

H₂S in Crude Oil

Hydrogen Sulphide (H₂S) occurs naturally in many types of crude oil, it is toxic & highly reactive. H₂S gas can 'evolve' when crude oil is heated or agitated ie: during distribution so measuring the H₂S level of an airspace such as inside a tanker) is not indicative of the entrained H₂S in the cargo itself.

Why Refiners are interested in H₂S content:

Managing hydrogen sulphide (H₂S) is a challenge at every stage of production, refining and transportation

H₂S is highly toxic, corrosive and produces noxious odours. H₂S content impacts on transport safety potentially compromising environmental and safety compliance as well as corroding infrastructure such as Pipelines and Tanks.

A considerable amount of gas may be dissolved in the wellhead crude oil which must be stabilised and/or removed to meet pipeline safety requirements. Treatment includes the use of washers and chemical scavengers designed to react with sulphide species to convert them to a more inert form.

H₂S reduces product value and may pose a safety threat:

Crude oil considered to contain high levels of H₂S may not meet transport regulations and be refused by the operator and devalued by the customer!

H₂S increases costs:

Failure to correctly identify or measure H₂S content has many cost implications, these include unnecessary or excessive remedial treatment, damage to plant and infrastructure and an unknown hazard level.

Hazardous Cargo Classification:

One primary concern is the ability to robustly determine H₂S levels in crude oil to comply with international dangerous goods regulations where H₂S is classified as Hazchem 2.3 - a poisonous gas.

Traditional test methods:


Various technologies are adopted for the measurement of H₂S however most are only able to determine the H₂S in VAPOUR phase or involve the use of toxic components or complex measurement technology. These methods include ASTM D5705 lead acetate (Draeger tube) test; UOP 163 Titration and ASTM D5623 Gas chromatography.

The opportunity:

Potential exists for producers to reduce processing costs and increase the traded value of crude oil through better measurement of entrained H₂S. IP 570 is becoming the adopted industry standard for testing crude oil...

- Fully portable instrument
- Precise Measurement range 0-250 mg/kg H₂S (0-250 ppm) in the liquid phase
- No costly or hazardous chemicals are required
- No need for analytical preparation by skilled technicians
- Very fast repeat sample measurement capability – test duration just 15 minutes
- Virtually no risk of losing entrained H₂S from the sample
- Visible result – no dependence on operator
- PTS scheme to support lab results



Hazchem Class 2.3		
 <p>Hazchem Class: 2.3 Emergency action code for this hazard class 2.3 UN Number: 1053</p> <p>2WE</p>	Material:	Hydrogen sulfide
	Hazard Class:	2.3
	UN Number:	UN1053
	Label Codes:	2.3, 2.1
	Special Provisions:	2, B9, B14, N89
	Exceptions:	None
	Non bulk:	304
	Bulk:	314, 315
	Passenger aircraft rail:	Forbidden
	Cargo aircraft only:	Forbidden
	Location:	D
	Other:	40
	sku:	HZ023

For more information please visit: www.stanhope-seta.co.uk/4909/H2S-Analyser