

Benzoate Ester

Finsolv® TN

INCI Name: C12-15 Alkyl Benzoate

CAS No.: 68411-27-8 EINECS No.: 270-112-4

Finsolv® TN is a unique non-toxic, non-irritating, non-sensitising, noncomedogenic and practically odourless emollient ester. It is water insoluble, readily emulsifiable and possesses the following properties and attributes:

- Superior solubiliser of lipophilic cosmetic raw materials, especially sunscreen agents and volatile silicones.
- High positive spreading coefficient.
- Anti-tack agent and anti-whitening, especially in antiperspirant formulation.
- Imparts a dry lubricating feel even in the presence of large amounts of mineral oil or petrolatum ("deoils" mineral oil and "degreases" petrolatum)
- Wetting agent and auxiliary suspending agent for water insoluble powdered products.
- Stable over a wide pH range

Applications

For a more complete listing of the multifunctionality of Finsolv® TN, see Table I.

These multifunctional properties lend themselves to formulating Finsolv® TN in a variety of cosmetic and personal care products as well as sun care and OTC skin products, all possessing a dry (non-greasy) cosmetically elegant emollient feel.

Examples of applications of Finsolv® TN in personal care products are listed in Table II.

Finsolv® TN is compatible with commonly used plastic containers except for polystyrene and styrene copolymers such as SAN (styrene/acrylonitrile copolymer).



TYPICAL PROPERTIES

Not intended for use in preparing specifications

| | |
|--------------------------------|---|
| Appearance | Clear liquid |
| Odor | Very mild, pleasant, practically odorless |
| Specific gravity @ 25°C | 0.915-935 |
| Refractive index @ 20°C | 1.430-1.4870 |
| Viscosity, cps @ 25°C | 50 maximum |
| Color, APHA | 30 maximum |
| Acidity, mg KOH/g | 0.10 maximum |
| Moisture,% | 0.10 maximum |
| Saponification value, mg KOH/g | 177-182 |

Table 1
Multifunctionality of Finsolv®TN

| | |
|------------------------------|---------------------------------------|
| • Emollient | • Solubiliser |
| • Sunscreen vehicle | • Plasticiser |
| • Hair conditioner | • Anti-tack agent |
| • Auxiliary suspending agent | • Dye levelling agent and dye carrier |
| • Superfating agent | • "Deoiler"/"Degreaser" |
| • Lubricant | • Binder in pressed powders |
| • Wetting agent for powders | • Gloss agent |

Table II
Personal care products/applications of Finsolv® TN

| | |
|-------------------------------|----------------------------------|
| Sunscreen/suntan preparations | Deodorants/antiperspirants |
| Emollient creams | Hand and body creams and lotions |
| Body and massage oils | Alcoholic lotions |
| Cleansing creams | Make-up and nail products |
| Foundation lotions | Lipsticks/lip glosses/lip balms |
| Eye make-up and removers | Peelable face masks |
| Bath and after bath products | Shaving preparations |
| Pre-electric shave lotions | Colognes and perfumes |
| Soaps, combos, syndets | Hair care products |
| Hair dye levelling agents | Body and baby powders |
| Foot care products | After shave lotions/balms |

Performance Properties

Solubility comparison of commonly used preservatives, bactericides and antioxidants

| 1g/100ml Solvent | Finsolv® TN | IPM |
|-------------------------------------|-------------|-----------|
| Methylparaben | Soluble | Soluble |
| Propylparaben | Soluble | Soluble |
| Butylparaben | Soluble | Soluble |
| Captan | Soluble | Insoluble |
| DMDM Hydantoin | Insoluble | Insoluble |
| <i>p</i> -Chloro- <i>m</i> -Xylenol | Soluble | Soluble |
| BHA or BHT | Soluble | Soluble |
| Propyl Gallate | Soluble | Insoluble |

Solubility, 10g Solute/90G Finsolv® TN

| | |
|---------------------|------------------------------|
| Acetone | Soluble |
| Beeswax | Soluble (Soluble hot) |
| Carbitol | Dispersible |
| Castor Oil | Soluble |
| Ethyl Acetate | Soluble |
| Ethanol | Soluble |
| Glycerin | Insoluble |
| Isopropanol | Soluble |
| Isopropyl Myristate | Soluble |
| Lanolin | Soluble |
| Paraffin Wax | Dispersible (Soluble hot) |
| Propylene Glycol | Insoluble |
| Vegetable Oils | Soluble |
| Volatile Silicones | Soluble (in all proportions) |

Suggested Formulas

SPF 20 Very Water Resistant* Sunscreen Lotion

This Very Water Resistant SPF 20 sunscreen lotion features Finsolv TN as the sunscreen solubilizer and Sensymer E wax as the waterproofing agent.

| | INCI Ingredients | Tradename (Supplier) | % w/w |
|---|--|----------------------------------|------------|
| A | Water | | q.s to 100 |
| B | Disodium EDTA | Versene NA (Dow Chemical) | 0.10 |
| | Carbomer | Carbopol 980 (Noveon) | 0.25 |
| | Acrylates C10-30 alkyl acrylates crosspolymers | Pemulen TR-2 (Noveon) | 0.20 |
| | Propylene Glycol | Propylene Glycol USP (Protameen) | 2.00 |
| C | C12-15 alkyl benzoate | Finsolv TN (Innospec) | 5.00 |
| | Isononyl Isononanoate | Dermol 99 (Alzo) | 2.50 |
| | Ethylhexyl Methoxycinnamate | Parsol MCX (Jeen) | 7.00 |
| | Benzophenone-3 | Escalol 567 (ISP) | 6.00 |
| | Cetyl Alcohol | Crodacol C-95 (Croda) | 0.75 |
| | Stearic Acid | Jeen stearic Acid TP (Jeen) | 1.25 |
| | Ethylene/VA copolymer | Sensymer E (Innospec) | 2.25 |
| | Triethanolamine | Tealan 99% (Rita Corp.) | 0.40 |
| D | Water | | 2.00 |
| | Preservative | | Q.S. |

Preparation Procedure

1. Charge water into main beaker and dissolve EDTA; then start heating phase A to 75-80 C and disperse ingredients from phase B; allow enough time between dispersion so that polymer hydrates properly and then add propylene glycol to the water phase while maintaining temperature.
2. In a separate beaker blend items from oil phase (holding back Sensymer), heat mixture to obtain a clear phase (75-80 C with propeller mixing), then add Sensymer E and continue heating (to slightly over 95 C) to allow wax to become incorporated into oil phase.
3. At 75-80 C form emulsion by adding phase C to phase AB with vigorous propeller mixing, follow with addition of phase D (neutralizer). Homogenize batch for one to two minutes at 3500 rpm's and return to the propeller mixing.
4. Initiate cooling and add preservative phase (E) below 50 C. Allow formula to equilibrate for 24 hrs

Properties

| | |
|------------|--------------------------|
| Appearance | White to off-white cream |
| pH | 5.5 - 6.0 |
| Stability | Passed 3 months at 45°C |

* Based on 2 Subject VWR testing

For further information, please email your region:

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