XBEE
ENZYME FUEL TECHNOLOGY

ELIMINATING PARTICLES IN FUELS

On August 22, 2016, Intertek Hamilton in Ontario, Canada tested **XBEE Enzyme Fuel Technology** to measure the impact of its unique enzyme formula on reducing the harmful small particles in aged diesel fuel that are monitored under the ISO-4406 fuel cleanliness standard.

ASTM D 7619 is a light obscuration test method that uses laser light beams passing through a fuel sample to determine the size and quantity of the very small particles that block filters and can damage engines. Particles that block light create a shadow which is picked up by a computer-controlled light sensor, and the total amount of particles, as well as their specific sizes, is measured. The test method is quite accurate and is non-discriminating. Being a purely calculative test, it does not determine the composition of contaminate particles. It is designed to measure all 4-, 6-, and 14-micron particles that may plug fuel filters or damage engines, including inorganic matter such as dust, catalyst fines, rust, and dirt, as well as organic matter, including gums, microbial matter, along with suspended water droplets.

XBEE does not affect the inorganic particles, but it does break down and reduce the size and amount of sticky organic particles that rapidly plug fuel filters, shortening their useful life. When left untreated, water in the fuel can erode metal parts and destroy injector tips. Water also displaces lubrication layers of motor oil and fuel, causing accelerated wear to moving parts. **XBEE** reduces the size of water droplets to microscopic levels, allowing them to be safely passed through the fuel system and harmlessly vaporized during combustion.

In this study, in average, **XBEE** enzymes eliminate a third of the particles contained in the fuel:

Test	Units	Neat aged diesel	XBEE aged diesel	Difference
≥ 4 µm	counts/ml	9,339	7,022	-24.81%
≥ 6 µm	counts/ml	2,280	1,608	-29.47%
≥ 14 µm	counts/ml	141	75	-46.81%

Annexes

Original report

Intertek

Report of Analysis

Lab Reference Number: 2016-HAML-001279
Job Description: Intertek Signal Hill - Aged Diesel Fuel Samples for Analysis

Client:	**Intertek USA Inc**	**Customer Reference(s):**
Contact:	Intercompany Accountant - USA01	None
Address:	PO Box 696450 San Antonio, TX 78269 United States of America	

Lab Report No.: 2016-HAML-001279-001
Customer Product Description: NEAT, Aged Diesel
Sample Source: Simple
Sample Location: Submitted Samples
Sample Identification: 2016-LOSA-001052-001.001

Sampled By: Client
Sampled Date: 04-Aug-2016 0:00
Submitted Date: 22-Aug-2016
Tested Date: 22-Aug-2016
Report Date: 22-Aug-2016

Method	Test	Result	Units
ASTM D7619	Cumulative Count for Particles >=4 µm	9339	counts/mL
	Cumulative Count for Particles >=6 µm	2280	counts/mL
	Cumulative Count for Particles >=14 µm	141	counts/mL

Lab Report No.: 2016-HAML-001279-002
Customer Product Description: XBEE-Treated, Aged Diesel
Sample Source: Simple
Sample Location: Submitted Samples
Sample Identification: 2016-LOSA-001052-002.001

Sampled By: Client
Sampled Date: 04-Aug-2016 0:00
Submitted Date: 22-Aug-2016
Tested Date: 22-Aug-2016
Report Date: 22-Aug-2016

Method	Test	Result	Units
ASTM D7619	Cumulative Count for Particles >=4 µm	7022	counts/mL
	Cumulative Count for Particles >=6 µm	1608	counts/mL
	Cumulative Count for Particles >=14 µm	75	counts/mL

Signed: _____ Date: August 22, 2016

Abraham Kim, Laboratory Supervisor

On behalf of
Iftikhar Chughtai,
Laboratory Manager

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