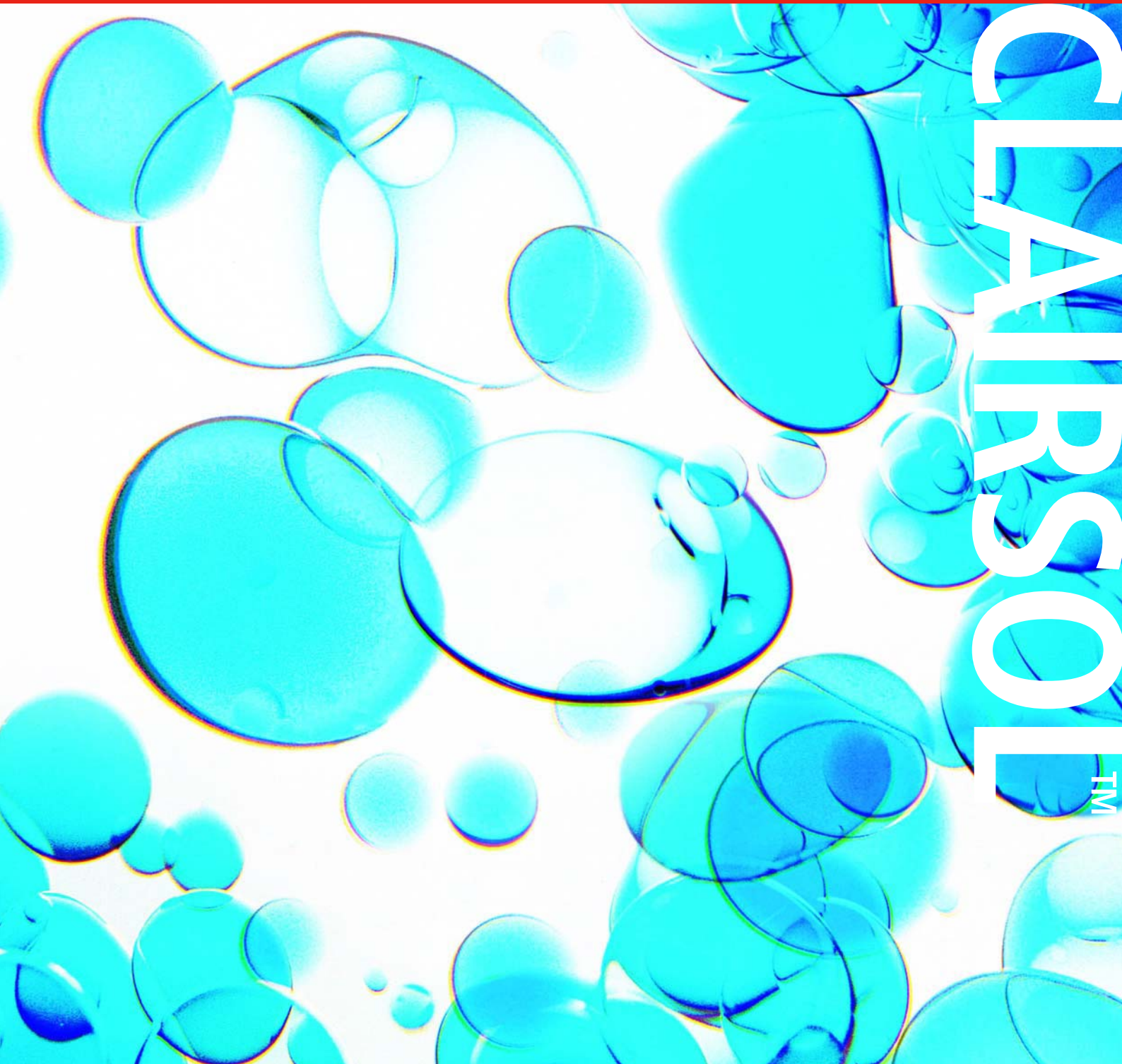




**PETROCHEM
CARLESS**

Drilling Fluids



CLEARSOIL™

Clairsol™ is a range of specialist drilling base fluids designed to meet the widely varying demands of the world's drilling industry. Petrochem Carless has been meeting these demands with high performance, environmentally sensitive base fluids since the early eighties.

Typical properties of Clairsol drilling fluids

	ASTM	CLAIRSOL NS	CLAIRSOL 370	CLAIRSOL 350 MHF	CLAIRSOL NT
Density @15°C	D4052	0.820	0.818	0.818	0.760
Colour (saybolt)	D156	+30	+30	+28	+30
Viscosity @40°C	D445	3.4cSt	2.4cSt	2.3cSt	1.8cSt
Aromatics %	HPLC	0.3%	0.5%	2.0%	<0.1%
Flash point °C	D93	122°C	102°C	100°C	>90°C
Aniline point °C	D611	84°C	80°C	78°C	91°C
Pour point °C	D97	-18°C	-29°C	-18°C	>-6°C

Petrochem Carless is one of the world's leading manufacturers and suppliers of drilling base fluids.

Industry issues

Petrochem Carless base fluids are high quality products used in the manufacture of invert emulsion drilling muds. Safeguarding the marine environment and employee occupational hygiene are primary concerns for the industry.

Petrochem Carless has responded to these challenges by developing fluids which are not only non-toxic to the marine environment, but also meet the very highest occupational hygiene standards.

Environmental considerations

It is essential that if a discharge of base oils occurs that there is the minimum impact on the environment. This means that drilling fluids should be non-toxic to marine life and also be designed to be readily biodegradable.

Occupational hygiene

A critical issue when using invert emulsion drilling muds is the generation of vapours, particularly in the confined space of the pitroom. Build-up of vapour anywhere on the rig is potentially hazardous and may

also have serious health and safety implications for rig operatives.

Although good ventilation and efficient extraction can reduce the build-up and effects of hydrocarbon vapours, the careful selection of base fluid type can significantly help to minimise this problem.



Marine Toxicity

Clairsol fluids have been shown to exhibit low toxicity to a number of marine organisms

SPECIES	METHOD	UNITS	VALUE
<i>Skeletonema Costatum</i>	EC50	mg/l	>100,000
<i>Acartia tonsa</i>	LC50	mg/l	>10,000
<i>Scophthalmus Maximus</i>	LC50	mg/l	>5,000
Biodegradation	-	%	80

Occupational hygiene

Clairsol fluids demonstrate the following occupational hygiene characteristics

TEST	RESULT
Skin irritation	Not Irritating
Eye irritation	Not Irritating
Ames Salmonella mutation	Negative
Vapour pressure	Typically 0.2Pa @ 20°C



Specialist advice on fluids and applications

A Petrochem Carless industry-orientated project and management team is ready to help and advise you on all drilling technology, toxicity, environmental and occupational hygiene issues in the workplace.

Low vapour products and expertise

Petrochem Carless has developed an accurate method of calculating the concentrations of hydrocarbons in the vapour phase and, using this technology, has produced drilling fluids with very low vapour pressures.

Clairsol drilling fluids

By using Clairsol drilling fluids, operators can be confident that only minute amounts of hydrocarbon vapour will be generated, even at high temperatures.

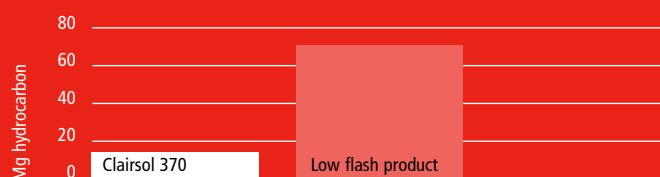
In Norway, Clairsol NS – the latest addition to the Petrochem Carless range – has demonstrated a significant reduction in the concentration of hydrocarbons in the vapour phase.

Where low flash base oils (odourless kerosine-type) are used, replacement with Clairsol 370 substantially reduces headspace vapours in the workplace.

Hydrocarbons in the vapour phase

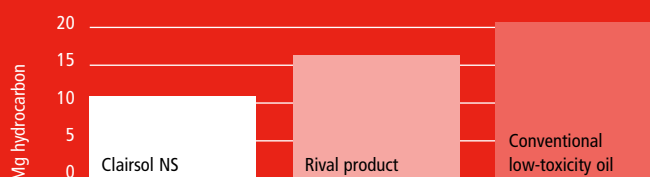
Careful selection of the appropriate Clairsol grade can substantially reduce headspace hydrocarbons in the working environment.

Clairsol 370



Typical low flash product has a volatility 4 x greater than Clairsol 370

Clairsol NS



Clairsol NS exhibits exceptionally low levels of volatility

Product Range

Alcohols
Aliphatic Solvents
Amines
Aromatics
Automotive Products

Blends
Burning Oils
Chlorinated Solvents
Custom Processing
Drilling Mud Fluids

Esters
Glycols
Glycol Ethers/Esters
Ketones
Heat Transfer Fluids

Performance Fuels
Plasticisers
Printing Ink Distillates
Process Oils
Refinery Naphthas

Special Kerosines
Speciality Base Oils
White Oils
Other products

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