

SEOJIN Chemical Co., Ltd.

- 1 Company
- 2 Product
- 3 Manufacturing Process
- 4 Packing System
- 5 Pollution Prevention
- 6 Quality Control
- 7 Certificates



SEOJIN CHEMICAL CO., LTD.

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www.seojinchem.com

1 Company

SEOJIN Chemical

SEOJIN Chemical which achieved success in localization here in Korea has grown as an eco-green company based on the human respect spirit for past 30 years.

We promise that we do our best to deliver the best value and product with investing in core technique development and securing the world best technique.

SEOJIN Chemical will keep trying to invest for high-tech facilities, laboratory, human resource development as well as be an eco-company with eco-friendly technique development.

VISION

The global vision of SEOJIN Chemical will be come true as firmed management and the best technique which whoever in the world can believe and trust. The world will be the place where SEOJIN Chemical can proudly show our long-experiences and accumulated abilities.

To satisfy all the needs in the world industry field, SEOJIN Chemical will newly create our distinguished clients' value with creative, innovative products and service which no competitors can imitate.

HISTORY

| | |
|---------------------|---|
| ESTABLISHED | In 1977 October |
| HISTORY | Established in 1977 Moved Headquarter to Ulsan in 1994 modernized facilities in 2003 automated process in 2009 |
| PRODUCTS | White Mineral Oil Refined Glycerin, 99.5% USP/BP/KP Other special oil |
| Head Quarter | 1, YongYeon-Ro 211 Beon-Gil, Nam-Gu, Ulsan 680-150, South Korea Tel: +82-52-712-0482 / Fax: +82-52-257-0486 |

2 Product

HIGH-PURITY

Tasteless, colorless, odorless of liquid saturated hydrocarbons compound 100% solvent/volatile organic compound(VOC) Free
harmful chemical substance(lead. Arsenic) Free

SAFETY

Allergic component from cosmetic Directives 2003/15/CE and 76/768/CE free
PARACOS Series meet FDA, 21 CFR 178-3620(a)
161 types of high-risk concerned SVHC component (carcinogenicity, mutagen, reproductive toxicity) from Appendix I of the Directive 67/548/CE and amendments Free RoHS (Restriction of the use of Hazardous Substances harmful substance Free

APPLICATION

Adaptable to various products
Cosmetic
Food additive Food industry
Medicines and pharmaceutical, Animal Vaccine Oil
Fertilizer coating
Plastic & Elastomers
Textile industry
Plasticizer

PARACOS series

- SEOJIN's PARACOS KF-series are highly refined white mineral oil that are removed aromatic hydrocarbon during the refinery process.
- It complies with pharmacopoeia purity requirements.
- SEOJIN's white oils are controlled according to ISO 9001, 14001, 18001 and HACCP.

| ITEM | Odor & Taste | Saybolt Color | Specific Gravity, 15/4 °C | Flash Point, C.O.C °C | Pour Point, °C | Kinematic Viscosity, 40.0 °C, cSt | Readily Carbonizable Substance | Polynuclear Compounds 260-350nm |
|-------------|--------------|---------------|---------------------------|-----------------------|----------------|-----------------------------------|--------------------------------|---------------------------------|
| Test Method | - | ASTM D 156 | ASTM D 4052 | ASTM D 92 | ASTM D 97 | ASTM D 7042 | ASTM D 565/USP | ASTM D 2269/USP |
| KF-40 | None | +30 | 0.830 | 140 | -45 | 5.2 | Pass | Pass |
| KF-50 | None | +30 | 0.827 | 158 | -36 | 7.7 | Pass | Pass |
| KF-70 | None | +30 | 0.835 | 202 | -33 | 12.3 | Pass | Pass |
| KF-85 | None | +30 | 0.837 | 202 | -27 | 15.4 | Pass | Pass |
| KF-100 | None | +30 | 0.839 | 204 | -21 | 20.3 | Pass | Pass |
| KF-120 | None | +30 | 0.841 | 214 | -21 | 21.9 | Pass | Pass |
| KF-150 | None | +30 | 0.843 | 214 | -18 | 30.3 | Pass | Pass |
| KF-250 | None | +30 | 0.846 | 254 | -15 | 44.0 | Pass | Pass |
| KF-350 | None | +30 | 0.857 | 264 | -15 | 70.5 | Pass | Pass |
| KF-550 | None | +30 | 0.865 | 278 | -15 | 103.0 | Pass | Pass |
| KF-700 | None | +30 | 0.870 | 284 | -21 | 132.3 | Pass | Pass |

- The values quoted above are typical of normal production. They do not constitute a specification.
- KF-Series meets the requirement of the USP/NF/BP/JP/Ph.Eur. for Mineral Oil
- FDA regulation 21 CFR 172.878 & 21 CFR 178.3620(a) for direct food-contact

* MAIN APPLICATION

- FOOD INDUSTRY

Food Packing Material, Food Grade Lubricants & Grease

- PHARMACEUTICALS

Laxatives, Veterinary Vaccines including oil adjuvant

- PLASTIC & ELASTOMERS

Polystyrene Internal Lubricants, PVC External Lubricants, Plastic Annealing, Catalyst Carriers, Thermoplastic Rubber-Extender Oils

- TEXTILE INDUSTRY

- TPE, TPV, TPR

- LIBS(Lithium-ion Battery Separator)

- MISCELLANEOUS

Adhesives , Household Cleaners & Polishes

PARACOS T-series

- SEOJIN's PARACOS KF-series are highly refined white mineral oil that are removed aromatic hydrocarbon during the refinery process.
- It complies with pharmacopoeia purity requirements.
- SEOJIN's white oils are controlled according to ISO 9001, 14001, 18001 and HACCP.

| ITEM | Odor & Taste | Saybolt Color | Specific Gravity, 15/4 °C | Flash Point, C.O.C °C | Pour Point, °C | Kinematic Viscosity, 40.0 °C, cSt | Readily Carbonizable Substance | Polynuclear Compounds 260-350nm | Hydro Carbon type, Ca/Cn/Cp, % |
|-------------|--------------|---------------|---------------------------|-----------------------|----------------|-----------------------------------|--------------------------------|---------------------------------|--------------------------------|
| Test Method | - | ASTM D 156 | ASTM D 4052 | ASTM D 92 | ASTM D 97 | ASTM D 7042 | ASTM D 565/USP | ASTM D 2269/USP | ASTM D 2140 |
| KF-50T | None | +30 | 0.835 | 158 | -30 | 7.7 | Pass | Pass | 0/33/67 |
| KF-85T | None | +30 | 0.848 | 190 | -21 | 15.9 | Pass | Pass | 0/33/67 |
| KF-150T | None | +30 | 0.859 | 212 | -15 | 29.0 | Pass | Pass | 0/33/67 |
| KF-350T | None | +30 | 0.866 | 256 | -15 | 71.5 | Pass | Pass | 0/31/69 |
| KF-550T | None | +30 | 0.867 | 266 | -15 | 100.5 | Pass | Pass | 0/30/70 |

- The values quoted above are typical of normal production. They do not constitute a specification.
- KF-Series meets the requirement of the USP/NF/BP/JP/Ph.Eur. for Mineral Oil
- FDA regulation 21 CFR 172.878 & 21 CFR 178.3620(a) for direct food-contact

* MAIN APPLICATION

- FOOD INDUSTRY

Food Packing Material, Food Grade Lubricants & Grease

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Laxatives, Veterinary Vaccines including oil adjuvant

- PLASTIC & ELASTOMERS

Polystyrene Internal Lubricants, PVC External Lubricants, Plastic Annealing, Catalyst Carriers, Thermoplastic Rubber-Extender Oils

- TEXTILE INDUSTRY

- TPE, TPV, TPR

- LIBS(Lithium-ion Battery Separator)

- MISCELLANEOUS

Adhesives , Household Cleaners & Polishes

PARAMIUM series (High Viscosity Oil)

- SEOJIN's PARAMIUM KL series are mostly applied for industrial use.
- SEOJIN's white oils are controlled according to ISO 9001, 14001, 18001 and HACCP.

| ITEMS | Odor & Taste | Saybolt Color | Specific Gravity, 15/4°C | Flash Point, C.O.C °C | Pour Point, °C | Kinematic Viscosity, 40.0°C cSt |
|-------------|--------------|---------------|-----------------------------|--------------------------|----------------|---------------------------------------|
| Test Method | - | ASTM D 156 | ASTM D 4052 | ASTM D 92 | ASTM D 97 | ASTM D 7042 |
| KL-700 | None | +30 | 0.870 | 282 | -21 | 137.3 |
| KL-900 | None | +30 | 0.873 | 282 | -27 | 174.0 |
| KL-1100 | None | +30 | 0.875 | 284 | -27 | 209.6 |
| KL-1300 | None | +30 | 0.876 | 284 | -27 | 234.0 |
| KL-1500 | None | +30 | 0.878 | 286 | -33 | 280.0 |
| KL-2100 | None | +30 | 0.879 | 302 | -30 | 379.3 |

- The values quoted above are typical of normal production. They do not constitute a specification.
- FDA regulation 21 CFR 178.3620(b) for indirect food-contact applications.

* MAIN APPLICATION

- PLASTIC & ELASTOMERS

PVC External Lubricants, Plastic Annealing Catalyst Carriers, Parts of an automobile: Trim, Sid Mold, Instrument

Panel covering material Air Intake Hose, Air Duct, Lamp Packing

Cable covering material: Booster Cable, Pump Cable, Electric wire, Household Appliances Hose

Electron: Connector Cover, Rubber Switch, Timing Belt

Industry: Valve, Conveyor Belt, Flexible Coupling Packing, Dustproof

- High grade(SEBS, SBS, EPDM) rubber compound, Rubber extender, Rubber softener
- Carbon Master batch
- Hyper Compressor Oils

PARATECH series

- SEOJIN's PARAMIUM KL series are mostly applied for industrial use.
- SEOJIN's white oils are controlled according to ISO 9001, 14001, 18001 and HACCP.

| ITEMS | Odor & Taste | Color | Specific Gravity, 15/4°C | Flash Point, C.O.C °C | Pour Point, °C | Kinematic Viscosity, 40.0 °C cSt |
|-------------|--------------|----------------------------|-----------------------------|--------------------------|----------------|--|
| Test Method | - | ASTM D 1500/ ASTM D 156 | ASTM D 4052 | ASTM D 92 | ASTM D 97 | ASTM D 7042 |
| HC-220 | None | L0.5 | 0.874 | 290 | -24 | 220 |
| HC-220(N) | None | /+30 | 0.873 | 290 | -24 | 224 |
| HC-320 | None | L0.5 | 0.879 | 310 | -24 | 312 |
| HC-320(N) | None | /+30 | 0.878 | 310 | -24 | 314 |

- The values quoted above are typical of normal production. They do not constitute a specification.
- SEOJIN PARATECH series are produced from components listed in the European Directive 2002/72/EC relating to plastic materials and articles intended to come into contact with foodstuffs.

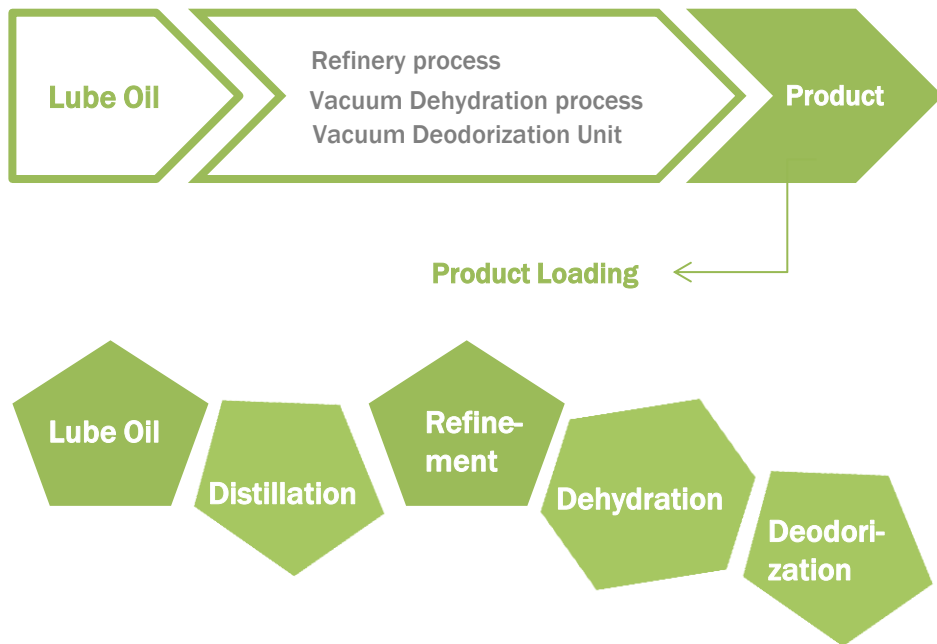
* MAIN APPLICATION

- Hyper Compressor Oils

* ADVANTAGES

- Excellent cylinder lubricant helping to prolong compressor life
- Suitable for applications where it can come in contact with food
- Outstanding corrosion protection and good viscosity under pressure behavior

3 Manufacturing Process



Manufacturing Process

SEOJIN Products are produced and managed in accordance with the food additive standard, ISO9001/14001/18001 passing through high-refine process using the newest white mineral oil production facilities.

MANUFACTURING PROCESS



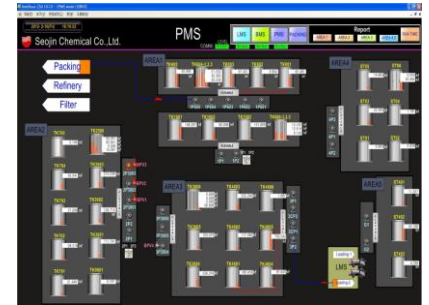
Distillation

This process is one of the steps which divide to a fraction having regular range of boiling point. It helps to control carbon distribution condition.



Refinement

After removing harmful and impurities, It produces liquid paraffin which is stable and harmless to direct/indirect contact



Dehydration

Moisture content causes microbial propagation in white mineral oil, and it can occur white turbidity when temperature is lower. Dehydration process makes our product with little moisture content, and it is able to supply stable product by controlling moisture content with PPM unit.

Deodorization

It is the process can get rid of odor from the oil which has its own or through refine process. It helps to maximize the effect of flavoring due to odorless products.

Storage

Our white mineral oil keeps in strictly separate by product. You can receive clean and even quality of product at right time as each product for cosmetic has its exclusive storage tank.

Automatic System

The automatic system throughout all process, production, tank operation etc., is available to supply the product faster and more accurate because of efficient production and easy inventory control.

4 Packing System

DRUM

CLEAN ROOM

External pollution prevention with proper circumstance such as Cleanliness, Sanitary Control, insect-proof, temperature and humidity control.

Cleanliness is controlled as 100,000 class (30 μ size of dirt are 100,000 in 1m³)

Exclusive LINE & FILTER

Prevent impurities and cross-contamination with other products.

Package(Drum) Management

Prevent external pollution by drum total inspection.

Select and use proper package as it determines final quality and value.

Use drum lifter or forklift truck to prevent transform, damage and leak etc. while transfer.

Automatic Filling System

Supply exact quality and exact quantity through automatic filling system.



BULK

White Mineral Oil Exclusive Vehicle (Directly operated)

Supply the product safely with thorough management of vehicle and packing product control.

Bulk Loading Depot

It is able to safety-loading our product even if in the rain, and the exclusive line for all product prevent cross-contamination.

Use Sole Line and Filter

Weight Scale and Loading

Supply exact quality and exact quantity through Total Monitoring System.



STORAGE

Indoor Warehouse

Packed drum is stored in indoor warehouse and it managed safely with proper circumstance such as Cleanliness, Sanitary Control, insect-proof, temperature and humidity control.

Barcode

Easy identification of each product using product and lot unit, and it helps fast trace and identify when the problem for product happen.



5 Pollution Preventive Measures

PROCESS

Independent production facilities only for white mineral oil
Exclusive line and independent production for food grade and cosmetic.
Outstanding safety and stability with SUS material facilities.

LINES

Have exclusive line and valve from production to storage to prevent cross-contamination from another product.
Real time LINE monitoring system.
Constant line-inspection by cleaning system.

TANKS

Fill out with N2 gas to prevent secondary pollution.
Prevent cross-contamination with labeling and exclusive line and valve of stored and released.
Real-time tank monitoring system.
Tank control system (biennial shut-down inspection)
Cleaning based on standard (contracted with a specialized company)
Stable storage with SUS material.

FILTERING

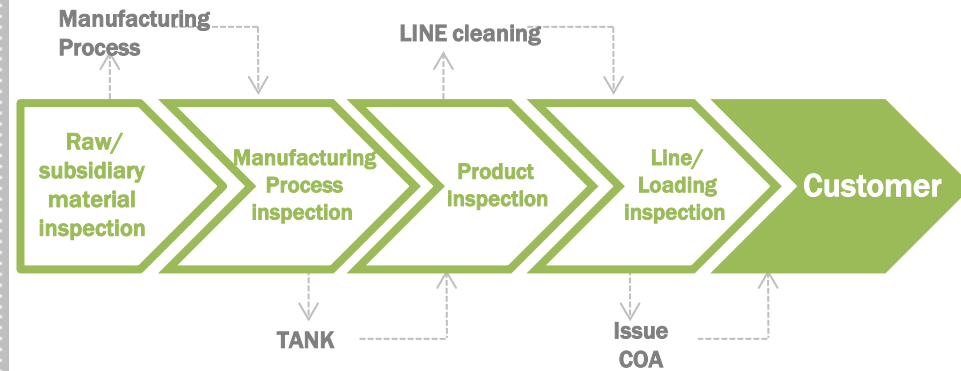
PRODUCTION ► 5 micro FILTER ► TANK ► 1micro FILTER ► LOADING
Use filter among each process, manufacturing, product and release to avoid impurities.

LOADING

Sole release-line system for each product.
Prevent cross-contamination through loading monitoring system.
Prevent cross-contamination through independent filter system for each nominated tank and product.

6 Quality Control

QUALITY CONTROL SYSTEM



Produce suitable product to regulated requirement by strict inspection of each step, and it never move forward unless get pass at corresponding process.

SEOJIN manage the quality control based on Feedback system.

CUSTOMER SATISFACTION SYSTEM



SEOJIN tries to improve customer satisfaction, minimize discontentment and provide fast and accurate service.

7 Certificates



Quality management system ISO 9001 certificate
Environmental management system ISO 14001 Certificate
Safety and health management system ISO 18001 Certificate

HACCP Certificate

HALAL Certificate of Islam food regulation policy
KOSHER certificate of Judaism food commandment

REACH (Registration Evaluation Authorization and Restriction of Chemical)
of Europe Union Certificate
Food additive manufacturer registration

Meet FDA 21 CFR 172.878, 21 CFR 178.3620(a) Standard
Meet Pharmacopoeia standard of USP/NF/BP/JP/Ph.Eur etc.
Raw material management based on cosmetic material standard of KFDA-KCA