



# Flexicare™ ZR-L

Zinc ricinoleate

## Overview

- Renewably sourced odor neutralizer that traps and absorbs odors-not a masking agent
- High actives, low moisture zinc ricinoleate complex
- Liquid form for ease of use
- Soluble in most polar organic solvents, and dispersible in aqueous surfactant solutions
- Effectively fixates a wide range of odorous compounds
- Non-antimicrobial for compatibility with skin flora
- Compatible with fragrances and most anionic, nonionic and amphoteric Personal Care ingredients
- INCI Name: zinc ricinoleate (and) tetrahydroxypropyl ethylenediamine (and) laureth-3 (and) propylene glycol and Aqua
- CIR Reviewed zinc ricinoleate as non-toxic and for safe use in Cosmetics

## Applications

- Deodorant Agent in deodorant sticks, sprays and roll-on
- Deodorant Agent in Personal cleansers and Shampoos
- Effective odor control in pet and veterinary cleansers and Shampoos

## Technical Information

Flexicare ZR-L is an odor neutralizer, not an antimicrobial or chemical masking agent. More effective than related copper and magnesium salts of the same valence, and related stearic and oleic acids of the same carbon number, Flexicare ZR-L zinc ricinoleate forms a unique fixating complex that traps and absorbs odor causing substances. Formulated into a liquid, easy to handle, alcohol soluble or surfactant dispersible solution, the Flexicare ZR-L active component, zinc ricinoleate, is a zinc salt of ricinoleic acid, derived from zinc and a purified fatty acid from castor seed oil which is a vegetable oil obtained from the seeds of the *Ricinus communis* plant. Flexicare ZR-L has 75% biorenewable carbon.

## Formulary

The concentration of Flexicare ZR-L in formulations depends on the application and the target odor causing substances, relating to the physical and chemical interactions with the odor causing materials and the active component in ZR-L. Deodorant use-concentrations of Flexicare ZR-L vary from 1% to 3%.

As sold, ZR-L is alcohol -soluble, but not water-soluble. The use of an appropriate surfactant system is required to provide stable aqueous mixtures.

Give us a call for assistance for your particular formulation requirements and composition.

## Typical Properties

PROPERTY	VALUE
Appearance	Clear to transparent, viscous, colorless to light amber liquid
Odor	Mild
Ionic character	Anionic
Zinc salt actives	50%
Solubility	Soluble in alcohol and polar organic solvents
Water solubility	Dispersible with surfactants
pH, 1:1 IPA/H <sub>2</sub> O	6-8
Density@25°C	1.01±0.01
Boiling point	>100°C
Flash point	Does not ignite below 100°C
Storage	Stable to freezing
Shelf life	12 months

## Packaging and Handling

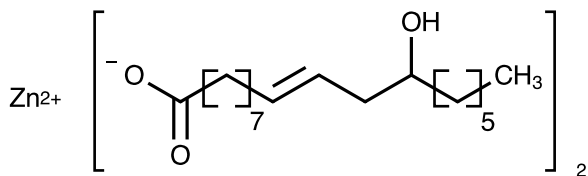
Flexicare ZR-L is available in totes (Net Wt. 2205 lbs), 55 gallon plastic drums (Net Wt. 441 lbs) and 5 gallon pails (Net Wt. 40 lbs).

Refer to the Safety Data Sheet (SDS) for information on the safe use, handling, and disposal of this product.

DOT Classification: Non-Regulated

Whether you're looking for a replacement product or an ingredient for a specific attribute, give us a call. We can provide assistance based upon your particular formulation requirements and composition; please feel free to contact us.

**Please refer to back page for important information**



### Flexicare ZR-L: Renewably Sourced Odor Neutralizer

Flexicare ZR-L is a renewably sourced odor neutralizer that traps and absorbs odors...not an antimicrobial or chemical odor masking agent. Formulated into a liquid, easy to handle, alcohol-soluble or aqueous surfactant dispersible solution, the Flexicare ZR-L active component is a zinc salt of ricinoleic acid, derived from zinc and a purified fatty acid from castor oil. Castor oil is obtained by the cold pressing of seeds of the *Ricinus communis* plant followed by clarification of the oil by heat. Often asked, castor oil does not contain ricin because ricin is water-soluble and does not dissolve in the oil obtained from the castor seeds. Purified castor oil is then naturally split into ricinoleic acid and glycerin for additional purification.

The derived ricinoleic acid and its zinc salts are CIR reviewed (Cosmetic Ingredient Review expert panel) and regarded for use as safe, non-toxic ingredients in a wide range of cosmetics and toiletries, and are FDA listed as Indirect Additives Used in Food Contact Substances (21 CFR §175.300).

### Flexicare ZR-L: Effective Odor Neutralization

The mechanism for odor fixation by Flexicare ZR-L is complicated, being a combination of adsorption, complex formation, and in some instances a chemical formation such as mercaptans to mercaptides. More effective than related copper and magnesium salts of the same valence, and related stearic and oleic acids of the same carbon number, Flexicare ZR-L zinc ricinoleate forms a unique fixating complex specific to the odor causing substances that cause intensive odor with low odor thresholds such as low molecular weight organic acids, amines, mercaptans, dialkyl sulfides, dialkyl disulfides,  $\text{NH}_3$ ,  $\text{H}_2\text{S}$ , and  $\text{SO}_2$ .

When formulated into Personal Care deodorant products, zinc ricinoleate does not block pores or inhibit normal perspiration, and not being antimicrobial or antifungal, it will not interfere with the natural flora of the skin. Instead, zinc ricinoleate 'traps' the odor-causing molecules produced by bacterial decomposition, such as TMHA (*trans*-3-methyl-2-hexenoic acid), in sweat so that they cannot be released with their characteristic sweaty smells.

### Flexicare ZR-L: Range of Application

Flexicare ZR-L traps, absorbs, and fixes odor-intensive organic substances. Substances with low odor thresholds with sulfur, such as thiols and thioethers, or nitrogen-containing functional groups such as ammonia and dimethylamine, low molecular weight carboxylic acids such as isovaleric acid and hexenoic acid are effectively neutralized by ZR-L. Flexicare ZR-L is effective against a wide range of odorous compounds, including food and animal decomposition products such as putrescine and cadaverine, and industrial by-products such as hydrogen sulfide and sulfur dioxide and others are effectively controlled by Flexicare ZR-L and formulations that contain it.

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