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Isopar™ fluids for personal care products

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Isopar™ fluids are high purity, virtually odorless synthetic isoparaffinic fluids which can be used in personal care products. They are extensively used as a viscosity reducing agent for personal care products due to their compatibility with many non-polar ingredients and good spreadability properties. Isopar fluids are also recognized for their lack of color and narrow distillation range. These fluids may also be a cost effective alternative to other isoalkanes with comparable performance.

Physical and chemical properties

A broad portfolio of Isopar fluids is available to provide a range of viscosities and volatilities for greater formulation flexibility. Isopar C, Isopar E, Isopar G and Isopar H fluids have lower boiling ranges, allowing them to be used in personal care products that require fast to moderate drying rates. Isopar L and Isopar M fluids possess the advantage of a flash point of more than 60 °C, meaning they do not qualify as dangerous goods under DG Transport regulations.

Features of Isopar fluids

- Virtually odorless, with typical aromatic content ≤ 0.01%
- Low viscosity
- Narrow distillation range for a high degree of consistent quality, with predictable performance
- Compatible with most non-polar ingredients used in personal care
- Globally available

Physical and chemical properties							
Key properties	**Test Methods**	**Isopar C fluid[1]**	**Isopar E fluid[1]**	**Isopar G fluid[2]**	**Isopar H fluid[2]**	**Isopar L fluid[3]**	**Isopar M fluid[1]**
Distillation range, °C	ASTM D86	99-104 [5]	115-140 [25]	162-177 [15]	181-193 [12]	185-198 [13]	227-254 [27]
Aromatics content, wt%	AMS 140.31	<0.001	<0.002	≤0.001	≤0.001	<0.01	<0.01
Density@15°C, kg/dm³	ASTM D4052/ ISO 12185†	0.699	0.723	0.746†	0.761†	0.764	0.790
Kinematic viscosity@25°C, mm²/s	ASTM D445	0.68	0.81	1.13	1.48	1.59	3.85
Evaporation rate, reference to n-BuAc = 100	Calculated	370	170	16	5.7	4.4	0.3
Flash point, °C	ASTM D56* / ASTM D93^ / Calculated	<0	4*	44*	60^	66^	97^
Aniline point, °C	ASTM D611	79	73	77	81	81	90
Colour, Saybolt	ASTM D156/ ASTM D6045#	30	30	+30#	+30#	30	30

* Values in above table are typical values and do not constitute specification limits
[1]Baytown typicals, [2]Antwerp typicals, [3]Singapore typicals
Source: Fluids at a Glance (typical properties 2015-Asia Pacific portfolio, typical properties 2014 Europe, Middle East & Africa portfolio, typical properties 2014-North America portfolio)

Purity

Isopar™ fluids are produced by an oligomerization or alkylation process from purified monomers, making them fully synthetic. Careful consideration is taken to ensure high purity is achieved during the treatment and separation process. Therefore, Isopar fluids typically contain extremely low levels of impurities such as benzene, sulfur, heavy metals and polyaromatic hydrocarbons (PAH).

Suitable for use in personal care products

Listed in the International Cosmetic Ingredient Dictionary and Handbook of the Personal Care Products Council (formerly the Cosmetic, Toiletry and Fragrance Association), Isopar fluids are suitable for use in cosmetic or other personal care products. Being soluble[1] in many non-polar ingredients such as cosmetic esters, natural oils and silicones, Isopar fluids give ease of formulation for various products.

International Nomenclature Cosmetic Ingredients (INCI) Name	
Products	**INCI Name**
Isopar C	C7-8 Isoparaffin
Isopar E	C8-9 Isoparaffin
Isopar G	C10-11 Isoparaffin
Isopar H	C11-12 Isoparaffin
Isopar L	C11-13 Isoparaffin
Isopar M	C13-14 Isoparaffin

Skin irritation potential

Some hydrocarbon solvents with a boiling range < 150°C or carbon number less than C-9, are classified as a "skin irritant" (H315). Other hydrocarbon solvents in the C9 through C19 range may cause skin defatting, resulting in skin dryness, flaking or cracking. Defatting represents a lower degree of harm compared to irritation, but could lead to irritation under specific exposure conditions (i.e. prolonged occlusive exposures).

In most personal care formulations, Isopar fluids are diluted to low concentrations, reducing the potential for adverse skin reactions, including skin defatting. In skin irritation tests conducted with Isopar fluids diluted to 50% in mineral oil or petrolatum, minimal evidence of adverse skin reactions is observed.

To avoid prolonged skin contact, Isopar fluids are generally recommended for semi-occlusive and non-occlusive applications. As classification and labeling rules may differ from country to country, please consult the safety data sheets of the ExxonMobil Fluids of interest at the following address: **http://www.msds.exxonmobil.com/IntApps/psims/psims.aspx?brand=xomcc**

[1] Tests under application conditions are required to confirm compatibility because individual members of each chemical family may differ.

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