



Product Stewardship Summary Synfluid[®] mPAO Products

This product stewardship summary is intended to give general information about Synfluid[®] mPAO products. 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 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:

Metallocene Polyalphaolefins (mPAOs) are a category of hydrogenated olefin oligomers manufactured by catalytic polymerization of normal alpha olefins. They are colorless liquids with well-defined, wax-free isoparaffinic structures. mPAOs are manufactured from 1-octene. This category contains two viscosity grades of mPAO.

Product Name	CAS Number
mPAO 65cSt	70693-43-5
mPAO 100cSt	70693-43-5
mPAO 150cSt	70693-43-5

Category Justification:

mPAOs are highly branched, isoparaffinic polyalphaolefins produced by oligomerizing 1-octene. 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 mPAOs are also similar.

Product Uses:

mPAOs are used as synthetic base fluids for high-performance industrial and automotive lubricants (gear oils, compressor oils, hydraulic fluids, greases, engine oils) and functional fluids (dielectric, heat transfer, drilling).

Chevron Phillips Chemical mPAOs meet the FDA technical white mineral 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 incidental contact with food. These products may not be used as a direct food additive as defined under food additive regulation 21 CFR §172.878. They are registered as an H1 and HX-1 lubricant for incidental food contact by the National Sanitation Foundation (NSF) for use in food production and processing plants.

Physical/chemical properties:

mPAOs 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 may cause a fire.

Health Information:

mPAOs 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:

mPAOs 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. mPAOs are not considered to be readily biodegradable. The most likely sources of potential environmental exposures are accidental spills.

Exposure Potential:

The most likely routes of exposure to mPAOs are eye and skin contact.

- Workplace use: This refers to potential exposure to mPAOs to persons in a manufacturing facility or through various industrial applications. 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 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 mPAOs are eye and skin contact. Manufacturing, quality assurance, and transportation workers will likely have access to engineering controls and should wear personal protective equipment to eliminate exposure, as should mechanics.
- 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 mPAOs. The most likely routes of exposure are eye and skin contact. Consumers should wear personal protective equipment to eliminate exposure.
- Potential environmental release: There may be some potential for exposure to the environment from an accidental release of the mPAOs due to transportation by rail, tank car and ship, however, risk of 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 make product information available to all of our customers, distributors, and carriers of mPAOs which contain detail about the properties of the product. To that end, a Safety Data Sheet and a certificate of analysis accompany each shipment from our manufacturing plant.

Before using these products, the user is advised and cautioned to make its own determination and assessment of the safety and suitability of the product for the specific use in question. It is the ultimate responsibility of the user to ensure suitability for use and determine if this information is applicable to the user's specific application. Chevron Phillips Chemical does not make, and expressly disclaims, all warranties, including warranties of merchantability or fitness for a particular purpose, regardless of whether oral or written, express or implied, or allegedly arising from any usage of any trade or from any course of dealing in connection with the use of the information contained herein or any product

itself. The user expressly assumes all risk and liability, whether based in contract, tort or otherwise, in connection with the use of the information contained herein or any product itself.

Regulatory Information:

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

Sources of Additional Information:

- Organization for Economic Cooperation and Development (OECD) – eChemPortal web-based search tool (use applicable CAS No.):
http://www.echemportal.org/echemportal/index?pageID=0&request_locale=en
- Our polyalphaolefins website: <http://www.cpchem.com/bl/pao/en-us/Pages/default.aspx>
- Safety Data Sheet: <http://www.cpchem.com/bl/pao/en-us/Pages/Products.aspx>

Conclusion:

mPAO products 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 mPAOs category or products which contain a mixture of mPAOs, make sure to consult the relevant product 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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