



Hoekstra Trading LLC  
November 1, 2016

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# *Independent Catalyst Test Report 2016N*

FCC gasoline desulfurization for Tier 3 sulfur compliance

Offer letter and Table of Contents

# I. Offer

Hoekstra Trading LLC is pleased to offer our *Independent Catalyst Test Report 2016N* to refiners and catalyst suppliers for a price of \$75,000:

The report includes the following:

1. *Independent Catalyst Test Report 2016 Section 1* – Field tests on commercial gasoline desulfurizers
2. *Independent Catalyst Test Report 2016 Section 2* – Analyzing octane loss with detailed chemical analysis
3. *Independent Catalyst Test Report 2016 Section 3* – Competitive analysis
4. Attachments
5. PowerPoint presentation for client meeting.

Items 1-3 will be delivered immediately upon receipt of a purchase order. Item 4 will be delivered in a face-to-face meeting or remote web conference to last at least one hour at a time and location 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.

Attached are the Table of Contents and a sample invoice showing the information needed to issue a purchase order.

There will be no restrictions on how you may use the information you receive in these reports.

This offer is valid until December 31, 2016,

We appreciate your interest in our work.

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Hoekstra Trading LLC  
Phone: +1 630 330 8159  
[george.hoekstra@hoekstratrading.com](mailto:george.hoekstra@hoekstratrading.com)

**SUMMARY**

**SECTION 1 – FIELD TESTS ON COMMERCIAL GASOLINE DESULFURIZERS**

*PBF Delaware gasoline desulfurizer - July 8, 2016*  
*PBF Toledo gasoline desulfurizer - June 1, 2016*  
*PBF Toledo gasoline desulfurizer - September 14, 2016*  
*PBF Toledo gasoline desulfurizer - May 21, 2014*  
*PBF Paulsboro gasoline desulfurizer - July 28, 2016*  
*Citgo Lemont gasoline desulfurizer - June 16, 2016*  
*Lukoil Bulgaria gasoline desulfurizer*  
*One Rock Kapolei gasoline desulfurizer - September 23, 2016*  
*Conclusions*

**SECTION 2 ANALYZING OCTANE LOSS WITH DETAILED CHEMICAL ANALYSIS**

*Categorizing FCC gasolines*  
*European raw FCC gasoline*  
*European pretreated FCC gasoline*  
*North American raw FCC gasoline*  
*Causes of octane loss*  
*Lukoil Bulgaria*  
*PBF Delaware*  
*PBF Toledo*  
*Other field tests*  
*Heavy tails in FCC gasoline*  
*A model for octane loss in gasoline desulfurizers*  
*Conclusions*  
*Field test data tables*

**SECTION 3 – COMPETITIVE ANALYSIS**

*Tier 3 sulfur regulations and industry impact*  
*Octane demand and price*  
*Value of octane to a refinery*  
*Industry expectation for octane loss with Tier 3 gasoline*  
*Conclusions*

**ATTACHMENTS**

- 1. Publication – Commercial field tests – FCC gasoline desulfurization for 10 ppm S*
- 2. Publication – Pilot plant tests – FCC gasoline desulfurization for 10 ppm S*
- 3. Consultant report – Tier 3 sulfur gasoline and its impact*
- 4. Article – Tier 3 credits and cost of postponing clean fuel output*
- 5. Publication – Preserving octane for Tier 3 gasoline*
- 6. Publication – The increasing price of premium gasoline*
- 7. Publication – Gasoline pricing, retail operations and consumer research trends*
- 8. Consultant report – Value of octane to a refiner*
- 9. Publication – Gasoline blending optimization*
- 10. Publication – Gasoline production in the age of shale oil and new regulations*
- 11. Publication – Refinery configuration and design issues for meeting new regulations*
- 12. Publication – Refinery options for Tier 3 gasoline*
- 13. Hoekstra Trading Report – Detailed chemical analysis of FCC gasolines*



# SAMPLE INVOICE

## Hoekstra Trading LLC

DATE: SAMPLE  
INVOICE NUMBER: SAMPLE

1961 Dorset Drive, Wheaton, IL 60189  
Phone +1 630 330 8159  
[George.hoekstra@hoekstratrading.com](mailto:George.hoekstra@hoekstratrading.com)  
PNC Bank of Ohio ABA number 041000124 account  
number 4602529997  
swift code pnccus33  
EIN 26-3221486

TO: Sample invoice

PAYMENT TERMS	DUE DATE
30 days from invoice	

quantity	description	unit price USD	line total USD
	<b>Reference PO Number</b> _____		
1	Report, Independent Catalyst Test Report 2016N --consisting of: 1. Section 1 – Field tests 2. Section 2 – Analyzing octane loss and model 3. Section 3 - Competitive analysis	\$75,000	\$75,000
1	Client presentation delivered in face-to-face meeting at each refinery	No charge	
1	Unlimited phone and E-mail consultation for 6 months on matters related to use of the report	No charge	
Total			\$75,000