



## Product Stewardship Summary SYNFLUID<sup>®</sup> PAO 4 - 10 cSt

The product stewardship summary is intended to give general information about the chemical or categories of chemicals addressed. It is not intended to provide an in-depth discussion of all health and safety information. Additional information on the chemical is available through the applicable Material Safety Data Sheet which should be consulted before use of the chemical. The product stewardship summary does not supplant or replace required regulatory and/or legal communication documents.

### Chemical identity:

Polyalphaolefins (PAOs) are a category of products. PAOs are hydrogenated olefin oligomers manufactured by catalytic polymerization of normal alpha olefins. They are colorless liquids with well-defined, wax-free isoparaffinic structures. The even numbered PAO's are manufactured from 1-decene, the odd-numbered PAOs are manufactured from 1-dodecene. This category contains 7 viscosity grades of PAO, with CAS numbers and names listed below.

CAS Number	Product Name
68037-01-4	PAO 4cSt
151006-62-1, 151006-63-2	PAO 5cSt
68037-01-4	PAO 6cSt
151006-63-2	PAO 7cSt
68037-01-4	PAO 8cSt
151006-62-1, 151006-63-2	PAO 9cSt
68037-01-4	PAO 10cSt

### Category Justification:

The 4-10 cSt PAOs are highly branched, isoparaffinic polyalphaolefins produced by oligomerizing either 1-decene or 1-dodecene. They are composed of various ranges of 1-decene or 1-dodecene trimer, tetramer, pentamer and higher. Within this category, the viscosity of the fluid increases as the percentage of the heavy oligomers increases. In addition to the similarity of chemical structures, the physical and health hazard profile of the 4-10 cSt PAOs are also similar.

### Product Uses:

The 4-10 cSt PAOs are used as synthetic base fluids for high-performance industrial and automotive lubricants (e.g., gear oils, compressor oils, hydraulic fluids, greases, engine oils) and functional fluids (e.g., dielectric, heat transfer, drilling). Almost all products go into lubricant applications.

The 4-10 cSt PAOs meet the FDA technical white oil specifications as described in 21 CFR 178.3620(b)(1) and may be used as a component of non-food articles intended for use in contact with food. They are registered as an H1 lubricant for incidental food contact by the National Sanitation Foundation (NSF) for use in food production and processing plants.

**Physical/chemical properties:**

The 4-10 cSt PAOs are clear, colorless, and odorless liquids at ambient conditions. They are not flammable, combustible, or highly reactive. Bonding and grounding are needed to prevent static hazards which could cause a fire.

**Health Information:**

The 4-10 cSt PAOs are not expected to be hazardous to human health. They are not acutely toxic by the oral, dermal, or inhalation routes of exposure; and there is no evidence that these products cause adverse chronic, genetic, developmental, reproductive or carcinogenic effects.

**Environmental Information:**

The 4-10 cSt PAOs are not expected to be hazardous to the environment. These products are not harmful to aquatic organisms and are not expected to be harmful to terrestrial mammals or to bioaccumulate. The 4-10 cSt PAOs are not considered to be readily biodegradable, but are expected to completely biodegrade over extended periods of time. The most likely sources of environmental exposures are accidental spills.

**Exposure Potential:**

The most likely routes of exposure to the 4-10 cSt PAOs are eye and skin contact.

- Workplace use: This refers to potential exposure to 4-10 cSt PAOs to persons in a manufacturing facility or through various industrial applications. The potentially exposed populations include (1) workers who manufacture this material and blend it into finished oils; (2) quality assurance workers who sample and analyze the product to ensure that it meets specifications; (3) workers involved in the transfer and transport of this material or finished oils that contain it; and (4) mechanics who may come into contact with both fresh and used oils while working on equipment. The most likely routes of exposure to the 4-10 cSt PAOs are eye and skin contact. Manufacturing, quality assurance, and transportation workers will likely have access to engineering controls and wear personal protective equipment to eliminate exposure, but mechanics often work without gloves or other protective equipment.
- Consumer use: Depending on the specific products being used and the conditions they are used under, this category of exposure is highly variable. Consumers who periodically add oil to crankcases or change their own oil may be exposed to the 4-10 cSt PAOs. The most likely routes of exposure are eye and skin contact. Consumers are likely to work without gloves or other protective equipment.

- *Potential environmental release:* There may be some potential for exposure to the environment from an accidental release of the 4-10 cSt PAOs due to transportation of large quantities over long distances by rail, tank car, and ship, however, exposure due to release is believed to be very low. Chevron Phillips Chemical Company LP is committed to operating in an environmentally responsible manner and has adopted the American Chemistry Council's Responsible Care® initiative.

### **Risk Management:**

Chevron Phillips Chemical Company LP is committed to Product Stewardship and doing business responsibly. We endeavor to provide sufficient information for the safe use and handling of all our products. We begin by ensuring that all of our customers, distributors, carriers and users of 4-10 cSt PAOs are well informed about the properties of each product. To that end, a Material Safety Data Sheet and a certificate of analysis accompany each shipment from our manufacturing plant. We also provide an in-depth guide to the Safe Handling & Storage of Polyalphaolefins and a Product Integrity Protection Guidelines brochure.

### **Regulatory Information:**

Regulations exist that govern the manufacture, sale, transportation, use and/or disposal of products of the 4-10 cSt PAOs category. These regulations may vary by city, state, country or geographic region. Additional helpful information may be found by consulting the relevant product Material Safety Data Sheet.

### **Sources of Additional Information:**

- U.S. Environmental Protection Agency (USEPA) - Robust Summaries & Test Plans: 1-Decene, Tetramer, Mixed with 1-Decene Trimer, Hydrogenated: <http://www.epa.gov/chemrtk/pubs/summaries/1dectmix/c13433tc.htm>
- European Chemical Substances Information System (ESIS): <http://ecb.jrc.it/esis/>
- Organization for Economic Cooperation and Development (OECD) – eChemPortal web-based search tool (use applicable CAS No.): <http://webnet3.oecd.org/echemportal/>
- Our polyalphaolefins website: <http://www.cpchem.com/enu/pao.asp>
- Our Safe Handling and Storage Brochure: [http://www.cpchem.com/enu/docs\\_pao/PAO\\_2008\\_Rev\\_0.pdf](http://www.cpchem.com/enu/docs_pao/PAO_2008_Rev_0.pdf)
- Our Product Integrity Protection Guidelines brochure: [http://www.cpchem.com/enu/docs\\_pao/PIP\\_Guidelines\\_Rev\\_12.pdf](http://www.cpchem.com/enu/docs_pao/PIP_Guidelines_Rev_12.pdf)
- Material Safety Data Sheet: [http://www.cpchem.com/enu/pao\\_p\\_products.asp](http://www.cpchem.com/enu/pao_p_products.asp)

### **Conclusion:**

4-10 cSt PAOs are not expected to be hazardous to human health and the environment. They have not been shown to cause adverse health or environmental effects at levels typically found in the workplace or environment, however, prior to use or handling products from the 4-10 cSt PAOs category or products which contain a mixture of 4-10 cSt PAOs, make sure to consult the relevant product Material Safety Data Sheet and

review applicable regulatory guidelines and requirements, including but not limited to OSHA guidelines.

**Contact Information:**

<http://www.cpchem.com/>

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