NEOFLO™ 4633

TECHNICAL DATASHEET

Synthetic Base Fluid

Updated: OCTOBER 2018
SICC Product Code: V1904

Description:

- NEOFLO 4633 is a premium-quality base fluid suitable for use in conventional and unconventional land and deep water applications. Because of its clean natural gas origin, it contains virtually no aromatics nor contaminants such as sulfur and amines.

- NEOFLO 4633 readily biodegrades, is non-toxic in the water column and has low sediment toxicity. It has a low viscosity, a low pour point and relatively high flash point making it ideal for land and deep water exploration. It is widely used as a non-aqueous base fluid in both water and invert emulsion drilling muds, hydraulic fracturing fluids and production chemicals in the upstream oil and gas industry.

- NEOFLO 4633 is a mixture of alkanes with carbon chain length of predominantly C10 to C24.

Classification:

This product is classified as a synthetic gas-to-liquids base drilling fluid as it is produced from the reaction of a purified feedstock as opposed to highly refined/processed mineral oils, which are produced from the distillation or refining of crude oil (OGP, 2003)[1].

[1] International Association of Oil & Gas Producers (OGP). Environmental Aspects of the Use and Disposal on Non-Aqueous Drilling Fluids Associated with Offshore Oil and Gas Operations. Report No. 342, May 2003. Website address: http://www.ogp.org.uk/pubs/342pdf

Typical Chemical Properties [a]	Property	Unit	Value	Method
	C10-24 Paraffins	%m/m	99	GC x GC
	Appearance		CSFVI[b]	Visual

a: An official sales specification is available from your local Shell Chemicals representative.
b: Clear & Substantially free of visual impurities

Typical Physical Properties	Property	Unit	Value	Method
	Density @ 15°C	kg/m^3	781	ASTM D1298
	Density @ 15°C	lbs/gal	6.52	ASTM D1298
	API Gravity @ 60°F	-	50	Calculated
	Flash Point, PMCC	°C	≥ 85	ASTM D93
	Pour Point	°C	< -20	ASTM D97
	Aniline Point	°C	95	ASTM D611
	Kinematic Viscosity @ 40°C	cSt	2.9	ASTM D445
	Kinematic Viscosity @ 25°C	cSt	4.0	ASTM D7042
	Distillation, Initial Boiling Point	°C	200	ASTM D86
	Distillation, Final Boiling Point	°C	344	ASTM D86
	Vapor Pressure @ 40°C	kPa	< 0.1	Calculated
	Color	Saybolt	+30	ASTM D156
	Fractional Polarity	-	0	Calculated
	Surface Tension @ 20°C	mN/m	26	-
	Volatile Organic Compound (VOC)	g/L	53	EPA Method 24
	Coefficient of Friction	-	0.1189	ASTM D5183

Typical Environmental Properties	Property	Method/ Endpoint	Value	Toxicity Classification
	Biodegradation Aerobic, Marine	OECD 306 D/28-d	62%	Biodegradable
	Water Column Toxicity *Skeletonema costatum*	ISO10253/ 72-h EL_{50}	>1,000 mg/L WAF	Not toxic
	Acartia tonsa	ISO T147/ SC5/WG2, 96-h LC_{50}	>1,000 mg/L WAF	Not toxic
	Mysidopsis bahia	US-EPA 2001 40 CFR 435 (Modified)/96-h LC_{50}	>1,000,000 mg/L of 10% SPP	Not toxic
	Terrestrial Toxicity *Chronic Toxicity to earthworms*	OECD222 /EC_{50}	>1,000 mg/kg	Not toxic
	Terrestrial Plant Test, soybean, tomato, mustard, oat, perennial ryegrass	OECD 208/ EC_{50}	990 to >1,000 mg/kg	Not toxic
	Sediment Toxicity *Corophium volutator*	PARCOM/10d LC50	>49,000 mg/kg (dry)	Not toxic
	Partition coefficient	OECD 117 Log K_{ow}	> 6.5	May bioaccumulate
	Aromatics Content PAH Content	US EPA-16 PAHs	<1 mg/kg	

[1] PARCOM 1995
[2] OECD 203
[3] OECD 201, PARCOM ISO 10253 (using Nitzschia closterium)
[4] US EPA 2003 PARCOM guideline: sediment test results must be read together with biodegradability and bio-accumulation results

Least Toxic OCNS Rating vs Others	Parameters	NEOFLO 4633	Diesel	LTMO1	LTMO2
	Total BTEX, ppm	ND	3840	ND	ND
	Total Aromatics, %m	~0.02	34	~0.02	~0.03
	Sulfur, ppm	~1	10 - 5000	10 max	~1
	OCNS Designation*	E	A	C	D

ND – not detected

*** Details of OCNS Rating:** The OCNS (i.e. Offshore Chemical Notification Scheme) list is produced by CEFAS on behalf of the United Kingdom Department of Energy and Climate Change and the Netherlands State Supervision of Mines. Group "A" is the most toxic and Group "E" is the least toxic.

Storage and Handling

NEOFLO 4633 may be stored in mild steel or stainless steel tanks. Seals and gaskets may be made from compressed asbestos fiber, PTFE, Viton A and Viton B. Natural rubbers, PVC, polystyrene and copper alloys are unsuitable materials for use with NEOFLO 4633. The recommended storage and handling temperature is between 15°C and 45°C.

Hazard Identification

NEOFLO 4633 has a relatively low order of toxicity by the routes of exposure (oral, dermal, inhalation) encountered in normal handling. Like many hydrocarbon liquids, NEOFLO 4633 will dry and de-fat the skin on prolonged contact and on repeated contact could result in skin irritation and dermatitis. Also, like other hydrocarbons, this product can be dangerous when aspirated or ingested. Before handling the product, refer to the Safety Data Sheet.

Emergency Helpline

For emergency telephone numbers refer to the Safety Data Sheet relevant for your company's country and language.

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