Product Name: NiQuan CDF™

Product Category: Clean Drilling Fluids

NiQuan ENERGY

Description:

NiQuan Clean Drilling Fluid (NiQuan CDF™) is an on-spec and environmentally friendly product. Biodegradable and with very low toxicity, NiQuan CDF™ meets OGP Group III standards. NiQuan CDF™ is an ideal base fluid component for Synthetic Drilling Muds as they are a cleaner key component of drilling fluids used to maintain bore hole stability when deep sea drilling and are non-toxic, therefore they do not contribute to pollution of waterways.

NiQuan CDF™ has a low pour point, low viscosity and a narrow boiling range which improves its rheological performance. It has near-zero sulfur content and is characterized by very low aromatics and greatly reduced nitrogen content. With a high flash point and low absorbency, NiQuan CDF™ is safe to store and handle.

NiQuan CDF™ is produced using X-to-Liquids (XTL) technology featuring the Fischer-Tropsch catalytic process; a cost-efficient and low emission means of producing Group III NABFs. During an extensive testing program carried out by Intertek Laboratories in Houston, Texas, its performance as a base for the preparation of drilling fluids was in accordance with industry-accepted parameters.

NiQuan CDF™ Specifications

	Property	Unit	Value	Test Method
Chemical Properties	*Total Paraffin*	%m	97	ASTM D1319/GC
	Total Aromatic	%vol	< 0.5	ASTM D391
	Sulphur Content	ppm	0.2	ASTM D4294 / ASTM D5453
Physical Properties	*Saybolt Color*		> +30	ASTM D156
	Boiling Range			ASTM D86
	IBP	°C	175	
	90% Recovered	°C	310	
	Aniline Point	°C	87	ASTM D611
	Pour Point	°C	-18	ASTM D97
	Flash Point	°C	75	ASTM D93
	Vapor Pressure	psi	< 0.02	ASTM D6378
	Kinematic Viscosity @ 40°C	cSt	2.2	ASTM D445
	Kinematic Viscosity @ 100°C	cSt	1.32	ASTM D445
Environmental Properties	*Biodegradability*	**Unit**	**Expected Value**	**Test Method**
	Aerobic (Marine Water)	% after 28 days	75	OECD 306
	Aerobic (Soil)	Half-life (days)	21	OECD 307
	*Water Column Toxicity **			
	Acartia Tonsa	mg/L	> 1,000 (non-toxic)	PARCOM, ISO 14569
	Skeletonema Costatum	mg/L	> 1,000 (non-toxic)	OSPAR / PARCOM
	Mysidopsis Bahia	ppm	> 1,000,000 of 10% SPP (non-toxic)	US-EPA 2001 40 CFR 435
	Pagrus Auratus	mg/L	7d LC50: > 100,000 (non-toxic)	US-EPA 2003
	Daphina Magna	mg/L	> 1,000 (non-toxic)	OECD 202
	Brachydanio Rerio	mg/L	> 1,000 (non-toxic)	OECD 203
	Sediment Organism Toxicity			
	Corophium Volutator	mg/kg	> 20,000	PARCOM Protocol 1995
	Bioaccumulation Potential			
	Octanol-Water Partition Coefficient		Log Kow > 6.5	OECD 117

* Results reflect expected values as water Column toxicity is region specific. As per Trinidad and Tobago's Local Testing Parameters NABF was found to be Biodegradable and non-toxic to its relevant marine organism.

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