



DIPHENYL OXIDE SAFETY DATA SHEET

1. PRODUCT AND COMPANY IDENTIFICATION

Product Name

DIPHENYL OXIDE, DPO

ISO 9001:2008 Certification Number: C2015-00068

Recommended Uses

Chemical Intermediate, heat transfer fluids, and/or process fluids

Company Identification

Headquarters and Manufacturing Facility
Radco Industries, Inc.
700 Kingsland Drive
Batavia, IL 60510

Customer information number: 1-630-232-7966

EMERGENCY TELEPHONE NUMBER**Advisory Office in case of poisoning: Chemtrec**

Chemtrec (North America): 1-800-424-9300

Chemtrec (International): 1-703-527-3887

2. HAZARDS IDENTIFICATION

Classification of mixture:

Acute hazards to the aquatic environment, Category 1

Serious eye irritation, Category 2A

Hazard Pictograms:

Signal Word: Warning

Hazard Statements:

H319: Causes serious eye irritation.
H303 + 333: May be harmful if swallowed and/or inhaled.
H335: May cause respiratory irritation.
H411: Toxic to aquatic life with long lasting effects.

Precautionary Statements:

P233 + P234 + P235: Keep container tightly closed. Keep only in original container. Keep cool.
P264: Wash exposed skin thoroughly after handling.
P270: Do not eat, drink or smoke when using this product.
P273: Avoid release to the environment.
P280: Wear protective gloves, eye protection and face protection.

This Safety Data Sheet (SDS) meets the Globally Harmonized System of Classification and Labelling of Chemicals (GHS).



- P285: In case of inadequate ventilation wear respiratory protection
- P305 + P351 + P331 + P315: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses if present and easy to do. Continue rinsing. Get immediate medical advice/attention.
- P405: Store locked up.
- P501: Dispose of contents/container to an approved waste disposal plant.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Components	%Content	CAS Number
Diphenyl oxide (diphenyl ether)	100%	101-84-8

4. FIRST-AID MEASURES

Eyes

Immediately flush eyes with plenty of water for at least 15 minutes. If easy to do, remove contact lenses. Get immediate medical attention.

Ingestion

DO NOT induce vomiting. If swallowed, rinse mouth with water (only if the person is conscious). If vomiting occurs, keep head low so that stomach content doesn't get into the lungs. Get immediate medical attention if symptoms occur.

Inhalation

Move to fresh air. If unconscious place in recovery position and seek medical advice. If respiratory irritation, dizziness, nausea, or unconsciousness occurs, seek immediate medical assistance. Remove from further exposure. Immediately call a doctor.

Skin

Remove contaminated clothes and rinse skin thoroughly with water. If skin irritation occurs: Get medical attention. Wash contaminated clothing before reuse.

5. FIRE-FIGHTING MEASURES

Suitable Extinguishing Media

For small fires use carbon dioxide, dry chemical or foam.
For large fires use alcohol-type foam, universal type foam or water fog.

Fire-Fighting Equipment

Firefighter should wear normal protective equipment (full bunker gear) and positive-pressure contained breathing apparatus. Water can be used to cool fire-exposed containers, to protect personnel and to disperse vapors and spills. Water runoff can cause environmental damage. Dike and collect water used to fight fires.

Special Fire-Fighting Procedures

Use water spray to cool fire-exposed containers and structures. If a rail or tank truck is involved in a fire, isolate for 800 meters (0.5 mile) in all directions. Shut off fuel to fire if it is possible to do so without hazard. If this is impossible, withdraw from the area and let the fire burn out under controlled conditions. Withdraw immediately in case of rising sound from venting safety device or any discoloration of tank due to fire.

6. ACCIDENTAL RELEASE MEASURES



General

Prevent further leakage or spillage if safe to do so. Clear up spills immediately and dispose of waste safely. Wear protective clothing when taking up spill. Eliminate sources of ignition. Prevent from entering sewers or drains. This product is insoluble in water and will float on the surface. Should this product enter sewers or drains, it should be pumped out into an open vessel. Avoid inhalation of vapors and spray mists. Ventilate closed spaces before entering them. Wear appropriate personal protective equipment. Contaminated surfaces may be slippery. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing.

Small Liquid Spills

Use vermiculite, sand or earth to soak up the product and place into a container for later disposal.

Large Spillages

Dike for later disposal. Collect spillage in containers, seal securely and deliver for disposal according to local regulations. Otherwise, absorb spill with vermiculite or other inert material, then place in a container for chemical waste. Clean surface thoroughly to remove residual contamination. Prevent runoff from entering drains, sewers, or streams .

7. HANDLING AND STORAGE

Handling

Do not handle until all safety precautions have been read and understood. Avoid heat, sparks, open flames and other ignition sources. Wear appropriate personal protective equipment. Do not taste or swallow. Avoid inhalation of vapors and spray mists. Do not breathe vapor from heated material. In case of inadequate ventilation, use respiratory protection. Do not get in eyes and avoid contact with skin and clothing. Wash promptly with soap and water if skin becomes contaminated. Remove contaminated clothing and wash it before reuse.

Storage

Do not store in open or unlabeled containers. Keep container tightly closed in a dry and well-ventilated place.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Diphenyl oxide (diphenyl ether) - Vapors

TLV (ACGIH)	1 ppm
STEL (ACGIH)	2 ppm
PEL (OSHA)	1 ppm
MAK	1 ppm
IDLH (NIOSH)	100 ppm

Eye and Face 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. Recommendations: Wear safety glasses with side shields (or goggles). Use safety goggles and face shield in case of splash risk.

Skin Protection

It is a good industrial hygiene practice to minimize skin contact. If prolonged or repeated contact is likely, chemical resistant gloves are recommended. If contact with forearms is likely, wear gauntlet style gloves. Contact the glove manufacturer for specific advice on glove selection and breakthrough times for your use conditions. After contamination with product change the gloves immediately and dispose of them according to relevant national and local regulations. When material is heated, wear gloves to protect against thermal burns.



Respiratory Protection

Use a properly fitted, particulate filter respirator complying with an approved standard if a risk assessment indicates this is necessary. Respirator selection, use, and maintenance must be in accordance with regulatory requirements, if applicable. If engineering controls do not maintain airborne concentrations below recommended exposure limits (where applicable) or to an acceptable level (in countries where exposure limits have not been established), an approved respirator must be worn. In the United States of America, if respirators are used, a program should be instituted to assure compliance with OSHA Standard 63 FR 1152, January 8, 1998. Respirator type: Air-purifying respirator with an appropriate, government approved (where applicable), air-purifying filter, cartridge or canister.

Other Protection Measures

Handle in accordance with good industrial hygiene and safety practice. Do not eat, drink or smoke when using the product. Wash at the end of each work shift and before eating, smoking and using the toilet. Contaminated work clothing should not be allowed out of the workplace. Wash contaminated clothing before reuse. Keep away from food, drink and animal feeding stuffs.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance:	White crystalline solid at 25°C - 27°C (77°F - 81°F) Liquid color is water white to straw yellow.
Odor:	Aromatic, floral
Odor threshold:	0.1 ppm
Auto-ignition temperature:	618°C (1144°F)
Decomposition temperature:	No data available
Evaporation Rate:	No data available
Flash point Cleveland Open Cup (ASTM D92):	115°C (239°F)
Flash point Pensky-Martens (ASTM D93):	65.6°C (150°F)
Flammability (solid, gas):	Non-flammable
Lower flammability limit:	1.5%
Upper flammability limit:	0.8%
Normal boiling point:	258°C (496.4°F)
Melting point/freezing point:	26°C (78.8°F)
Partition coefficient (n-octanol/water), Log P _{ow} :	4.21
pH:	Not applicable
Solubility:	18 mg/L at 25°C (77°F)
Relative density (ASTM D1298) 15.6°C/15.6°C:	1.075 at 20°C (68°F)
Vapor density (air = 1):	5.87
Vapor pressure:	< 1.0 mmHg at 20°C (68°F)
Viscosity (ASTM D445):	2.4 cSt at 40°C (104°F)

10. STABILITY AND REACTIVITY INFORMATION

Materials to avoid

Exposure to materials which are highly oxidizing should be avoided.

Hazardous polymerization

Does not occur.

Hazardous decomposition products

Incomplete combustion may give various cracked and oxidized hydrocarbons.



Stability

Stable under normal conditions.

11. TOXICOLOGICAL INFORMATION

Inhalation

None known

Ingestion

May be harmful if swallowed.

Skin contact

Causes mild skin irritation.

Eye contact

Causes severe eye irritation.

Oral

LD-50, rat: 2,830 mg/kg

Dermal

LD-50, rabbit: > 7,940 mg/kg

Skin corrosion/irritation

Rabbit, 4 hours: Non-irritating to the skin.

Eye damage/Eye irritation

Rabbit, 4 hours: slight to moderate

Sensitization

Guinea pig sensitization (OECD 406): Non-sensitizing

Carcinogenicity

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

Reproduction toxicity

No data is available.

Developmental toxicity

NOAEL, rat: 500 mg/l

NOAEL, rat: > 50 mg/kg

Mutagenicity

In vitro: *Salmonella typhimurium* assay (Ames test) (Bacterial Reverse Mutation Assay): negative

Mammalian (In vitro Mammalian Cell Gene Mutation Test): negative

Mammalian (In vitro Mammalian Chromosome Aberration Test): negative

Mammalian: negative

In vivo: No data is available.

12. ECOLOGICAL CONSIDERATIONS

Toxic to aquatic life with long lasting effects.

Aquatic toxicity

LC-50, fish (*Oncorhynchus mykiss*, 96 h): 4.2 mg/l

LC-50, aquatic invertebrates (*Daphnia magna*, 48 h): 1.7 mg/l



EC-50, aquatic plants, algae (*Pseudokirchneriella subcapitata*), 72 h): 2.5 mg/l

Biodegradation

Readily biodegradable.

Bioaccumulation

Bioconcentration Factor (BCF), Rainbow Trout: 196

13. DISPOSAL INFORMATION

Disposal must be in accordance with applicable federal, state, or local regulations.

Do not allow product to reach ground water, water course, or sewage systems.

This unused material, when discarded or disposed of, is not specifically listed as a hazardous waste in Federal regulations; however, it could be considered hazardous if it meets criteria for being toxic, corrosive, ignitable, or reactive according to U.S. EPA definitions (40 CFR Subpart C). This material could also become hazardous waste if it is mixed with or comes into contact with a listed hazardous waste. If it is a hazardous waste, regulations in 40 CFR 262-266, 268, 270, and 279 may apply.

“Empty” containers retain residue (liquid and/or vapor) and can be dangerous. Do not pressurize, cut, weld, braze, solder, drill, grind, or expose such containers to heat, flame, sparks, or other sources of ignition; they may explode and cause injury or death. Do not attempt to clean since residue is difficult to remove and even a trace of remaining material constitutes as explosive hazard. “Empty” drums should be completely drained, properly bunged, and promptly returned to a drum recycler. All other containers should be disposed of in an environmentally safe manner and in accordance with governmental regulations.

14. TRANSPORT INFORMATION

U.S. Dept. of Transportation Shipping Name

Not regulated.

Canadian Transportation of Dangerous Goods Shipping Name

Not regulated.

European Rail/Road (ADR/RID) Shipping Name

Not regulated.

Air (ICAO/IATA) Shipping Name

Not regulated.

Sea (IMO/IMDG)

Not regulated.

15. REGULATORY INFORMATION

California (Proposition 65)

This product does not contain any of the substances known to the State of California to cause cancer, birth defects, or reproductive harm.

CERCLA Reportable Quantity

This product is not reportable under 40 CFR Part 302.4.



Environmental Protection Agency

None of the ingredients are listed

National Toxicology Program (NTP)

None of the ingredients are listed.

OSHA Hazard Communication Standard

Not hazardous per 29 CFR 1910.1200(d).

SARA Title III Section 302 Extremely Hazardous Substances (40 CFR Part 355)

This product is not regulated under Section 302 of SARA and 40 CFR Part 355.

SARA Title III Sections 311/312 Hazardous Categorization (40 CFR Part 370)

Hazardous categories for this product are: Acute= no; Chronic= no; Fire=no; Pressure=no; Reactive=no.

SARA Title III Section 313 (40 CFR Part 372)

This product is not regulated under Section 313 of SARA and 40 CFR Part 372.

U.S. Inventory (TSCA)

Listed on inventory.

Australia Inventory (AICS)

Listed on inventory.

Canada Inventory (DSL)

All of the ingredients are listed.

China (CICS)

None of the ingredients are listed.

EC Inventory (EINECS/ELINCS)

In Compliance

International Agency for Research on Cancer (IARC)

None of the ingredients are listed.

Japan Inventory (MITI)

Listed on inventory.

Korea Inventory (ECL)

Listed on inventory.

16. OTHER INFORMATION

Safety Data Sheet Creation 24 August 2015
Date:

THIS INFORMATION RELATES TO THE SPECIFIC MATERIAL DESIGNATED AND MAY NOT BE VALID FOR SUCH MATERIAL USED IN COMBINATION WITH ANY OTHER MATERIALS OR IN ANY PROCESS. SUCH INFORMATION STATED IS TO THE BEST OF RADCO'S KNOWLEDGE AND BELIEF, ACCURATE AND RELIABLE AS OF THE DATE COMPILED. HOWEVER, NO REPRESENTATION, WARRANTY OR GUARANTEE IS MADE TO ITS ACCURACY, RELIABILITY, OR COMPLETENESS, AND RADCO DOES NOT ACCEPT LIABILITY FOR ANY LOSS OR DAMAGE THAT MAY OCCUR FROM THE USE OF THIS INFORMATION. FINAL DETERMINATION OF SUITABILITY OF ANY MATERIAL IS THE SOLE RESPONSIBILITY OF THE USER. ALL MATERIAL SHOULD BE USED WITH CAUTION TO GUARD AGAINST UNKNOWN HAZARDS. ALTHOUGH CERTAIN HAZARDS ARE DESCRIBED HEREIN, RADCO DOES NOT GUARANTEE THAT THESE ARE THE ONLY HAZARDS THAT EXIST.



Radco Industries, Inc. 700 Kingsland Drive, Batavia, Illinois 60147, United States
Product Name: DIPHENYL OXIDE

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