

SAFETY DATA SHEET



Section 1. Identification

GHS product identifier	: Harvest King All Season Lith-Flex Multi-Purpose Grease
Synonyms	: Grease ; CITGO® Material Code: 665408176
Code	: 665408176
MSDS #	: 665408176

Relevant identified uses of the substance or mixture and uses advised against

Not applicable.

Supplier's details	: CITGO Petroleum Corporation P.O. Box 4689 Houston, TX 77210 sdsvend@citgo.com
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Emergency telephone number (with hours of operation)	: Technical Contact: (800) 248-4684 Medical Emergency: (832) 486-4700 CHEMTREC Emergency: (800) 424-9300 (United States Only)
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Section 2. Hazards identification

OSHA/HCS status	: This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).
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Classification of the substance or mixture	: AQUATIC HAZARD (ACUTE) - Category 1 AQUATIC HAZARD (LONG-TERM) - Category 1
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GHS label elements

Hazard pictograms

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Signal word	: Warning
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Hazard statements	: Very toxic to aquatic life with long lasting effects.
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Precautionary statements

General	: Keep out of reach of children.
Prevention	: Avoid release to the environment. Do not get in eyes, on skin, or on clothing.
Response	: Collect spillage. Wash with plenty of soap and water or use a recognized skin cleanser.
Storage	: Store in accordance with all local, regional, national and international regulations. Store in a dry place and a closed container. Empty containers may contain material residues which can ignite with explosive force. Misuse of empty containers can be dangerous if used to store toxic, flammable, or reactive materials. Cutting or welding of empty containers can cause fire, explosion, or release of toxic fumes from residues. Do not pressurize or expose empty containers to open flame, sparks, or heat. Keep container closed and drum bungs in place. All label warnings and precautions must be observed. Return empty drums to a qualified reconditioner. Consult appropriate federal, state and local authorities before reusing, reconditioning, reclaiming, recycling, or disposing of empty containers and/or waste residues of this material.

Disposal	: Dispose of contents and container in accordance with all local, regional, national and international regulations.
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Hazards not otherwise classified	: Injection of pressurized hydrocarbons can cause severe permanent tissue damage. Initial symptoms may be minor. Injection of petroleum hydrocarbons requires immediate medical attention.
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Section 3. Composition/information on ingredients

Substance/mixture : Mixture
Other means of identification : Grease ; CITGO® Material Code: 665408176

CAS number/other identifiers

CAS number : Not applicable.

Ingredient name	%	CAS number
Distillates (petroleum), hydrotreated heavy paraffinic	≥90	64742-54-7
Distillates (petroleum), hydrotreated heavy naphthenic	≥75 - ≤90	64742-52-5
Residual oils (petroleum), solvent-dewaxed	≥10 - ≤25	64742-62-7
molybdenum disulphide	≤3	1317-33-5
calcium carbonate	≤3	471-34-1
Natural graphite	≤3	7782-42-5
Butene, homopolymer (products derived from either/or But-1-ene/But-2-ene)	≤2.4	9003-29-6
zinc oxide	≤2	1314-13-2
Lead	<0.1	7439-92-1
cadmium (non-pyrophoric)	<0.1	7440-43-9

* = Various ** = Mixture *** = Proprietary

Any concentration shown as a range is to protect confidentiality or is due to process variation.

There are no additional ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified and hence require reporting in this section.

Occupational exposure limits, if available, are listed in Section 8.

Section 4. First aid measures

Description of necessary first aid measures

- Eye contact** : Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Get medical attention if irritation occurs.
- Inhalation** : Remove victim to fresh air and keep at rest in a position comfortable for breathing. In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours.
- Skin contact** : Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Get medical attention if symptoms occur.
- Ingestion** : Wash out mouth with water. Remove dentures if any. Remove victim to fresh air and keep at rest in a position comfortable for breathing. Do not induce vomiting unless directed to do so by medical personnel. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. Get medical attention if adverse health effects persist or are severe. Never give anything by mouth to an unconscious person. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.

Most important symptoms/effects, acute and delayed

Potential acute health effects

- Eye contact** : No known significant effects or critical hazards.
- Inhalation** : Serious effects may be delayed following exposure. Exposure to decomposition products may cause a health hazard.
- Skin contact** : Injection of pressurized hydrocarbons can cause severe permanent tissue damage. Initial symptoms may be minor.
- Ingestion** : No known significant effects or critical hazards.

Over-exposure signs/symptoms

- Eye contact** : No specific data.
- Inhalation** : No specific data.
- Skin contact** : No specific data.

Section 4. First aid measures

Ingestion : No specific data.

Indication of immediate medical attention and special treatment needed, if necessary

Notes to physician : In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours. In the event of injection in underlying tissue, immediate treatment should include extensive incision, debridement and saline irrigation. Inadequate treatment can result in ischemia and gangrene. Early symptoms may be minimal.

Specific treatments : Treat symptomatically and supportively.

Protection of first-aiders : No action shall be taken involving any personal risk or without suitable training. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation.

See toxicological information (Section 11)

Section 5. Fire-fighting measures

Extinguishing media

Suitable extinguishing media : Use an extinguishing agent suitable for the surrounding fire.

Unsuitable extinguishing media : None known.

Specific hazards arising from the chemical : This material is very toxic to aquatic life with long lasting effects. Fire water contaminated with this material must be contained and prevented from being discharged to any waterway, sewer or drain.

Hazardous thermal decomposition products : Decomposition products may include the following materials:
carbon dioxide
carbon monoxide
nitrogen oxides
sulfur oxides
phosphorus oxides
metal oxide/oxides

Special protective actions for fire-fighters : Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training.

Special protective equipment for fire-fighters : Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

Section 6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

For non-emergency personnel : No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Put on appropriate personal protective equipment.

For emergency responders : If specialized clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".

Environmental precautions : Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air). Water polluting material. May be harmful to the environment if released in large quantities. Collect spillage.

Methods and materials for containment and cleaning up

Section 6. Accidental release measures

- Small spill** : Move containers from spill area. Vacuum or sweep up material and place in a designated, labeled waste container. Dispose of via a licensed waste disposal contractor.
- Large spill** : Move containers from spill area. Approach release from upwind. Prevent entry into sewers, water courses, basements or confined areas. Vacuum or sweep up material and place in a designated, labeled waste container. Dispose of via a licensed waste disposal contractor. Note: see Section 1 for emergency contact information and Section 13 for waste disposal.

Section 7. Handling and storage

Precautions for safe handling

- Protective measures** : Put on appropriate personal protective equipment (see Section 8). Do not ingest. Avoid contact with eyes, skin and clothing. Avoid release to the environment. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Empty containers retain product residue and can be hazardous. Do not reuse container.
- Advice on general occupational hygiene** : Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.

- Conditions for safe storage, including any incompatibilities** : Store in accordance with local regulations. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabeled containers. Use appropriate containment to avoid environmental contamination. See Section 10 for incompatible materials before handling or use.
- Bulk Storage Conditions: Do not apply heat or flame to stockpiled material. Rotate stock to reduce the potential for hot spots. Do not store with oxidizers. Minimize dust creation by keeping material moist and/or covered.

Section 8. Exposure controls/personal protection

Control parameters

Occupational exposure limits

Distillates (petroleum), hydrotreated heavy paraffinic

OSHA PEL (United States, 5/2018).

TWA: 5 mg/m³ 8 hours.

ACGIH TLV (United States, 1/2022).

TWA: 5 mg/m³ 8 hours. Form: Inhalable fraction

NIOSH REL (United States, 10/2020).

TWA: 5 mg/m³ 10 hours. Form: Mist

STEL: 10 mg/m³ 15 minutes. Form: Mist

OSHA PEL (United States, 5/2018).

TWA: 5 mg/m³ 8 hours.

ACGIH TLV (United States, 1/2022).

TWA: 5 mg/m³ 8 hours. Form: Inhalable fraction

NIOSH REL (United States, 10/2020).

TWA: 5 mg/m³ 10 hours. Form: Mist

STEL: 10 mg/m³ 15 minutes. Form: Mist

ACGIH TLV (United States, 6/2013).

TWA: 5 mg/m³ 8 hours. Form: Inhalable fraction

NIOSH REL (United States, 4/2013).

TWA: 5 mg/m³ 10 hours. Form: Mist

STEL: 10 mg/m³ 15 minutes. Form: Mist

OSHA PEL (United States, 2/2013).

Distillates (petroleum), hydrotreated heavy naphthenic

Residual oils (petroleum), solvent-dewaxed

Section 8. Exposure controls/personal protection

molybdenum disulphide

TWA: 5 mg/m³ 8 hours.

ACGIH TLV (United States, 1/2022).

TWA: 10 mg/m³, (as Mo) 8 hours. Form: Inhalable fraction

TWA: 3 mg/m³, (as Mo) 8 hours. Form: Respirable fraction

OSHA PEL (United States, 5/2018).

TWA: 15 mg/m³, (as Mo) 8 hours. Form: Total dust

NIOSH REL (United States, 10/2020).

TWA: 5 mg/m³ 10 hours. Form: Respirable fraction

TWA: 10 mg/m³ 10 hours. Form: Total

ACGIH TLV (United States).

TWA: 2 mg/m³ 8 hours. Form: Respirable fraction

ACGIH TLV (United States, 1/2022).

TWA: 2 mg/m³ 8 hours. Form: Respirable fraction

NIOSH REL (United States, 10/2020).

TWA: 2.5 mg/m³ 10 hours. Form: Respirable fraction

OSHA PEL (United States, 5/2018).

TWA: 5 mg/m³ 8 hours. Form: Respirable fraction

TWA: 15 mg/m³ 8 hours. Form: Total dust

OSHA PEL (United States).

TWA: 15 mg/m³ 8 hours. Form: Total dust

OSHA PEL Z3 (United States, 6/2016).

TWA: 15 mppcf 8 hours.

NIOSH REL (United States, 10/2020).

CEIL: 15 mg/m³ Form: Dust

TWA: 5 mg/m³ 10 hours. Form: Dust and fumes

STEL: 10 mg/m³ 15 minutes. Form: Fume

OSHA PEL (United States, 5/2018).

TWA: 5 mg/m³ 8 hours. Form: Fume

TWA: 5 mg/m³ 8 hours. Form: Respirable fraction

TWA: 15 mg/m³ 8 hours. Form: Total dust

ACGIH TLV (United States).

TWA: 2 mg/m³ 8 hours. Form: Respirable

STEL: 10 mg/m³ 15 minutes. Form:

Respirable

ACGIH TLV (United States, 1/2022).

TWA: 2 mg/m³ 8 hours. Form: Respirable fraction

STEL: 10 mg/m³ 15 minutes. Form:

Respirable fraction

OSHA PEL (United States). Notes:

Respirable

TWA: 5 mg/m³ 8 hours. Form: Respirable dust

OSHA PEL (United States). Notes: Total

TWA: 15 mg/m³ 8 hours. Form: Total dust

zinc oxide

ACGIH TLV (United States, 1/2022).

TWA: 0.05 mg/m³, (as Pb) 8 hours.

NIOSH REL (United States, 10/2020).

TWA: 0.05 mg/m³ 8 hours.

OSHA PEL (United States, 5/2018).

TWA: 50 µg/m³, (as Pb) 8 hours.

Lead

Section 8. Exposure controls/personal protection

cadmium (non-pyrophoric)

OSHA PEL Z2 (United States, 2/2013).TWA: 0.2 mg/m³ 8 hours. Form: DustCEIL: 0.6 mg/m³ Form: DustTWA: 0.1 mg/m³ 8 hours. Form: FumeCEIL: 0.3 mg/m³ Form: Fume**OSHA PEL (United States, 5/2018).**TWA: 5 µg/m³, (as Cd) 8 hours.**ACGIH TLV (United States, 1/2022).**TWA: 0.002 mg/m³, (as Cd) 8 hours. Form: Respirable fraction

Appropriate engineering controls

- : Good general ventilation should be sufficient to control worker exposure to airborne contaminants.

Environmental exposure controls

- : Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, vapor controls, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.

Individual protection measures

Hygiene measures

- : Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.

Eye/face protection

- : Safety glasses equipped with side shields are recommended as minimum protection in industrial settings. If contact is possible, the following protection should be worn, unless the assessment indicates a higher degree of protection: Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists, gases or dusts. If inhalation hazards exist, a full-face respirator may be required instead.

Skin protection

Hand protection

- : Chemical-resistant gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary. Considering the parameters specified by the glove manufacturer, check during use that the gloves are still retaining their protective properties. It should be noted that the time to breakthrough for any glove material may be different for different glove manufacturers.

Body protection

- : Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

Other skin protection

- : Appropriate footwear and any additional skin protection measures should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

Respiratory protection

- : Avoid inhalation of gases, vapors, mists or dusts. Use a properly fitted, particulate filter respirator complying with an approved standard if a risk assessment indicates this is necessary. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.

Section 9. Physical and chemical properties

The conditions of measurement of all properties are at standard temperature and pressure unless otherwise indicated.

Appearance

Physical state

- : Solid. [Paste.]

Color

- : Dark amber to black

Odor

- : Petroleum.

pH

- : Not available.

Boiling point, initial boiling point, and boiling range

- : Not available.

Flash point	: Open cup: >150°C (>302°F) [Estimated]
Evaporation rate	: <1 (n-butyl acetate. = 1)
Lower and upper explosive (flammable) limits	: Lower: 1% Upper: 7%
Vapor pressure	: <0.0013 kPa (<0.01 mm Hg)
Relative vapor density	: >10 [Air = 1]
Relative density	: 0.97
Density lbs/gal	: Estimated 8.09 lbs/gal
Density gm/cm³	: Not available.
Gravity, °API	: Estimated 14 @ 60 F
Solubility	: Insoluble in the following materials: cold water and hot water.
Auto-ignition temperature	: Not available.
NLGI Grade	: 2
Flow time (ISO 2431)	: Not available.
Particle characteristics	
Median particle size	: Not available.

Section 10. Stability and reactivity

Reactivity	: Not expected to be Explosive, Self-Reactive, Self-Heating, or an Organic Peroxide under US GHS Definition(s).
Chemical stability	: The product is stable.
Possibility of hazardous reactions	: Under normal conditions of storage and use, hazardous reactions will not occur.
Conditions to avoid	: No specific data.
Incompatible materials	: No specific data.
Hazardous decomposition products	: Under normal conditions of storage and use, hazardous decomposition products should not be produced.

Section 11. Toxicological information

Information on toxicological effects

Acute toxicity

Product/ingredient name	Result	Species	Dose	Exposure
Distillates (petroleum), hydrotreated heavy paraffinic	LD50 Dermal	Rat	>5000 mg/kg	-
	LD50 Oral	Rat	>5000 mg/kg	-
Distillates (petroleum), hydrotreated heavy naphthenic	LD50 Oral	Rat	>5000 mg/kg	-
	LD50 Oral	Rat	>5000 mg/kg	-
molybdenum disulphide	LD50 Oral	Rat	>5000 mg/kg	-
	LD50 Oral	Rat	>6000 mg/kg	-
	LDLo Oral	Rat	6 g/kg	-
	LD Dermal	Rat	>2 g/kg	-
	LD Oral	Rat	>2 g/kg	-
	LD50 Oral	Rat	6450 mg/kg	-
calcium carbonate	LD50 Oral	Rat	6450 mg/kg	-
cadmium (non-pyrophoric)	LD50 Oral	Rat	2330 mg/kg	-

Conclusion/Summary :

Section 11. Toxicological information

Distillates (petroleum), hydrotreated heavy paraffinic: Mineral oil mists derived from highly refined oils are reported to have low acute and sub-acute toxicities in animals. Effects from single and short-term repeated exposures to high concentrations of mineral oil mists well above applicable workplace exposure levels include lung inflammatory reaction, lipoid granuloma formation and lipoid pneumonia. In acute and sub-acute studies involving exposures to lower concentrations of mineral oil mists at or near current work place exposure levels produced no significant toxicological effects.

Distillates (petroleum), hydrotreated heavy naphthenic: Mineral oil mists derived from highly refined oils are reported to have low acute and sub-acute toxicities in animals. Effects from single and short-term repeated exposures to high concentrations of mineral oil mists well above applicable workplace exposure levels include lung inflammatory reaction, lipoid granuloma formation and lipoid pneumonia. In acute and sub-acute studies involving exposures to lower concentrations of mineral oil mists at or near current work place exposure levels produced no significant toxicological effects.

Dec-1-ene, homopolymer, hydrogenated: Practically non-irritating to eyes. Practically non-irritating to the skin.

Poly alpha olefins:

Potential mild skin irritant from repeated or prolonged exposures.

molybdenum disulphide: In general, insoluble compounds of molybdenum, such as molybdenum disulfide, exhibit a low order of toxicity.

Natural graphite: Laboratory studies have associated graphite with mild pulmonary fibrotic reactions when administered to rats by intratracheal injection. Numerous epidemiological studies performed in the mining, milling and carbon electrode manufacturing industries have associated a form of pneumoconiosis with overexposure to both synthetic and natural graphite. These data are not expected to be relevant to graphic used in a grease or oil matrix.

tris(dipentyldithiocarbamate-S,S')antimony: ORAL (LD50): Acute: 16,400 mg/kg (rat)
DERMAL (LD50): Acute: 16,000 mg/kg (rabbit)

DERMAL (Primary Skin Irritation): Mild Irritation (rabbit)

EYE (Primary Eye Irritation): Mild Irritation (rabbit)

Salmonella Mutagenicity Assay in the presence and absence of Aroclor - induced rat liver microsomal enzymes (Ames Test): Negative

In micronucleus cytogenetic assay in mice, dose levels of 1250, 2500 and 5,000 mg/kg did not induce bone marrow toxicity in males or females. No significant increase in micronucleated polychromatic erythrocytes was observed in male mice. Mid and high dose produced an increase in micronucleated polychromatic erythrocytes in female mice. The compound is weakly positive in the mouse micronucleus assay.

Irritation/Corrosion

Product/ingredient name	Result	Species	Score	Exposure	Observation
calcium carbonate	Eyes - Mild irritant	Rabbit	-	-	-
	Respiratory - Irritant	Rabbit	-	-	-
	Skin - Moderate irritant	Rabbit	-	24 hours 500 mg	-
zinc oxide	Eyes - Mild irritant	Rabbit	-	24 hours 500 mg	-
	Skin - Mild irritant	Rabbit	-	24 hours 500 mg	-

Skin : **molybdenum disulphide:** May cause skin irritation.

Eyes : **molybdenum disulphide:** May cause eye irritation.

Respiratory : **molybdenum disulphide:** May cause respiratory irritation.

Sensitization

Not available.

Skin : No additional information.

Respiratory : No additional information.

Mutagenicity

Not available.

Section 11. Toxicological information

Conclusion/Summary : No additional information.

Carcinogenicity

Not available.

Conclusion/Summary : No additional information.

Classification

Product/ingredient name	OSHA	IARC	NTP
Lead cadmium (non-pyrophoric)	- +	2B 1	Reasonably anticipated to be a human carcinogen. Known to be a human carcinogen.

Reproductive toxicity

Not available.

Conclusion/Summary : No additional information.

Teratogenicity

Not available.

Conclusion/Summary : No additional information.

Specific target organ toxicity (single exposure)

Name	Category	Route of exposure	Target organs
molybdenum disulphide	Category 3	-	Respiratory tract irritation

Specific target organ toxicity (repeated exposure)

Name	Category	Route of exposure	Target organs
Lead	Category 1	-	central nervous system (CNS), peripheral nervous system
	Category 2	oral	blood system, kidneys
cadmium (non-pyrophoric)	Category 1	-	-

Aspiration hazard

Name	Result
Butene, homopolymer (products derived from either/or But-1-ene/But-2-ene)	ASPIRATION HAZARD - Category 1

Information on the likely routes of exposure : Routes of entry anticipated: Dermal.

Potential acute health effects

Eye contact : No known significant effects or critical hazards.

Inhalation : Serious effects may be delayed following exposure. Exposure to decomposition products may cause a health hazard.

Skin contact : Injection of pressurized hydrocarbons can cause severe permanent tissue damage. Initial symptoms may be minor.

Ingestion : No known significant effects or critical hazards.

Symptoms related to the physical, chemical and toxicological characteristics

Eye contact : No specific data.

Inhalation : No specific data.

Skin contact : No specific data.

Ingestion : No specific data.

Section 11. Toxicological information

Delayed and immediate effects and also chronic effects from short and long term exposure

Short term exposure

Potential immediate effects : Not available.

Potential delayed effects : Not available.

Long term exposure

Potential immediate effects : Not available.

Potential delayed effects : Not available.

Potential chronic health effects

Not available.

General : No known significant effects or critical hazards.

Carcinogenicity : No known significant effects or critical hazards.

Mutagenicity : No known significant effects or critical hazards.

Teratogenicity : No known significant effects or critical hazards.

Developmental effects : No known significant effects or critical hazards.

Fertility effects : No known significant effects or critical hazards.

Numerical measures of toxicity

Acute toxicity estimates

Product/ingredient name	Oral (mg/kg)	Dermal (mg/kg)	Inhalation (gases) (ppm)	Inhalation (vapors) (mg/l)	Inhalation (dusts and mists) (mg/l)
Harvest King All Season Lith-Flex Multi-Purpose Grease	N/A	17710.3	N/A	N/A	N/A
calcium carbonate	6450	N/A	N/A	N/A	N/A
cadmium (non-pyrophoric)	2330	N/A	N/A	N/A	0.05

Section 12. Ecological information

Toxicity

Product/ingredient name	Result	Species	Exposure
Distillates (petroleum), hydrotreated heavy naphthenic	Acute EC50 >10000 mg/l Fresh water	Daphnia - Daphnia magna	48 hours
	Acute LC50 >100 mg/l Fresh water	Fish - Pimephales promelas	96 hours
	Acute NOEL >100 mg/l Fresh water	Algae - Pseudokirchneriella subcapitata	72 hours
calcium carbonate	Acute LC50 >56000 ppm Fresh water	Fish - Gambusia affinis - Adult	96 hours
	Chronic NOEC 16.5 mg/l Fresh water	Fish - Rhamdia quelen	30 days
Butene, homopolymer (products derived from either/ or But-1-ene/But-2-ene)	EC50 >1000 mg/l similar material	Daphnia	48 hours
	LC50 >1000 mg/l similar material	Fish	96 hours
zinc oxide	Acute IC50 1.85 mg/l Marine water	Algae - Skeletonema costatum	96 hours
	Acute LC50 98 µg/l Fresh water	Daphnia - Daphnia magna - Neonate	48 hours
	Acute LC50 1.1 ppm Fresh water	Fish - Oncorhynchus mykiss	96 hours
Lead	Acute EC50 105 ppb Marine water	Algae - Chaetoceros sp. - Exponential growth phase	72 hours
	Acute EC50 0.489 mg/l Marine water	Algae - Ulva pertusa	96 hours

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cadmium (non-pyrophoric)	Acute EC50 8000 µg/l Fresh water	Aquatic plants - Lemna minor	4 days
	Acute LC50 530 µg/l Fresh water	Crustaceans - Ceriodaphnia reticulata	48 hours
	Acute LC50 0.594 mg/l Fresh water	Daphnia - Daphnia magna	48 hours
	Acute LC50 0.44 ppm Fresh water	Fish - Cyprinus carpio - Juvenile (Fledgling, Hatchling, Weanling)	96 hours
	Chronic NOEC 0.25 mg/l Marine water	Algae - Ulva pertusa	96 hours
	Chronic NOEC 0.03 µg/l Fresh water	Fish - Cyprinus carpio	4 weeks
	Acute EC50 0.095 mg/l Marine water	Algae - Ulva pertusa	96 hours
	Acute EC50 200 µg/l Fresh water	Aquatic plants - Lemna minor	4 days
	Acute EC50 13.5 µg/l Fresh water	Daphnia - Daphnia magna - Neonate	48 hours
	Acute LC50 0.072 µg/l Marine water	Crustaceans - Amphipoda - Adult	48 hours
	Acute LC50 1 µg/l Fresh water	Fish - Pimephales promelas - Juvenile (Fledgling, Hatchling, Weanling)	96 hours
	Chronic NOEC 2 µg/l Fresh water	Algae - Parachlorella kessleri - Exponential growth phase	72 hours
	Chronic NOEC 0.02 µg/l Fresh water	Fish - Cyprinus carpio	4 weeks

Conclusion/Summary : Not available.

Persistence and degradability

Conclusion/Summary : **Butene, homopolymer (products derived from either/or But-1-ene/But-2-ene)**: This product is unlikely to biodegrade at a significant rate.

Product/ingredient name	Aquatic half-life	Photolysis	Biodegradability
Distillates (petroleum), hydrotreated heavy naphthenic	-	-	Inherent

Bioaccumulative potential

Product/ingredient name	LogP _{ow}	BCF	Potential
Distillates (petroleum), hydrotreated heavy naphthenic	>6	-	high
Butene, homopolymer (products derived from either/or But-1-ene/But-2-ene)	7.6 to 7.8	314 to 1882	high
zinc oxide	-	28960	high

Mobility in soil

Soil/water partition coefficient (K_{oc}) : Not available.

Other adverse effects : No known significant effects or critical hazards.





Section 13. Disposal considerations

Disposal methods : The generation of waste should be avoided or minimized wherever possible. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Waste should not be disposed of untreated to the sewer unless fully compliant with the requirements of all authorities with jurisdiction. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible. This material and its container must be disposed of in a safe way. Care should be taken when handling emptied containers that have not been cleaned or rinsed out. Empty containers or liners may retain some product residues. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains

Section 13. Disposal considerations

and sewers.

Section 14. Transport information

	DOT Classification	IMDG	IATA
UN number	Not regulated.	UN3077	UN3077
UN proper shipping name	-	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (zinc oxide)	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (zinc oxide)
Transport hazard class(es)	-	9  	9  
Packing group	-	III	III
Environmental hazards	No.	Yes.	Yes.

Oil: The product(s) represented by this SDS is (are) regulated as “oil” under 49 CFR Part 130. Shipments by rail or highway in packaging having a capacity of 3500 gallons or more or in a quantity greater 42,000 gallons are subject to these requirements. In addition, mixtures containing 10% or more of this product may be subject to these requirements.

Additional information

TDG Classification

- : Product classified as per the following sections of the Transportation of Dangerous Goods Regulations: 2.43-2.45 (Class 9), 2.7 (Marine pollutant mark). Non-bulk packages of this product are not regulated as dangerous goods when transported by road or rail.

Mexico Classification

- : The environmentally hazardous substance mark is not required when transported in sizes of ≤5 L or ≤5 kg.

ADR/RID

- : This product is not regulated as a dangerous good when transported in sizes of ≤5 L or ≤5 kg, provided the packagings meet the general provisions of 4.1.1.1, 4.1.1.2 and 4.1.1.4 to 4.1.1.8.

Tunnel code (-)

IMDG

- : This product is not regulated as a dangerous good when transported in sizes of ≤5 L or ≤5 kg, provided the packagings meet the general provisions of 4.1.1.1, 4.1.1.2 and 4.1.1.4 to 4.1.1.8.

IATA

- : This product is not regulated as a dangerous good when transported in sizes of ≤5 L or ≤5 kg, provided the packagings meet the general provisions of 5.0.2.4.1, 5.0.2.6.1.1 and 5.0.2.8.

Special precautions for user : **Transport within user's premises:** always transport in closed containers that are upright and secure. Ensure that persons transporting the product know what to do in the event of an accident or spillage.

Transport in bulk according to IMO instruments : Not available.

Section 15. Regulatory information

- U.S. Federal regulations** :
- United States inventory (TSCA 8b):** All components are listed or exempted.
 - Clean Water Act (CWA) 307:** tris(dipentyldithiocarbamate-S,S')antimony; zinc oxide; Phosphorodithioic acid, O,O-di-C1-14-alkyl esters, zinc salts; Phosphorodithioic acid, O, O-di-C1-14-alkyl esters, zinc salts; Naphthenic acids, zinc salts; zinc neodecanoate; lead powder; Cadmium (Non-pyrophoric); naphthalene; ethylbenzene; mercury; arsenic; chromium
 - Clean Water Act (CWA) 311:** maleic anhydride; naphthalene; xylene; ethylbenzene
- This material is classified as an oil under Section 311 of the Clean Water Act (CWA) and the Oil Pollution Act of 1990 (OPA). Discharges or spills which produce a visible sheen on waters of the United States, their adjoining shorelines, or into conduits leading to surface waters must be reported to the EPA's National Response Center at (800) 424-8802.

SARA 302/304

Composition/information on ingredients

SARA 304 RQ : Not applicable.

SARA 311/312

Classification : HNOC - Injection Hazards

Composition/information on ingredients

Name	%	Classification
molybdenum disulphide	≤3	SKIN IRRITATION - Category 2 EYE IRRITATION - Category 2B SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) (Respiratory tract irritation) - Category 3 HNOC - Injection Hazards
calcium carbonate	≤3	SKIN IRRITATION - Category 2 EYE IRRITATION - Category 2A HNOC - Injection Hazards
Butene, homopolymer (products derived from either/or But-1-ene/But-2-ene)	≤2.4	SKIN IRRITATION - Category 2 ASPIRATION HAZARD - Category 1 HNOC - Injection Hazards
zinc oxide	≤2	EYE IRRITATION - Category 2B HNOC - Injection Hazards

SARA 313

	Product name	CAS number	%
Form R - Reporting requirements	tris(dipentyldithiocarbamate-S,S')antimony	15890-25-2	<2
	zinc oxide	1314-13-2	<2
Supplier notification	tris(dipentyldithiocarbamate-S,S')antimony	15890-25-2	<2
	zinc oxide	1314-13-2	<2

SARA 313 notifications must not be detached from the SDS and any copying and redistribution of the SDS shall include copying and redistribution of the notice attached to copies of the SDS subsequently redistributed.

State regulations

- Massachusetts** : The following components are listed: OIL MIST, MINERAL; OIL MIST, MINERAL; OIL MIST, MINERAL; MOLYBDENUM DISULFIDE; ZINC OXIDE FUME; molybdenum disulphide
- New York** : The following components are listed: Butene, homopolymer (products derived from either/or But-1-ene/But-2-ene)
- New Jersey** : The following components are listed: Petroleum Oil (Grease)
- Pennsylvania** : The following components are listed: Butene, homopolymer (products derived from either/or But-1-ene/But-2-ene); ZINC OXIDE FUME

California Prop. 65 Clear and Reasonable Warnings (2018)

Section 15. Regulatory information

⚠ WARNING: This product can expose you to chemicals including Silica, crystalline, which is known to the State of California to cause cancer, and Lithium carbonate, which is known to the State of California to cause birth defects or other reproductive harm. For more information go to www.P65Warnings.ca.gov.

Ingredient name	%	Cancer	Reproductive	No significant risk level	Maximum acceptable dosage level
lithium carbonate	<0.1	No.	Yes.	-	-
crystalline silica,	<0.01	Yes.	No.	-	-
respirable powder					
molybdenum trioxide	<0.01	Yes.	No.	-	-
lead powder	<0.01	Yes.	Yes.	Yes.	Yes.
Cadmium (Non-pyrophoric)	<0.01	Yes.	Yes.	Yes.	Yes.
naphthalene	<0.001	Yes.	No.	Yes.	-
cumene	trace	Yes.	No.	-	-
ethylbenzene	trace	Yes.	No.	Yes.	-
4-methylpentan-2-one	trace	Yes.	Yes.	-	-
ethyl acrylate	trace	Yes.	No.	-	-
mercury	trace	No.	Yes.	-	-
arsenic	trace	Yes.	No.	Yes.	-

International regulations

Rotterdam Convention on Prior Informed Consent (PIC)

Not listed.

Inventory list

United States	: All components are listed or exempted.
Australia	: At least one component is not listed.
Canada	: Not determined.
China	: At least one component is not listed.
Europe	:
Japan	: Japan inventory (CSCL): At least one component is not listed. Japan inventory (ISHL): Not determined.
Malaysia	: Not determined
New Zealand	: At least one component is not listed.
Philippines	: At least one component is not listed.
Republic of Korea	: At least one component is not listed.
Taiwan	: Not determined.
Thailand	: Not determined.
Turkey	: Not determined.
Viet Nam	: Not determined.

Section 16. Other information

National Fire Protection Association (U.S.A.)



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Section 16. Other information

Copyright ©2001, National Fire Protection Association, Quincy, MA 02269. This warning system is intended to be interpreted and applied only by properly trained individuals to identify fire, health and reactivity hazards of chemicals. The user is referred to certain limited number of chemicals with recommended classifications in NFPA 49 and NFPA 325, which would be used as a guideline only. Whether the chemicals are classified by NFPA or not, anyone using the 704 systems to classify chemicals does so at their own risk.

Procedure used to derive the classification

Classification	Justification
AQUATIC HAZARD (ACUTE) - Category 1	Calculation method
AQUATIC HAZARD (LONG-TERM) - Category 1	Calculation method

History

Date of printing : 4/11/2023

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Version : 1.02

Key to abbreviations : ATE = Acute Toxicity Estimate
 BCF = Bioconcentration Factor
 GHS = Globally Harmonized System of Classification and Labelling of Chemicals
 IATA = International Air Transport Association
 IBC = Intermediate Bulk Container
 IMDG = International Maritime Dangerous Goods
 LogPow = logarithm of the octanol/water partition coefficient
 MARPOL = International Convention for the Prevention of Pollution From Ships, 1973 as modified by the Protocol of 1978. ("Marpol" = marine pollution)
 UN = United Nations

References : Not available.

☑ Indicates information that has changed from previously issued version.

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