



NEOFLO™ DRILLING FLUIDS

NEOFLO Drilling Fluids Typical Property Data

Description:

- The NEOFLO product grade names are based on their environmental performance category and their carbon number distribution. Products are coded first by category:

Premium = 1
Enhanced = 2
Standard = 3

- The following two numbers then represent the carbon number range. For example, NEOFLO 1-58 is a Premium grade base fluid with a carbon number range of 15 to 18.

	NEOFLO 1 Premium	NEOFLO 2 Enhanced	NEOFLO 3 Standard
Zero polyaromatic hydrocarbons (PAH)	•	•	•
Aerobic biodegradability	•	•	•
Low water column toxicity	•	•	•
Anaerobic biodegradability	•	•	
Low sediment toxicity	•		

NEOFLO products are clear, colorless, and mostly odorless liquids. Many NEOFLO products have optimal pour points, viscosity profiles, and flash points for both deepwater and shelf applications.

Typical properties data for NEOFLO Premium, Enhanced and Standard series of products

Parameter	ASTM Method	Unit	NEOFLO Grade									
			1-58	1-6	1-68	1-68i	2-4	2-46	2-48	3-14	3121	4633
Compound type			Internal olefin	Alpha olefin	Alpha olefin	Internal olefin	Alpha olefin	Alpha olefin	Alpha olefin	Synthetic paraffin	Internal olefin	Synthetic paraffin
Carbon number range			15-18	16	16-18	16-18	14	14-16	14-18	11-14	13-14	10-20
Density @ 20°C	D-4052	kg/m ³	787	780	788	788	771	775	778	759	773	778
		lb/gal	6.57	6.51	6.58	6.58	6.44	6.47	6.50	6.33	6.45	6.50
		lb/bbl	276	274	276	276	270	271	272	266	271	273
Kinematic viscosity @ 40°C	D-445	cSt	2.9	2.6	3.0	3.4	2.0	2.1	2.5	1.5	1.8	2.7
Pour point	D-97	°C	-12	4	13	-4	-14	-7	-2	-17	-37	< -20
Flash point	D-93	°C	135	130	135	141	102	115	115	83	102	≥85
Fire point	D-92	°C	146	146	172		135	126	120	88		
Aniline point	D-611	°C	77.7	73	93.3		>66	67.6	70.3	82.8	66	95
Boiling range, 5%	D-2887	°C	268	285	287		240	249	225	230	233	218
Boiling range, 95%	D-2887	°C	367	302	342		246	294	299	260	257	334
Color	D-1209	Pt-Co	<5	<5	<5	<5	<5	<5	<5	5	<10	+30

Typical environmental property data for NEOFLO Premium, Enhanced and Standard series of products

Parameter	Method/ Endpoint	NEOFLO Grade										
		Unit	1-58	1-6	1-68	1-68i	2-4	2-46	2-48	3-14	3121	4633
Biodegradation												
Anaerobic	Modified ISO 11734 275-d	%	70	60	62	61	78	82	73	17		
	BRR ¹		0.6	0.8	0.8	0.6	0.6	0.5	0.6	2.4		
Aerobic	OECD 301 or 306 28-d	%	58 – 76	60 – 71	86	58	>60	63 – 73	61	58		62
Water Column Toxicity												
Fathead minnow	96-h LC ₅₀	mg/L								>1000		
<i>Daphnia magna</i>	48-h LC ₅₀	mg/L								>1000		>1000
<i>Cyprinodon variegatus</i>	OECD 203 96-h LC ₅₀	mg/L	>1000 ³		>1000				>1000			
<i>Acartia tonsa</i>	48-h EC ₅₀	mg/L	>1000	>1000					>1000			>1000
<i>Skeletonema costatum</i>	72-h EC ₅₀	mg/L	>1000						>1000			>1000
<i>Mysidopsis bahia</i>	96-h LC ₅₀	mg/L	>1000				>1000		>1000			>1000000
Sediment toxicity												
<i>Leptocheirus plumulosus</i>	Formulated sediment 10-d LC ₅₀	mg/kg	2700	1500	1700	1600	180	260	430	220		497
	STR ²		0.8	0.7	0.7	0.9	8	5	3	13		
PAH	EPA 1654A	mg/kg	<5	<5	<5	<5	<10	<5	<5	<5		<1

¹BRR = biodegradation rate ratio (% biodegradation of C1618 internal olefin reference/% biodegradation to test material). US EPA passing ratio is ≤ 1.

²STR = sediment toxicity ratio (C1618 internal olefin reference LC₅₀/test material LC₅₀). US EPA passing ratio is ≤ 1.

³Non-toxic. Acute aquatic toxicity of >1000 mg/L is defined as non-toxic by GESAMP (2002). IMO/FAO/UNESCO-IOC/WMO/IAEA/UN/UNEP Joint Group of Experts on the Scientific Aspects of Marine Environmental Protection (GESAMP). 2002. The Revised GESAMP Hazard Evaluation Procedure for Chemical Substances Carried by Ships. Reports and Studied No. 64.

WARNING: FOR PARAFFIN BASE FLUIDS (NEOFLO 3 AND 4 SERIES)

OFFSHORE DISCHARGE

DO NOT USE THIS PRODUCT FOR DRILLING OPERATIONS INVOLVING MARINE DISCHARGE OF CUTTINGS CONTAINING THIS PRODUCT. DO NOT DISCHARGE THIS PRODUCT OR DRILL CUTTINGS CONTAINING THIS PRODUCT INTO ENVIRONMENTS THAT MAY BE OR MAY BECOME ANAEROBIC (ABSENT OF OXYGEN). Anaerobic conditions are likely to exist at the seafloor and within cuttings piles in certain conditions. Testing jointly developed by the E&P industry and the US EPA indicates that this product does not biodegrade anaerobically.

LAND DRILLING AND ZERO DISCHARGE OPERATIONS

THIS PRODUCT SHOULD ONLY BE USED FOR LAND DRILLING OPERATIONS AND ZERO DISCHARGE OPERATIONS WHERE DRILL CUTTINGS ARE MANAGED VIA ACCEPTED CUTTINGS MANAGEMENT PRACTICES SUCH AS INJECTION, THERMAL TREATMENT, LAND FARMING, OR COMPOSTING. Similar to diesel cuttings, if drill cuttings containing this product are discharged to or placed in the environment, best cuttings management practices should be used.

Emergency Helpline

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

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