium Hydroxide

- Chromium Oxide green has an olive like color with strong yellow undertones.
- Chromium hydroxide is weaker than chromium oxide, has a high oil absorption and considerably bluer aqua shade.
- Very hard pigments and sometimes difficult to grind and disperse.
- Both have excellent strength and stability.



Titanium Dioxides

- The principal white pigment used to give opacity and coverage to color cosmetics, particularly foundations.
- Two common forms of titanium: anatase and rutile
- Our anatase pigmentary titanium ; A-8117 Titanium Dioxide.
- We also offer a variety of Hydrophobic, Hydrophilic, and Lipophilic surface treated grades.

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Sericite & Mica

- Mica is platy, has excellent slip, and is chemically inert.
- The source, either USA, China, India, Brazil, and processing, either wet or dry ground, will determine the physical properties that will affect performance.
- Sericite (INCI name: mica) has properties that are between that of talc and mica, depending on source and processing. It can be used to formulate talc free products; not a 1:1 replacement.

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Kaolin – A Talc Replacement

- Hydrated aluminum silicate
- Used as a white pigment extender, a filler, and a compression aid
- Refractive index: 1.85
- Color: off-white
- Useful properties:
  - Coverage in pressed powders
  - Compressible
  - Platy: smooth skin feel
  - Pigment dispersant/spacer in wet systems
  - Extender for pigment milling in dry systems
  - Offered as **D-9801/I Hydrophobic Kaolin**, **Improved,** surface treated with methicone

Relevant Information

- All Color Techniques products are approved worldwide
- None of our products have been tested on animals, nor do they contain raw materials with animal origins
- None of our products are considered “Nano”; documentation and particle size analysis are available.
- We do not offer any materials considered to be hazardous.
- There are no allergens present in our products or in our facility.
- We do not use preservatives or solvents.
- Members of RSPO

Relevant Information (cont'd)

- Regulatory statements, such as composition, source & origin, REACH, Prop 65, Materials of Concern, Purity, Halal and Kosher compliance, etc., are available.
- Most of our products have been CSAR registered; submission records are available.
- To comply with microbiological specs, all our products are irradiated.
- No charge samples are always available upon request.
- Starting formulas are available on our website.
- Color Techniques Inc. is an associate member of PCPC and an active member of the Color Additive Committee.
- Color Techniques is currently engaged in toll manufacturing for various companies.

Surface Treatments

Enhancing the Performance of Your Products

Color Techniques surface treats inorganic pigments and fillers to improve their performance attributes

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Introduction

Surface treated pigments and fillers permit the development of unique product forms:

- Cosmetically elegant water in silicone/oil foundations
- Cream to powder cosmetics
- Powder to liquid formulations
- High color intensity mascaras and eye liners

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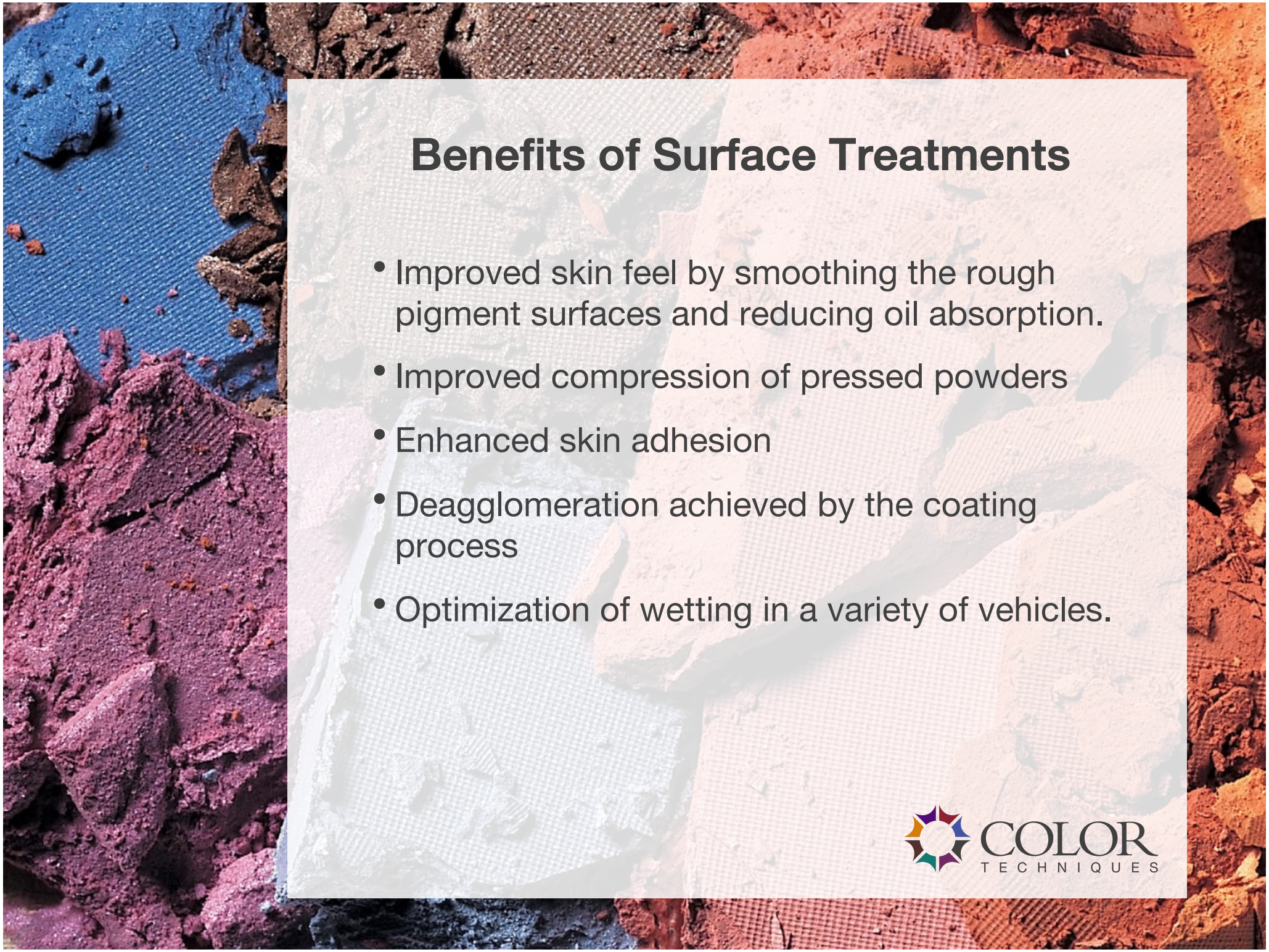

Benefits of Surface Treatments

- Improved skin feel by smoothing the rough pigment surfaces and reducing oil absorption.
- Improved compression of pressed powders
- Enhanced skin adhesion
- Deagglomeration achieved by the coating process
- Optimization of wetting in a variety of vehicles.

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Surface Treatments

- Hydrophobic
  - Resist wetting by water
  - Smooth skin feel
  - Varying levels of emolliency
  - Many exhibit enhanced lipophilicity (affinity for oil)
- Hydrophilic
  - Enhanced hydrophilicity (affinity for water)

Hydrophobic Treatments

- D/I Hydrophobic (Methicone)
- AS Alkyl Silane (Triethoxycaprylylsilane)
- LL Lauroyl Lysine
- DL Methicone/Lauroyl Lysine
- ROD OptiSperse Pigments

Reacted Treatments

- Most durable form of surface treatment
- Silane (monomer) or silicone polymer compounds having reactive groups bond with pigment surfaces
- Coatings are durable, cannot be dissolved off by formula ingredients
- Surfaces can be tailor made to achieve a variety of properties:

  Hydrophobic

  Lipophobic

  Lipophilic

  Hydrophilic

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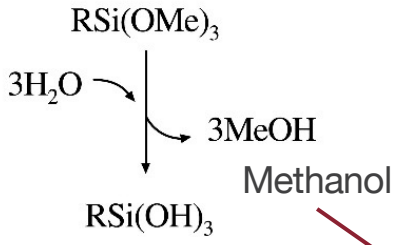
Reactive Silicone and Silanes

Trimethoxyalkyl silane

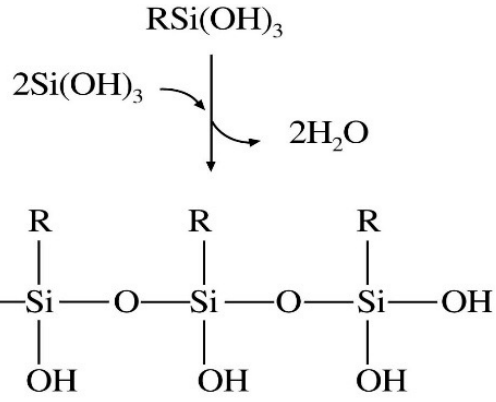
Hydrolysis



Silicon compounds having at least one non-reactive organic “R” group and at least one hydrolyzable group: H, NR’, Cl, OR’.
In contact with water the reactive group(s) **hydrolyze** to SiOH groups called silanol(s)

By products are H plus the reactive group

Condensation



These silanol containing compounds can self **condense** to form oligomers (pre-polymers)

or

be attracted to other compounds containing surface hydroxyl (OH) groups

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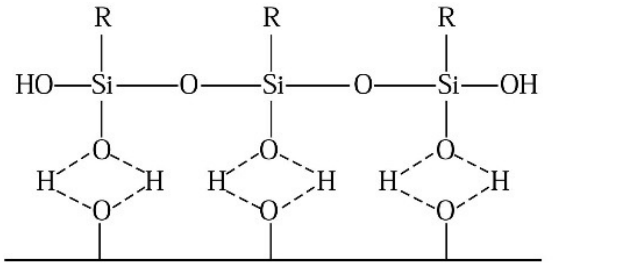
Silicone and Silane Reacted Treatments

Form a chemical bond between the treating compound and substrate surface

Substrates having surface hydroxyl groups; utilized in cosmetics include:

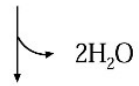
- silica
- silicate minerals, e.g. talc, mica, sericite, kaolin
- metal oxides: titanium dioxide, zinc oxide, iron oxides

Hydrogen Bonding

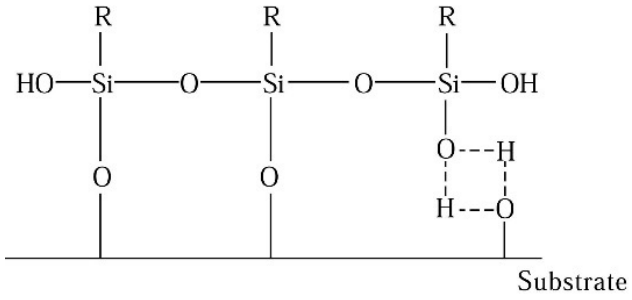


Through hydrogen bonding, the silicone oligomer or polymer orients to the pigment /filler surfaces

Curing



Bond Formation



On curing a permanent bond is formed between the silicone and the pigment/filler surface

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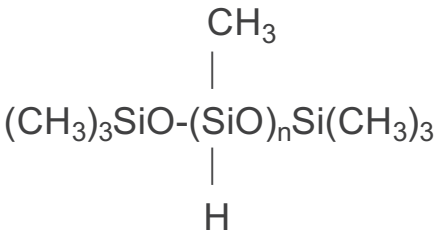
D/I: INCI name: Methicone



Polymethylhydrogensiloxane,
a reacted, hydrophobic coating

- Powder benefits
  - Soft, smooth skin feel
  - Excellent slip
  - Water repellency
  - Good skin adhesion
  - Good compression
- Dispersion benefits
  - Improved wetting in oils, particularly silicone oils
  - Good color development
  - Allows high pigment concentration
  - Not solubilized by common solvents

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D/I: Recommended Applications

Pressed and loose powders

- Silky skin feel
- Good compression, require lower binder levels
- Good payoff

Hot pour, powder cream formulations

- Good color development
- Allows high pigment concentration

Water in silicone or water in oil emulsions

- Preferred wetting in the outer oil phase
- Improves emulsion stability
- Mass tone equals skin tone

Note: Color Techniques' D/I treated pigments are emulsion grade. The manufacturing process limits hydrogen potential to acceptable levels.

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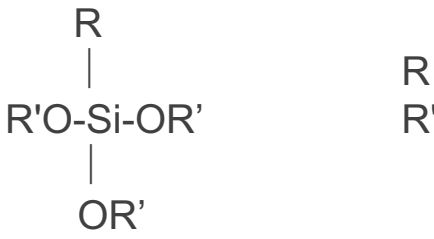
AS: INCI name: Triethoxycaprylylsilane



R = Caprylyl
R' = Ethoxy

Triethoxycaprylylsilane

A reacted, hydrophobic coating

Benefits:

- Better compatibility with organomodified silicones, organic waxes and oils compared to Methicone treatment
- Increased hydrophobicity
- Reduced oil absorption
- No potential for hydrogen evolution
- Emollient skin feel
- Not solubilized by common solvents
- Compatible pH 3 to 9

COLOR TECHNIQUES

AS: Recommended Applications

Pressed and loose powders

- Creamy skin feel
- Good compression, require lower binder levels

Hot pour powder cream compacts and sticks

- Good color development
- Allows high pigment concentration maintaining melt fluidity
- Powder-like skin feel
- Compatibility with waxes and common oils used in stick products

Water in silicone/oil and water in oil emulsions

- Preferred wetting in the outer oil phase
- Improves emulsion stability
- Mass tone equals skin tone

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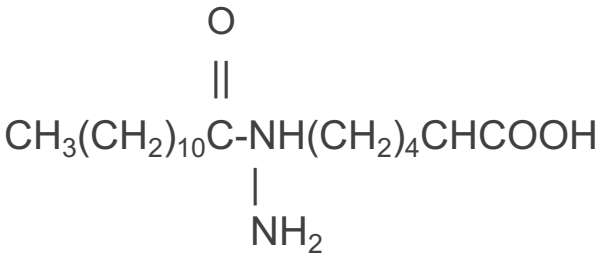
LL: Lauroyl Lysine



N-Lauroyl Lysine

N-Lauroyl Lysine:
An electrostatic, water-resistant coating

Benefits

- Derived from the natural materials: L-lysine and lauric acid
- Non-irritating, non-sensitizing
- Good lubricity
- Smooth spreading
- Skin compatible
- Moderately anti-oxidative
- Excellent skin adhesion
- DL combines D/I treatment with LL to achieve complete hydrophobicity

CERTIFIED SUSTAINABLE PALM OIL™
RSPO

COLOR TECHNIQUES

LL: Recommended Applications

Pressed and loose powders

- Soft, lubricious, but light skin feel
- Excellent spreading and blending
- Good compression, require lower binder levels

Hot pour powder cream compacts and sticks

- Good color development
- Powder-like skin feel

D/L: Water in silicone/oil and water in oil emulsions

- Preferred wetting in the outer oil phase
- Improves emulsion stability
- Mass tone equals skin tone
- Soft skin feel

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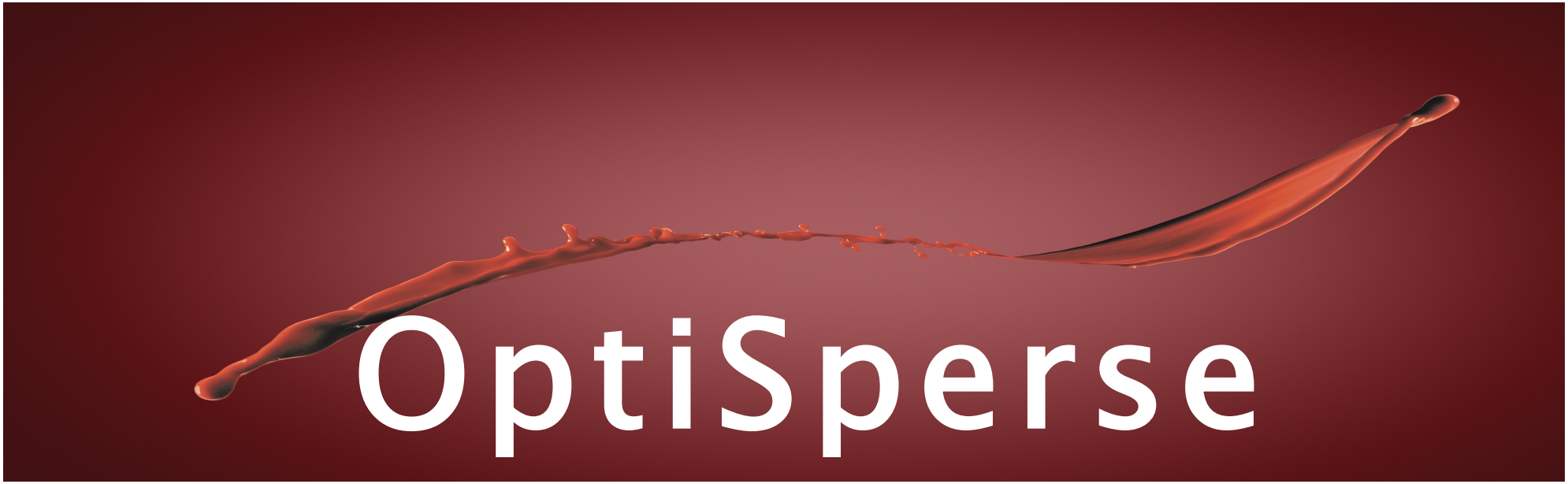

- Innovative, 99% naturally derived surface treatment for optimal pigment dispersion
- Pigments easily disperse in oils and other nonpolar solvents
- Very high loading concentrations with low viscosities for easy processing.
- Creates a hydrophobic and lipophilic barrier
- For additional information and a video showing OptiSperse pigments in action:

www.colortechniques.com

or request OptiSperse Pigments Presentation

(Patent Pending)

GA-Hydrophilic : **Galactoarabinan, a highly branched polysaccharide, naturally derived from larch trees**

In water based formulations, wetting and dispersion are improved by the rapidly hydrating coating

- Rapid wetting of pigments and fillers with little or no high shear agitation.
- Better pigment suspension is due to the smaller agglomerate size
- Increased color intensity
- Reduced dispersion viscosity, allowing higher pigment loading
- Galactoarabinan acts as a protective colloid, inhibiting destabilizing particle-particle attractions through steric effects, prolonging shelf life.

As for all coatings, compatibility with other formula ingredients, particularly gums and thickeners, must be assured so as not to lose the beneficial effects of the surface treatment.

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GA: Recommended Applications

Water based systems

Suspensions

Eyeliners, Mascaras

Oil in water emulsions

Rapid wetting

Complete color development

Mass tone equals skin tone

Dispersion without intensive milling

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Thank You For Your Business!

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