



OILCONTROL

H₂S Removal



OIL CONTROL

Innovative Chemical Solutions for the Oil and Gas Industry



WHO ARE WE?

OIL CONTROL is a chemical inventor and manufacturer. We specialize in H₂S/Sulfide & Mercaptan removal from oil, gas and fuel oils, as well as Mercury and Hydrocarbon Decontamination. We also specialize in matrix stimulation and heavy oil problems.



OILCONTROL

HydraScav™

The Oil & Gas industry have been looking for a better and more economic way to remove hydrogen sulfide for years.....

OIL CONTROL has it!

HydraScav is the most effective and efficient way to remove Hydrogen sulfide (H_2S) from liquids

HydraScav is completely unique, 100% effective in the removal of H_2S , the reaction is stable and works instantly.

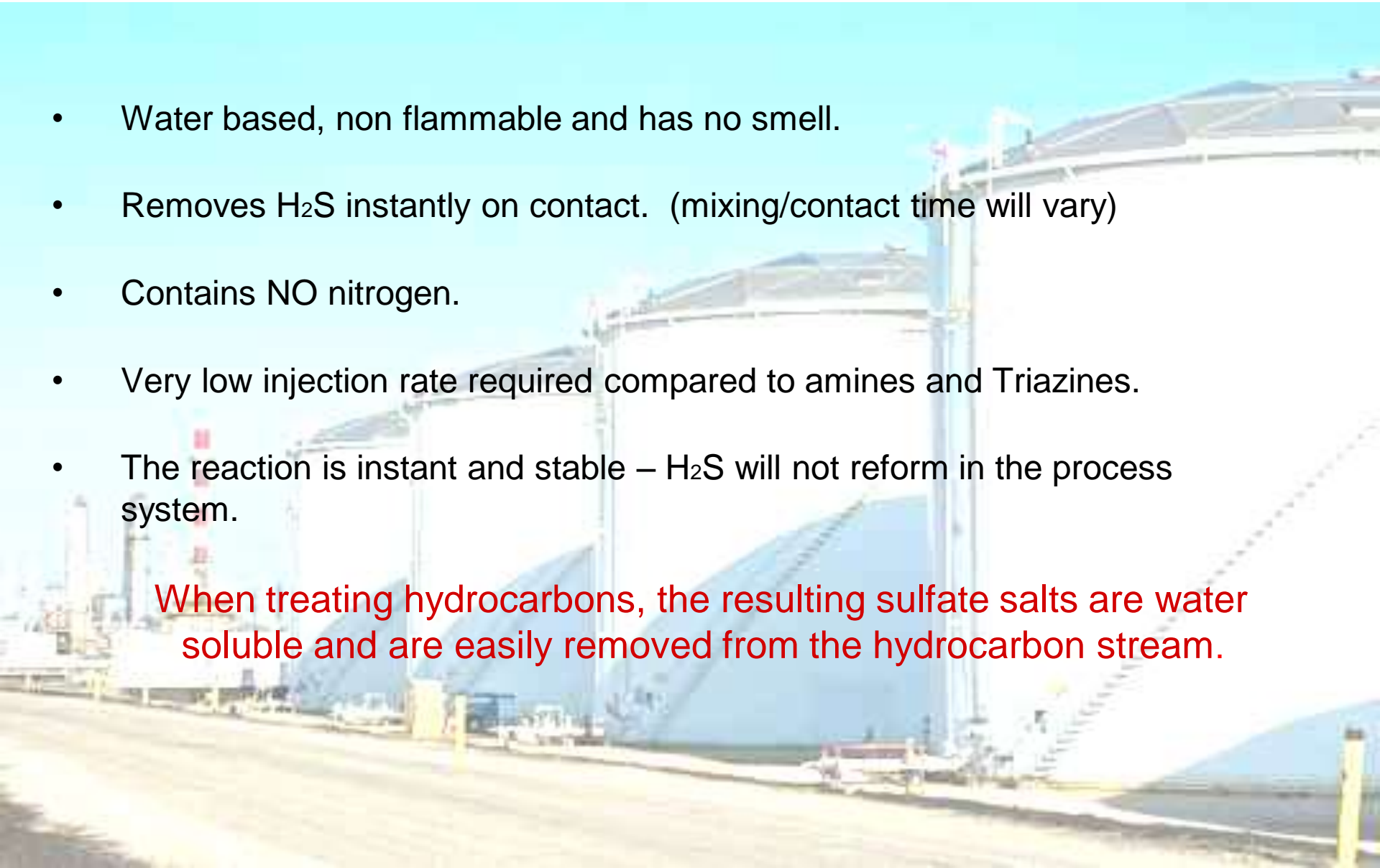
HydraScav contains NO nitrogen, and will not cause fouling in heat trains or Crude Distillation Units (CDU's).

The required dosage of HydraScav required is a fraction of that required of other chemicals and the cost per gallon is lower!



- Water based, non flammable and has no smell.
- Removes H₂S instantly on contact. (mixing/contact time will vary)
- Contains NO nitrogen.
- Very low injection rate required compared to amines and Triazines.
- The reaction is instant and stable – H₂S will not reform in the process system.

When treating hydrocarbons, the resulting sulfate salts are water soluble and are easily removed from the hydrocarbon stream.





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HydraScav™

PHYSICAL PROCESS

1. Water soluble blend of stabilized polyol additives
2. H₂S is converted into stable water soluble components
3. The Sulfide stays with the water phase
4. Spent chemical is easily treated
5. The water salt is stable and the reaction is irreversible

CHEMISTRY

1. Stabilized Polyol & Hydroxyls
2. Stabilizer
3. Complex alcohols





OILCONTROL

Crude Oil

TRIAZINE BASED SCAVENGERS

- Efficient at removing H_2S gas – poor performance in liquids
- Reaction is unstable and H_2S can reform
- Known carcinogen – difficult to handle
- Cause fouling in heater process systems (solid formation)
- Injection rate = 0.8 – 1.0ppm of Triazine per 1ppm H_2S (gas phase)

AMINE BASED SCAVENGERS

- Poor efficiency
- Increase Nitrogen level in liquids
- Cause fouling in heater process systems
- Reaction is unstable and H_2S can reform
- Injection rate = 0.9- 1.2ppm of chemical per 1ppm H_2S (gas phase)

HYDRASCAV V3

- Removes H_2S in liquids extremely effectively (typically not suitable for gas)
- Reaction is instant and stable
- Easily Removed from hydrocarbons – no fouling in CDU's
- Injection rate = 0.15-0.25ppm of HydraScav V3 per 1ppm H_2S (gas phase)
- **OVER FOUR TIMES THE EFFICIENCY OF TRIAZINE BASED SCAVENGERS**



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Crude Oil

CFR Chemicals – Comparison Tests (Jan 2013)

Scavenger	Sample Size (mL)	pH	H2S Flow (sccm)	CO2 Flow (sccm)	gH2S/L Scavenger
CFR Triazine	10	11.5	750	0	10.2
HydraScav V3	1	14	750	0	76.3
ACL-78	10	10	750	0	14.3
Baker Triazine	10	10	750	0	12.1
Nalco Triazine	10	10.5	750	0	16.4
Caradad Triazine	10	10	750	0	12
SulfurClear	10	9.8	750	0	12.4

CFR Chemicals Inc.

915, 4747 – 67 Street, Red Deer AB,

T4N 6H3 Ph: (403) 346-2214 Fax: (403) 346-2299

www.cfrchemicals.com



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Crude Oil

Compositional Analysis of Cylinder TS-126706 to C36 plus

Before:

Component	Mole %	Weight %
H ₂ Hydrogen	0.07	0.00
H ₂ S Hydrogen Sulphide	5.95	1.35
CO ₂ Carbon Dioxide	5.62	1.64
N ₂ Nitrogen	0.13	0.02
C ₁ Methane	12.05	1.28
C ₂ Ethane	6.13	1.22
C ₃ Propane	7.14	2.09
iC ₄ i-Butane	1.04	0.40
nC ₄ n-Butane	4.35	1.68
C ₅ Neo-Pentane	0.01	0.00
iC ₅ i-Pentane	1.71	0.82
nC ₅ n-Pentane	2.94	1.41



Compositional Analysis of Cylinder ts-126706 to C36 plus

After HydraScav

Component	Mole %	Weight %
H ₂ Hydrogen	0.01	0.00
H ₂ S Hydrogen Sulphide	0.00	0.00
CO ₂ Carbon Dioxide	0.00	0.00
N ₂ Nitrogen	0.14	0.02
C ₁ Methane	13.24	1.29
C ₂ Ethane	6.83	1.25
C ₃ Propane	8.00	2.14
iC ₄ i-Butane	1.16	0.41
nC ₄ n-Butane	4.88	1.72
C ₅ Neo-Pentane	0.00	0.00
iC ₅ i-Pentane	1.93	0.85
nC ₅ n-Pentane	3.33	1.46



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Before:

Component	Fl. Liquid ppm Mole
Hydrogen Sulfide	831.80
Carbonyl Sulfide	4.80
Methyl mercaptan	85.80
Ethyl mercaptan	75.20
Di methyl sulfide	7.20
Carbon Disulfide	6.80
i-Propyl mercaptan	49.40
Tert.butyl mercaptan	16.70
Ethyl methyl Sulfide	6.30
n-propyl mercaptan	15.40
Thiophene	43.70
Sec-butyl mercaptan	6.60
i-butyl mercaptan	13.90
Diethyl sulfide	1.50
n-butyl mercaptan	7.90
2-methyl-2-Butanethiol	7.20
Di methyl disulfide	2.60
Thiophene-2-methyl	13.10
i-pentyl mercaptan	3.50
n-pentyl mercaptan	6.20
Thiophene-2,5-Dimethyl	4.30
Ditert. Butyl Sulfide	7.70
n-Hexyl mercaptan	1.00
Di-Sec.butyl Sulfide	12.70
n-Heptyl mercaptan	21.60
Di Butyl Sulfide	14.60
n-Octyl mercaptan	11.00
n-Nonyl mercaptan	5.00
Other Sulfur and RSH	365.60
Total sulfur (ppm Mole)	1649.10

After HydraScav

Component	Fl. Liquid ppm Mole
Hydrogen Sulfide	0.00
Carbonyl Sulfide	0.00
Methyl mercaptan	0.00
Ethyl mercaptan	2.80
Di methyl sulfide	7.00
Carbon Disulfide	0.00
i-Propyl mercaptan	22.00
Tert.butyl mercaptan	0.00
Ethyl methyl Sulfide	8.40
n-propyl mercaptan	7.20
Thiophene	37.80
Sec-butyl mercaptan	0.00
i-butyl mercaptan	0.00
Diethyl sulfide	0.00
n-butyl mercaptan	0.00
2-methyl-2-Butanethiol	0.00
Di methyl disulfide	0.00
Thiophene-2-methyl	15.50
i-pentyl mercaptan	1.10
n-pentyl mercaptan	9.10
Thiophene-2,5-Dimethyl	18.50
Ditert. Butyl Sulfide	0.00
n-Hexyl mercaptan	0.00
Di-Sec.butyl Sulfide	19.70
n-Heptyl mercaptan	33.00
Di Butyl Sulfide	30.00
n-Octyl mercaptan	25.10
n-Nonyl mercaptan	9.60
Other Sulfur and RSH	355.70
Total sulfur (ppm Mole)	602.50



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Crude Oil

LABORATORY TEST RESULTS					
16-Apr-13					
JOB NUMBER: 52137-2013-0961			CUSTOMER: NHR Chemicals LLC		
CLIENT ID:	Brand X Oil	LABORATORY ID.:	0961-1-348 / 0961-3-348		
DATE SAMPLED:	9-Oct-12	DATE RECEIVED:	03/20/13		
SAMPLE POINT:	Sales Line - Sample Pump Inlet	REPORT DATE:	04/09/13		
TEST DESCRIPTION	RESULT	UNITS	TEST METHOD	DATE	TECH
<u>Before Hydrascav dosage</u> Headspace H2S	2.18	Mole %	ASTM D-5705m	04/01/13	BH
<u>After Hydrascav dosage</u> Headspace H2S	1.04	Mole %	ASTM D-5705m	04/09/13	BH
Test Procedure					
<p>The objective of the experiment was to observe the effects of Hydrascav on the headspace H2S of a sour crude sample. Headspace H2S was determined using a modified version of ASTM D-5705 in which the detection method is by Chemiluminescence using GC-SGD. This initial value is reported above. 229 mg of Hydrascav (1:1 mixture with DI water) was then added to 190.0 g of crude oil to give a solution containing 1200 ppm of 1:1 Hydrascav/water. This solution was agitated in a shaker for one hour and left to rest for 30 minutes. Final headspace H2S was then measured and reported above.</p>					

- 1200 ppm of HydraScav V3 removes 1% H₂S in head space.



Table 1. Results on the TEST CRUDE using HydraScav with 5 minutes of agitation.

Component	Test Crude Untreated (mg/kg)	Test Crude With 400 ppm HydraScav (mg/kg)
Hydrogen Sulphide	142	17
Carbonyl Sulphide	<1	<1
Methyl Mercaptan	7.2	<1
Ethyl Mercaptan	14	3.2
Dimethyl Sulphide	2.6	2.8
Iso - Propyl Mercaptan	11	7.5
Tert - Butyl Mercaptan	2.0	2.0
N - Propyl Mercaptan	5.6	2.4
Methyl Ethyl Sulphide	3.8	4.2
Sec - Butyl Mercaptan/Thiophene	13	12
Iso - Butyl Mercaptan	<1	<1
Diethyl Sulphide	<1	<1
N - Butyl Mercaptan	3.6	2.4
Dimethyl Disulphide	<1	<1
Diethyl Disulphide	<1	<1



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Crude Oil

(Eagle Ford – South Texas)





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(Eagle Ford – South Texas)

- 160 wells to be treated
- H₂S range from 200ppm to 80,000 ppm (8%)

- Tank Head Space H₂S under 100ppm
- Improved safety for workers, transporter and the surrounding communities
- Reduced chemical costs by 52% (\$1.2m)





OILCONTROL (Corpus Christi – South Texas)

*333 Clay St., Suite 1600
Houston, TX 77002*



**Trafigura receives 300,000 bbls/d into Plains Corpus Christi.
100% treated by HydraScav V3 (ADS Pro 3)**



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Refined Products

TEST REPORT JO10-00968.002 Re-issue: 1

**** This is a re-issued document and supercedes all previous versions ****

PRODUCT DESCRIPTION:	Contaminated MOGAS	CLIENT ID:	Request dated 03 October 2010
SAMPLE SOURCE:	As stated	SAMPLE RECEIVED:	03/10/2010
SOURCE ID:	Contaminated MOGAS + 360ppm Hydra Scav	SAMPLE ANALYSED:	04/10/2010
LOCATION:	Jebel Ali, UAE	SAMPLE BY:	--
SAMPLE TYPE:	Hand Blend	DATE SAMPLED:	Not available

PROPERTY	Units	METHOD	RESULT	
Mercaptan Sulphur				
Before Additive	mg/kg	ASTM D3227	71	
Stand for 30 minutes	mg/kg	ASTM D3227	64	
Stand for 18 hours	mg/kg	ASTM D3227	54	
Stand for 24 hours	mg/kg	ASTM D3227	44	
Hydrogen Sulphide Content (Liquid Phase)				
Before Additive	ppm (m/m)	UOP 163	37	
Stand for 30 minutes	ppm (m/m)	UOP 163	zero	#

Contact us Today



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