

UCARTHERM™

Heat Transfer Fluids

NORKOOL™

## Sample Analysis Report

Jeremy Brown / Rees Lusk  
Canadian Natural Resources Limited

Sample Number: 2013-130-0083  
Report Date: 8/16/2013

**Sample Label Description:** Boulder d72g/9308 Unit 2826 K102 Aux

		<u>New Data</u>	<u>Acceptable</u>
<b>Appearance:</b>			
Color		green	---
Clarity		clear	clear
Sediment	wt%	<0.01	<0.01
<b>Concentration &amp; Freeze Point:</b>			
Ethylene Glycol	vol% EG	45	30-60
Freeze Point	deg F	-22	---
Freeze Point	deg C	-30	---
<b>Chemical Properties</b>			
Fluid pH		8.0	8-10.5
Reserve Alkalinity	ml of 0.1N HCl	2.7	>8
<b>Corrosion Inhibitors:</b>			
Nitrite	ppm NO <sub>2</sub>	967	>600
Phosphate	ppm PO <sub>4</sub>	1909	>2500
Tolytriazole	ppm C <sub>7</sub> H <sub>7</sub> N <sub>3</sub>	472	>100
<b>Corrosives &amp; Scale Promoters:</b>			
Chloride	ppm Cl	0	<200
Sulfate	ppm SO <sub>4</sub>	125	<500
Total Hardness	ppm CaCO <sub>3</sub>	<10	<300
<b>Glycol Degradation &amp; Contaminants:</b>			
Total Degradation Acids	ppm as C <sub>2</sub> H <sub>4</sub> O <sub>3</sub>	815	<3000
Nitrate	ppm NO <sub>3</sub>	1041	<500
MBT	ppm MBT	0	<500
Propylene Glycol	vol% PG	0	<1
Diethylene Glycol	vol% DEG	0	<1
Triethylene Glycol	vol% TEG	0	<1

**FLUID MAINTENANCE RECOMMENDATIONS:**

The condition of this fluid is outside recommended ranges, but can be adjusted back to normal. Phosphate level is low. Adjust by adding 2 units of NORKOOL inhibitor 231 for every 100 units of system volume. Nitrate is most likely from the nitrites breaking down due to the age of the fluid.

This information is not to be taken as a warranty or representation for which we assume legal responsibility nor as permission or recommendation to practice any patented invention without a license. It is offered solely for your consideration, investigation and verification.

The Dow Chemical Company • Thermal Fluids Testing Lab • 1691 N. Swede Road • Midland MI 48674  
For technical assistance regarding this report please contact FMDTFL@dow.com  
For sales and general information about our products please contact Dow Customer Service: 1-800-447-4369