



Hoekstra Trading LLC  
November 1, 2017

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# *Hoekstra Research Report 3*

## Catalyst testing for diesel desulfurization

Hoekstra Trading LLC is pleased to offer our *Hoekstra Research Report 3* for a price of \$50,000:

The report includes the following:

1. Section 1 – Results of pilot plant run GH-6LP
2. Section 2 – Results of pilot plant run GH-8
3. Section 3 – Competitive analysis
4. Attachments
5. PowerPoint presentation for client meeting.

Items 1-4 will be delivered immediately upon receipt of a purchase order. Item 5 will be delivered in a face-to-face meeting or remote web conference to last at least one hour at a time that is convenient for you.

In addition, your purchase of this report will include six months of unlimited phone and E-mail consultation on your use of the information in the report.

There are no restrictions on what the recipient can do with the information in this report.

Attached are the Table of Contents and a sample invoice showing the information needed to issue a purchase order. This offer is valid until December 31, 2023.

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# Hoekstra Research Report 3

## Catalyst Testing for Diesel Desulfurization

### Table of Contents

#### EXECUTIVE SUMMARY

- Catalyst rankings
- Competitive analysis

#### SECTION 1 – CATALYST TEST RESULTS - PILOT PLANT RUN GH-6LP

- Test Protocol
- Feeds
- Catalysts
- Desulfurization activity of the catalysts
- Catalyst performance curves
- Temperature for 10 ppm product sulfur
- Effect of 20% LCO Addition
- Denitrogenation
- Hydrogen Consumption
- Catalyst Stability
- Catalyst ranking at 35 bar pressure
- Summary Tables of Results from Run GH-6LP

#### SECTION 2 – CATALYST TEST RESULTS - PILOT PLANT RUN GH-8

- Test protocol
- Feeds
- Catalysts
- Desulfurization activity of the catalysts
- Catalyst performance curves
- Temperature for 10 ppm product sulfur
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- Catalyst ranking at 725 psi (50 bar) pressure
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#### SECTION 3 – COMPETITIVE ANALYSIS

- Evolution of catalysts for low sulfur diesel
- Assessing catalyst stability claims
- Catalyst supplier costs, pricing, profitability
- Catalyst cost
- Pricing
- Profitability

#### ATTACHMENTS

1. Article from NPRA 108TH Annual Meeting, Next generation BRIM catalysts
2. Article from Hydrocarbon Engineering, Worth thinking about
3. Article from Hydrocarbon Engineering, Catching up on catalysts
4. Haldor Topsoe product sheets

5. Presentation from 5th Annual ERTC Meeting, Latest Improvements
6. NPRA paper AM-10-152, ULSD Catalyst Stability:
7. Haldor Topsoe A/S Annual Report
8. AFPM paper AM-12-54, Challenges with synthetic crude processing



Hoekstra Trading LLC

## SAMPLE INVOICE

DATE: SAMPLE  
INVOICE NUMBER: SAMPLE

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PNC Bank of Ohio ABA number 071921891 account number **4712186382**

swift code pncus33

EIN 26-3221486

<b>TO:</b> _____	
Payment terms	<b>Due date</b>
<b>30 days from invoice</b>	

quantity	description	unit price USD	line total USD
	<b>Reference PO Number</b> _____		
1	Report, Hoekstra Research Report 3	\$50,000	\$50,000
1	Client presentation delivered in remote web conference	No charge	
1	Unlimited phone and E-mail consultation for 6 months on matters related to use of the report	No charge	
		<b>Total</b>	<b>\$50,000</b>