Safety Data Sheet SDS	Form No	GBF-DOA-EN
	Issue Date	18.01.2017
OPTAFLEKS DOA **BIS (2-ETHYLHEXYL) ADIPATE**	Revision Date	12.06.2025
	Revision No	12

Prepared in accordance with the REACH Regulation (EC)1907/2006, CLP Regulation (EC) 1272/2008 and Regulation (EU) 2015/830

SECTION 1: IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

1.1. Product identifier

Trade Name : Optafleks DOA

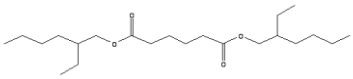
IUPAC Name : Bis(2-ethylhexyl) adipate

EC Number : 203-090-1

CAS Number : 103-23-1

Common Synonyms : DOA; DEHA; Di-(2-ethylhexyl) adipate; bis (2-ethylhexyl) ester; Adipic acid

Molecular Structure :



Molecular Formula : $C_{22}H_{42}O_4$

Molecular Weight : 370,64

REACH Registration Number : 01-2119439699-19-0041

Chemical Structure : Mono-constituent substance-organic

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

Identified uses Plasticizer. Plasticizer; Generally used with materials like P.V.C in order to plasticiser, after being heated to a doughy or plasticised state, to obtain elasticity, brightness for plastic material, generate electrical resistance, to prevent cracking and make surface smooth.

1.3. Details of the supplier of the safety data sheet

Manufacturer **Plastay Kimya San. Tic. A.Ş.**
GGOSB İnönü Mah. Atatürk Bulv. No:22 Gebze /KOCAELİ – TURKEY 41400

Contact Person Melike ÖZKAN (Mrs)-Chemical Assessment Specialist

1.4. Emergency telephone number

24 Hour Emergency Contact : 112

National Capital Poison Center : 114

Emergency Phone of the Company : +90 (262) 679 53 00 (08:30-18:00)

SECTION 2: HAZARDS IDENTIFICATION

Prepared in accordance with the REACH Regulation (EC)1907/2006, CLP Regulation (EC) 1272/2008 and Regulation (EU) 2015/830

2.1. Classification of the substance or mixture

Classification (EC 1272/2008)

Physical and Chemical Hazards	Not classified.
Human health	Not classified.
Environment	Not classified.

2.2. Label elements

Not a hazardous substance or mixture.

2.3. Other hazards

This product does not contain any PBT or vPvB substances.

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

3.1. Substances

Name	EC No.	CAS No.	Content	Classification (EC 1272/2008)
Bis(2-ethylhexyl) adipate	203-090-1	103-23-1	>99,5%	Not classified

The Full Text for all Hazard Statements are Displayed in Section 16.

Composition Comments

- The data shown are in accordance with the latest EC Directives.

SECTION 4: FIRST AID MEASURES

4.1. Description of first aid measures

General Advice: Immediately flush with plenty of water. After initial flushing, remove any contact lenses and continue flushing for at least 15 minutes. Seek immediate medical attention/advice.

Eye contact: In the case of contact with eyes, rinse immediately with plenty of water and seek medical advice.

Skin contact: Flush skin with plenty of water for at 15 minutes while removing contamined clothing and shoes. Laundering enough contaminated clothing before reuse. Get medical attention immediately.

Inhalation: When exposed to large amounts of steam and mist, move to fresh air. Take specific treatment if needed. Get medical attention immediately. If breathing is stoped or irregular, give artificial respiration and supply oxygen.

Ingestion: About whether I should induce vomiting take the advice of the doctor. Rinse your mouth with water immediately.

4.2. Most important symptoms and effects, both acute and delayed

Inhalation : No known chronic or acute health risks.

Ingestion : No known chronic or acute health risks.

Skin contact : Irritation, redness. May cause sensitisation by skin contact.

Eye contact : Irritation, redness.

4.3. Indication of any immediate medical attention and special treatment needed

Avoid contact with this product while helping the person; keep the person warmed. Treat symptomatically.

SECTION 5: FIREFIGHTING MEASURES

5.1. Extinguishing media

Suitable Extinguishing Media: Compatible with dry chemical, water spray, carbon dioxide and fog or foam.

Unsuitable Extinguishing Media: Do not use a solid water stream as it may scatter and spread fire.

Special Hazard Arising from the Chemical: May produce acrid smoke and fumes if burning.

Special Protective Equipment for Fire-Fighters: Wear an approved positive pressure self-contained breathing apparatus in addition to standard fire fighting gear.

5.2. Special hazards arising from the substance or mixture

Exposure Hazards

As organic substance DEHA is combustible. Vapours may be heavier than air. They can spread along the ground and collect in low or confined areas. Run off from fire control or dilution water may cause pollution. Use water-spray to cool fire exposed containers. Prevent entry into sewers and water courses of the wastes resulted from fire.

Specific hazards

Carbon monoxide (CO). Carbon dioxide (CO_2).

5.3. Advice for firefighters

Special Precautions for Fire-Fighters: Fire water contaminated with this material must be contained and prevented from being discharged to any waterway, sewer or drain.

Protection of 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. Clothing for firefighters. (including helmets, protective boots and gloves) conforming to European standard EN 469 will provide a basic level of protection for chemical incidents.

SECTION 6: ACCIDENTAL RELEASE MEASURES

6.1. Personal precautions, protective equipment and emergency procedures

Keep unnecessary and unprotected personnel away from entering. Avoid contact with skin, eyes, and clothing-wear suitable protective equipment (see section 8). Do not touch or walk through spilt material. Shut off all ignition sources. Ventilate area of leak or spill. Personnels performing clean-up work should wear personal protective equipment and a self-contained breathing apparatus with full facepiece operated in the pressure demand or other positive pressure mode. Remove all sources of ignition.

6.2. Environmental precautions

Avoid dispersal of spilt material contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air). Contain and recover liquid when possible. Keep closed containers and dispose according to all applicable federal, state or local environment regulations.

6.3. Methods and material for containment and cleaning up

Methods of Cleaning Up: Absorb spills with dry sand, similar non-combustible absorbent material then place into suitable container for later disposal. For large, dike and pump into suitable containers for disposal. Flush area with plenty of water. Waste water will be treated in biological treatment plant.

Special Precautions: Do not use combustible materials, such as saw dust. Do not flush to sewer.

6.4. Reference to other sections

For personal protection, see section 8.

For waste disposal, see section 13.

SECTION 7: HANDLING AND STORAGE

7.1. Precautions for safe handling

Protective Measures: Protect containers from physical damage. The personnel which handling the product must wear protective equipment. Sources of ignition such as smoking and open flames prohibited where DEHA is handled.

Hygiene Measures: Wash hands thoroughly after handling. Do not eat, drink or smoke when using this product. Wash hands before eating, drinking, smoking or going to the toilet. Take off all contaminated clothing and wash before reuse.

7.2. Conditions for safe storage, including any incompatibilities

Conditions for Safe Storage: Keep only in original container, in a cool, dry, well ventilated place. Keep away from food. Store locked up. Keep out of reach of children. Avoid static electricity by grounding.

Incompatible Products: Strong oxidants, acids and alkalis.

7.3. Specific end use(s)

Prepared in accordance with the REACH Regulation (EC)1907/2006, CLP Regulation (EC) 1272/2008 and Regulation (EU) 2015/830

The identified uses for this product are detailed in Section 1.2.

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1. Control parameters

Derived No Effect Level (DNEL) according to Regulation (EC) No. 1907/2006:
This product, as supplied, does not contain any hazardous materials with occupational exposure limits established by the region-specific regulatory bodies.

Exposure Pattern	DNEL	
	Workers	General Population
Long-term–inhalation,systemic	Not Relevant	Not Relevant
Long-term– dermal,systemic	Not Relevant	Not Relevant
Long-term– oral,systemic	Not Relevant	1,7 mg/kg/day

Predicted No Effect Concentration (PNEC) according to Regulation (EC) No. 1907/2006:

Environmental Compartment	Value
Fresh water	0,000434 mg/l
Marine water	0,000043 mg/l
Aqua Intermittent	No hazard identified
Fresh water sediment	3,043 mg/kg
Sewage treatment plant	No hazard identified
Soil	No hazard identified
Marine sediment	0,304 mg/kg

8.2. Exposure controls

8.2.1. Appropriate Engineering Controls

Good general ventilation (typically 10 air changes per hour) should be used. Ventilation rates should be matched to conditions. Supplementary local exhaust ventilation, closed systems, or respiratory and eye protection may be needed in special circumstances; such as poorly ventilated spaces, heating, evaporation of liquids from large surfaces, spraying of mists, mechanical generation of dusts, drying of solids, etc. Local exhaust ventilation is generally preferred because it can control the emission of the contaminant at its sources, preventing dispersions of it into the general work area. It is recommended safety shower and eye bath available near work side.

Protective equipment

Eye/Face Protection: It must be good industrial hygiene practice minimize eye contact. Use chemical safety goggles and/or full-face shield where splashing is possible. Maintain eye wash and quick-drench facilities in work area.

Hand Protection: Chemical resistant, impervious gloves complying with an approved standard should be always worn when handling chemical products.

Skin/Body Protection: Impervious clothing. Wear face-shield and protective suit for abnormal processing problems.

Respiratory Protection: For emergencies or instances where the exposure level are not known, there must be half face respirator for organic vapours. In cases of high potential of exposure use a supplied-air respirator, full facepiece, operated in positive-pressure mode. **Respirator Type:** Air purifying respirator with an appropriate government approved (where applicable), air-purifying filter, cartridge or canister.

Hygiene Measures: Do not eat, drink or smoke while using this product. Wash hands before eating, drinking, smoking or going to the toilet. Take off all contaminated clothing and wash before reuse.

Thermal Hazards: The substance does not represent a thermal hazard; thus special consideration is not required.

Other Precautions: Maintain shower, eye wash fountain and quick-drench facilities in work area.

Environmental Exposure Controls

Please act in accordance with local and national laws.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

Prepared in accordance with the REACH Regulation (EC)1907/2006, CLP Regulation (EC) 1272/2008 and Regulation (EU) 2015/830

9.1. Information on basic physical and chemical properties

PROPERTY	TEST METHOD	VALUE
Appearance	-	Clear Liquid
Colour (Pt/Co)	ASTM D 1209	≤ 30
Odour	-	Typical
Water Solubility (20 °C, g/L)	-	≤ 0,1
Acidity (mg KOH/g)	ASTM D 1045	≤ 0,07
Boiling Point (°C)	-	415
Freezing Point (°C)	-	-76
pH-Value	-	Not available.
Flash Point (°C)	ASTM D 92	≥ 190
Water Content (%)	ASTM 1364-02	≤ 0,10
Density (20 °C, g/cm³)	ASTM D 1045	0.924-0.928
Viscosity (20 °C, cP)	ASTM D 1045	12 - 20
Flammability	-	Non flammable
Upper/Lower Explosion Limits (%)	-	Non explosive
Vapour Pressure (20°C, Pa)	-	~3.10^{-6}
Partition Coefficient (n-octanol/water)	Sparc Calculation Model	8,94
Refractive Index (20°C)	ASTM D 1045	1.4440-1.4480
Purity (%)	GC-Home Method	≥ 99,5

9.2. Other information

No information required.

SECTION 10: STABILITY AND REACTIVITY

10.1. Reactivity

No specific reactivity hazards associated with this product.

10.2. Chemical stability

Stable under normal temperature conditions and recommended use. Stable under the prescribed storage conditions.

10.3. Possibility of hazardous reactions

Strong oxidizers, strong bases.

10.4. Conditions to avoid

Heat, flame, sources of ignition and incompatibles.

10.5. Incompatible materials

Strong oxidizing agents.

10.6. Hazardous decomposition products

Hazardous decomposition products formed under fire conditions. - Carbon oxides other decomposition products - No data available in the event of fire: see section 5.

SECTION 11: TOXICOLOGICAL INFORMATION

11.1. Information on toxicological effects

Acute toxicity

	Dose	Species	Result
Acute Toxicity	LD_{50} (oral)	Rat	>20.000 mg/kg bw
	LD_{50} (dermal)	Rabbit	16300 mg/kg
	LC_{50} (Inhalation)	Rat	>5.7 mg/1 (highest concentration tested)

Skin corrosion/irritation

Not classified as irritant.

Product:
Species : Rabbit
Exposure time : 24 h
Result : none

Serious eye damage/eye irritation

Not classified as irritant.

Product:
Species : Rabbit
Result : none
Remarks : DEHA is not corrosive.

Respiratory or skin sensitization

Skin sensitization

Skin sensitizing effets were not onserved in animal studies. The substance did not cause skin sensitization in humans.

Respiratory sensitization

Not classified based on available information.

Product:
Test Type: Skin Sensitization
Species: Guinea pig
Result: non-sensitizing

Carcinogenicity
Not classified as to its carcinogenicity in humans.

Product:
Remarks: This product does not contain any carcinogens or potential carcinogens as listed by OSHA, IARC or NTP.

Reproductive toxicity

DEHA is not toxic (T) based on results from chronic aquatic toxicity studies that show no effects at levels equal to or even exceeding its maximum water solubility and mammalian toxicity studies that support not classifying DEHA as carcinogenic, mutagenic, or toxic for reproduction.

Product:
Effects on fertility: Remarks: No data available

STOT-single exposure
Not classified based on available information.

Product:
Remarks: No data available

STOT-repeated exposure
Not classified based on available information.

Product:
Remarks: No data available

Repeated dose toxicity

28-day, oral, gavage, rat: NOAEL = 200mg/kg (Miyata 2006, according to draft of the enhanced OECD 407 guideline)
2-year, oral, diet, rat: NOAEL = 600mg/kg (NTP, 1982, comparable to OECD 451)
Within this study, additional range finding studies in rats and mice were performed (2-weeks, 90-days)

Aspiration toxicity

Prepared in accordance with the REACH Regulation (EC)1907/2006, CLP Regulation (EC) 1272/2008 and Regulation (EU) 2015/830

Not classified based on available information.

Information on likely routes of exposure

Product:
Inhalation: Remarks; None known.
Skin contact: Remarks; None known.
Eye contact: Remarks; None known.
Ingestion: Remarks; None known.

SECTION 12: ECOLOGICAL INFORMATION

12.1. Toxicity

12.1. Ecotoxicity

All of the aquatic toxicity results indicate that there is no toxicity at the limit of water solubility. The data for DEHA show that it is not toxic at its maximally attainable water solubility level, which varies dependent on the conditions of study.

12.1.1 Short-term toxicity to fish

Method: Lepomis macrochirus; freshwater; static; based on EPA (1977) methods

Results: LC50 (96 h): > 0,78 mg/L

Results of short-term studies show DEHA has no acute effect on fish at concentrations far exceeding its water solubility.

12.1.2 Long-term toxicity to fish

No data available.

12.1.3 Short-term toxicity to aquatic invertebrates

Method: Daphnia magna; freshwater; static; equivalent or similar to OECD Guideline 202 (Daphnia sp. Acute Immobilisation Test)

Results: EC50 (48 h): > 1,6 mg/L

Results of short-term studies show that DEHA has no acute effect on aquatic invertebrates at concentrations far exceeding its water solubility.

12.1.4. Long-term toxicity to aquatic invertebrates

Results of long-term studies show that DEHA will not produce chronic toxicity to invertebrates at or below its maximum attainable water solubility.

12.1.5 Algae and aquatic plants

Results from algal toxicity studies show that DEHA does not cause toxicity to algae at or below its maximum attainable water solubility.

12.1.6 Toxicity to soil macro-organisms

DEHA showed no acute toxicity to earthworm at the limit concentration of 1000 mg/kg (dw) This NOEC cannot be normalised since the organic contents of the test soil was not reported.

12.1.7. Toxicity to terrestrial plants

No data available.

12.2. Persistence and degradability

Product:

Biodegradability: Result; Readily biodegradable.

Log Kow: 8.94 (OECD 117)

Water solubility: 0.0032 mg/L (literature data)

Biodegradation:> 90 % in 28 days (OECD 301F)

BCF: 27 L/kg (28 d uptake and 14 d depuration bioconcentration study)

12.3. Bio accumulative potential

DEHA does not significantly accumulate in organisms.

12.4. Mobility in soil

No data available.

12.5. Results of PBT and vPvB assessment

This product does not contain any PBT or vPvB substances.

12.6. Other adverse effects

Should not be released to the environment.

SECTION 13: DISPOSAL CONSIDERATIONS

13.1. Waste treatment methods

Dispose of waste and residues in accordance with local authority requirements. Avoid dispersal of spilt material and contact with soil, waterways, drains.

13.2.Contaminated Packaging:

The empty containers, tank cars and tank trucks are treated with steam and rinsed with plenty of hot water. The resulted effluent are treated in the same way as waste. The empty and clean containers are to be reused in conformity with regulations. This material and its container must be disposed of in a safe way. Empty containers or liners may retain some product residues.

SECTION 14: TRANSPORT INFORMATION

Prepared in accordance with the REACH Regulation (EC)1907/2006, CLP Regulation (EC) 1272/2008 and Regulation (EU) 2015/830

General The product is not regulated under UN ADR/RID, ADNR, IMDG, IATA, ICAO lists. Also, it is not applicable for DOT list. This product is not dangerous good.

14.1. UN number

Not applicable.

14.2. UN proper shipping name

Not applicable.

14.3. Transport hazard class(es)

Transport Labels

No transport warning sign required.

14.4. Packing group

Not applicable.

14.5. Environmental hazards

Environmentally Hazardous Substance/Marine Pollutant

Not applicable.

14.6. Special precautions for user

Not applicable.

14.7. Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code

Not applicable.

SECTION 15: REGULATORY INFORMATION

15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture

REACH - Candidate List of Substances of Very High Concern for Authorization (Article 59): Not applicable

Regulation (EC) No 1005/2009 on substances that deplete the ozone layer: Not applicable

Regulation (EC) No 850/2004 on persistent organic pollutants: Not applicable

Seveso III: Directive 2012/18/EU of the European Parliament and of the Council on the control of major-accident hazards involving dangerous substances: Not applicable

15.2. Chemical Safety Assessment

No chemical safety assessment has been carried out.

European union/EEA: In the event of purchase from an Arkema legal entity based in the European Economic Area (EEA), it is established that this product complies with the registration provisions of REACH Regulation (EC) No. 1907/2006, given that all of its components are excluded, exempted and / or registered. If purchasing from a legal entity established outside the EEA, please contact your local representative for more information.

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TSCA (USA):	The components of this product are all on the TSCA Inventory.
DSL/NDSL (CA):	All components of this product are on the Canadian DSL.
IECSC (CN):	All components of this product are listed or exempted.
ENCS (JP):	All components of this product are listed or exempted.
ISHL (JP):	Not all components of this product are listed or exempted.
KECI (KR):	All components of this product are listed or exempted.
PICCS (PH):	All components of this product are listed or exempted.
NZIOC (NZ):	All components of this product are listed or exempted.
AIIC (AU):	All components of this product are listed or exempted.
TCSI (TW):	All components of this product are listed or exempted.

SECTION 16: OTHER INFORMATION

Abbreviations and acronyms used in the safety data sheet

ADR: European Agreement concerning the International Carriage of Dangerous Goods by Road.

ADN: European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways.

RID: European Agreement concerning the International Carriage of Dangerous Goods by Rail.

IATA: International Air Transport Association.

ICAO-TI: Technical Instructions for the Safe Transport of Dangerous Goods by Air.

IMDG: International Maritime Dangerous Goods.

CAS: Chemical Abstracts Service.

ATE: Acute Toxicity Estimate.

LC_{50}: Lethal Concentration to 50 % of a test population.

LD_{50}: Lethal Dose to 50% of a test population (Median Lethal Dose).

EC_{50}: 50% of maximal Effective Concentration.

PBT: Persistent, Bio accumulative and Toxic substance.

vPvB: Very Persistent and Very Bio accumulative.

DNEL: Derived No Effect Level

PNEC: Predicted No-Effect Concentration

NOAEL: No observable adverse effect level

NOEC: No Observed Effect Concentration

Prepared in accordance with the REACH Regulation (EC)1907/2006, CLP Regulation (EC) 1272/2008 and Regulation (EU) 2015/830

Revision Comments

Revised according to CLP Regulation. The ecotoxicity values have been updated and reviewed according to current regulations. The design of the form has been renewed using our company's new logo.

Issued By

Melike ÖZKAN / **Chemical Engineer-Chemical Assessment Specialist**
E-Mail: melike.ozkan@plastay.com
Phone: +90 530 548 0420
Certificate No: GBF01.60.03

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