

Vikoflex® 7170

EPOXIDIZED SOYBEAN OIL

Functional Additives 

Product Description

Vikoflex® 7170 epoxidized soybean oil adds a new dimension to improvements in epoxidized soybean oils. High oxirane efficiency from specially processed soybean oil produces a total compatibility and stabilization performance which is second to none and superior to many present and past commercial products.

Epoxidized oils have been marketed for over three decades. Early products were deficient due to high residual iodine value of the finished epoxide which ranged from 20-25. Thought to be a substitute for DOP, they were misapplied resulting in early spew or exudation. It was discovered over the next few years that to achieve approximately ninety-five percent of the total compatibility potential, iodine value reduction to approximately 5-7, was a necessity. It was found that below an iodine value of three, no absolute compatibility correlation using artificial or natural exposures could be made due to other variables such as hydroxyl value, viscosity, polymerization effects, and base soybean oil.

The only economically unaffected area for improved performance lies in raw material improvements and selection. Vikoflex® 7170 epoxidized soybean oil utilizes only the highest iodine value, lowest saturate soybean oil available in the country, reducing the probability of random highly saturated triglycerides adversely affecting formulation compatibility.

Epoxy soybean oils have been found to be the best value of all stabilizing additives. They have been accepted as a standard industry formulation tool, effecting cost reductions and improving performance in heat and light stability over those systems previously employing only metallic stabilizers. No other additive enjoys such universal acceptance for all types of vinyl compound. Vikoflex® 7170 epoxidized soybean oil functions as the most effective known synergist to metallic stabilizer compounds in vinyl systems.

At the same time, Vikoflex® 7170 epoxidized soybean oil functions as a true polymeric type plasticizer by adding flexibility and retarding volatilization, extraction, and migration due to its high molecular weight.

Typical Physical Properties

| | |
|--------------------------|----------|
| Oxirane Oxygen | 7.0% Min |
| Specific Gravity 25/25°C | 0.993 |
| Color - APHA | 150 Max |
| Pounds Per Gallon @ 25°C | 8.3 |
| Viscosity Stokes @ 25°C | 4.2 |
| Acid Value | 0.5 Max |
| Molecular Weight | 1000 |
| Freeze Point | 0°C |
| Fire Point | 315°C |
| Refractive Index @ 25°C | 1.472 |
| Odor | Mild |

Product Benefits

1. Efficient Heat & Light Stabilization
2. Low Viscosity
3. High Detergent Resistance
4. Low Volatility
5. Improves Processing Speed
6. Excellent Pigment Wetting
7. Improves Plastisol Viscosity Stability
8. Low Styrene & Lacquer Mar
9. High Oil & Gas Resistance

Suggestions for Use

- Plasticization of all PVC flexible and semi-flexible compounds.
- Heat and light stabilization of all flexible, semi-rigid, and rigid PVC compounds.
- Pigment dispersions as an outstanding grinding liquid.
- Plate-out resistant compounds requiring high epoxy levels.
- Acid acceptance in chlorinated hydrocarbons, phosphoric acid esters, and natural resins.
- Plasticization of PVC and PVA emulsions.
- Plasticization of chlorinated rubber, nitrocellulose, and neoprene.
- Process improvement in certain rigid compounds.
- Acid scavenging in soy based ink compounds.

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Applications in PVC Compounds

- Floor covering, vinyl asbestos and homogenous.
- Coated fabrics: automotive and furniture upholstery, sporting equipment, wall covering, clothing, luggage.
- Unsupported film.
- Pigment dispersions.
- Injection molding compounds.
- Wire and cable coatings.
- Plastics & Organosols used in molding, dipping, and casting applications.
- Extrusions: wetting, gasketing, weather strip, beverage tubing, hose.
- Foam for padding, seating, automotive, packaging.
- Blow molded bottles.
- Printed semi-rigid and rigid laminate film.

Packaging

Vikoflex® 7170 epoxidized soybean oil is available in 55 gallon (450 lb net) steel drums, 40,000 lb bulk tanktrucks and 160,000 lb min. bulk tankcars.

Compatibility

Compatible With:

Polyvinyl Chloride
Chlorinated Rubber
Ethyl Cellulose
Nitrocellulose
Polyvinyl Acetate

Partially Compatible With:

Alkyds

Incompatible With:

Cellulose Acetate
Cellulose Acetate Propionate
Polyvinyl Butyral

Solvents

Miscible:

Aromatic Hydrocarbons
Butanol
Esters
Ketones
Plasticizers

Partly Miscible:

Aliphatic Hydrocarbons
Ethanol

Immiscible:

Water

Performance Information @ 50 phr

| | Vikoflex® 7170 | Epoxy A | Epoxy B | DOP |
|---------------------------|---------------------|----------------------|----------------------|----------------------|
| Tensile Strength | 2770 | 2805 | 2758 | 2650 |
| Elongation | 377 | 358 | 380 | 392 |
| 100% Modulus | 1587 | 1690 | 1577 | 1450 |
| Tear Strength | 505 | 540 | 507 | 452 |
| Durometer Hardness | 90 | 92 | 90 | 85 |
| Clash & Berg (Tf=135,000) | -11°C | -9.5°C | -11°C | -23°C |
| Volatility | 0.3 | 0.3 | 0.4 | 4.1 |
| Water Extraction | 0.03 | 0.05 | 0.04 | 0.26 |
| Soap Extraction | 0.28 | 0.31 | 0.33 | 4.20 |
| Gasoline Extraction | 2.2 | 2.5 | 2.9 | 13.6 |
| Mineral Oil Extraction | 0.96 | 0.87 | 1.26 | 3.1 |
| Motor Oil Extraction | 1.41 | 1.27 | 1.59 | 3.77 |
| Hexane Extraction | 2.50 | 2.35 | 3.12 | 16.60 |
| Neoprene Migration | 7.1 | 7.4 | 8.6 | 18.6 |
| GRS Migration | 6.6 | 6.5 | 7.3 | 19.9 |
| Vol. Resistivity, Ohm Cm | .8x10 ¹³ | .85x10 ¹³ | 1.0x10 ¹³ | 3.0x10 ¹³ |
| Accelerated UV | | | | |
| Hrs to Slight Spew | 26 | 21 | 17 | 8 |

Environmental and Safety Information

BEFORE HANDLING THIS MATERIAL, READ AND UNDERSTAND THE MSDS (MATERIAL SAFETY DATA SHEET) FOR ADDITIONAL INFORMATION ON PERSONAL PROTECTIVE EQUIPMENT AND FOR SAFETY, HEALTH AND ENVIRONMENTAL INFORMATION.

For Environmental, Safety & Toxicology information, contact our Customer Service Department at 1.800.331.7654 in the US or (+33) (0) 1.49.00.88.02 in Europe to request a Material Safety Data Sheet.

More Technical Information Available

Ask your Arkema account manager for further information about other high quality Arkema additives for use in PVC resins, PVC alloys, and other polymer systems. Arkema produces a full line of heat stabilizers, impact modifiers, process aids and epoxidized vegetable oils. In addition, Arkema's Technical Service staff is available to assist compounders and processors solve formulation and processing problems.

Biostrength® Modifiers for Sustainable Additives

The Biostrength® product line of impact modifiers, melt strengtheners, and metal release agents are designed to improve properties and enhance processability of polylactic acid (PLA) and other biopolymers and biopolymer compounds for use in sheet extrusion, calendaring, blow molding, thermoforming and foamed applications. Biopolymer applications can now achieve the physical properties and economy of traditional petroleum-based engineering resins, so you can confidently deliver a more sustainable product.

Clearstrength® & Durastrength® Impact Modifiers

Clearstrength® and Durastrength® impact modifiers are designed to meet a wide variety of processing requirements, from high efficiency modifiers for durable, exterior building products to high clarity, crease resistant products for packaging applications. Arkema's impact modifiers provide PVC processors with cost effective performance and lot-to-lot consistency.

Plastistrength® Process Aids

Plastistrength® process aids offer producers of rigid and flexible PVC greater product uniformity by improving compound fusion and flow during extrusion, injection molding and thermoforming. Variances in wall thickness and surging can be greatly minimized with Plastistrength® process aids.

Thermolite® Heat Stabilizers

Thermolite® heat stabilizers are designed for use in the production of rigid, semi-rigid, foamed, and flexible PVC products. Arkema has developed PVC heat stabilizers specifically for extruded siding, profiles and pipe, injection molding, blow molded bottles, and calendared or extruded sheet. Arkema offers a full line of stabilizers that meet FDA requirements for food grade PVC packaging, and a full line of NSF authorized stabilizers for PVC potable water pipe & fittings.

Vikoflex® Epoxy Plasticizers

The Vikoflex® line of epoxy plasticizers offers flexible PVC producers one of the highest quality, dual-function epoxidized vegetable oils available. Arkema has the ability to produce material with exacting specifications to meet varied customer requirements.

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