Fuel Quality Management Field Guide

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Fuel Quality Management

The Fuel Quality Management (FQM) Field Guide is a quick reference tool to use in the field to determine fuel quality issues. This guide, along with Hammonds **Test...Treat...\PROTECT** program, represents years of research and development. The easy to follow steps are a path to Fuel Quality Management.

Step One: Test.... to determine fuel quality and set a baseline for further actions.

Sample the Fuel for Testing

Take a cross-section of samples. Use a bacon bomb style fuel sampler. Open style dippers are inadequate for pulling acceptable samples from different fuel



levels. In order to have a more complete picture of fuel quality, take several samples from different access points and different levels within the fuel. The diagram below displays several potential locations. Ideally, six to nine fuel samples are adequate to properly assess the fuel in most systems. If access is limited, as might be in a generator belly tank, take as many samples from available access points as possible.

Use clean, clear jars and fuel samplers that are presterilized. Isopropyl alcohol is a good solution to use in the field for quick clean-up and sterilization between samplings. Simply wipe the jars and sampler down with the solution prior to use and dry with a clean towel.





Complete a visual test using the *Fuel Clarity Bar Chart* like the one shown and determine the level of visual contamination using the *Visual Fuel Assessment Guide*. Follow the guide instructions for treatment options. Bottom samples are generally most revealing. If the sample contains biomass, water, particulates or dark aged fuel then treat and remediate the fuel. If the mid and upper layers are visually bright and clean looking, pump off the bottom contamination and treat with Biobor®JF. Clear samples may require additional testing to gain insight into problem systems.

Test the fuel for microbial contamination using the Biobor[®] Hum-Bug Detection[®]Kit or the Conidia FUELSTAT[®] test. Even if fuel looks bright and clear, microbial contamination is very possible. Always test the fuel.

Inspect the Fuel System for Microbial Influenced Corrosion (MIC). Once the fuel assessment and microbial testing are complete, do a quick visual inspection of the fuel system looking specifically for corrosion. Corrosion is associated with microbial contamination. Use the *Corrosion*



Assessment Guide to determine next steps. This is especially important if the fuel samples are clear. MIC often indicates microbial activity in difficult to sample locations within the fuel system. Follow the treatment instructions on the guide if MIC is identified.

Step Two: Treat... the fuel. Follow each assessment guide to determine how to treat contaminated and degraded fuel. FQM includes the proper use of biocides and fuel additives to remediate fuel issues. Use Biobor®JF to kill microbial growth and protect the system from MIC. Use Biobor® Fuel Additives to remediate fuel caused by oxidization and aging. When diesel fuel ages, it loses cetane, lubricity, essential detergents and stabilizers that need to be replaced. Use the *Additive Treatment Chart* to determine which Biobor® product is appropriate or contact Hammonds Fuel Additives, Inc. and talk to one of the technical specialists.

Step Three: **PROTECT** the fuel. FQM is not a one-time event. It is an ongoing program aimed at reducing maintenance costs, liabilities and downtime. Once you **Test...** and **Treat...** monitor your system and fuel using the *TTP* Assessment Chart. This is the **PROTECT** part of the program. Visual inspections and fuel sampling are all part of protecting your system from unwanted costs and problems. Set up a monthly schedule to **Test...Treat... PROTECT** the fuel and system.

LOWER COSTS LOWER DOWNTIME LOWER LIABILITIES LOWER RISK



Fuel Clarity Bar Chart

Fuel clarity is rated by placing fuel sample in front of bar chart. Test based on a pass or fail method for determining contamination in fuel.





Visual Fuel Assessment Guide

Negligible Visual Contamination

TEST FOR MBG AND CONTINUE TO MONITOR*



REGULAR







OFF ROAD

TREAT AND POLISH FUEL**



KEROSINE

Moderate Visual Contamination

PREMIUM



REGULAR





PREMIUM



ULSD



OFF ROAD



KEROSINE

Heavy Visual Contamination

TREAT FUEL, POLISH FUEL AND CLEAN TANK***



*Complete regular microbiological testing using FUELSTAT® and regular visual inspections to establish a fuel quality trendline. Knowing how your fuel quality is trending is an essential element to cost savings. Verify fuel is free of microbiological growth (MBG). If fuel is visually clear, but tests for MBG then treat with Biobor®JF.

**Treat with Biobor®JF, let soak for 24-48 hours then polish fuel until bright and clear.

***Treat with Biobor®JF, let soak for 48-72 hours then polish fuel and clean tank of all contamination. Remediate fuel quality issues with Biobor® additives



Corrosion Assessment Guide

Negligible Visible Corrosion

TEST FOR MBG AND CONTINUE TO MONITOR*



STP







Tanks

TEST FOR MBG**



Component



Component

Moderate Visible Corrosion

Riser



STP



Riser



Tanks



Component



Component

Heavy Visible Corrosion

TEST FOR MBG AND TREAT FUEL***



STP



Riser





Component



Component

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Tanks

**If fuel shows signs of contamination, treat with Biobor®JF, let soak for 24-48 hours and polish if needed.

***If fuel shows signs of contamination, treat with Biobor[®]JF, let soak for 48-72 hours and polish fuel and/or clean tank of all contamination. Remediate fuel quality issues with Biobor[®] additives if needed.

Additive Treatment Chart

	DIESEL					GAS
BENEFIT	BIOBORJF		BUBURDE Bus Summer Blend	Winter Blend	with LubriBor	BIDBOR
Biocide						
Lubricity	-	✓	>	-	 Image: A set of the set of the	>
Corrosion Inhibitor		✓	>	-		>
Cleans Injectors, Valves and Deposits		✓	>	-		
Stabilizers		~	>	-		
Controls Water		-	>	-	✓	
Disperses Solids and Particulates		✓	>	-		>
Increases Cetane				-		
Reduces Soot and Smoke			>	-		>
Improves Performance and Efficiency			>	-		>
Winter Protection		✓		-		
Anti Gel and De-Icer		~		-	~	
Prevents Ethanol-Related Issues in Gasoline						
Helps Prevent Fuel Phase Separation in Gas w/Ethanol						~
TREAT RATE	1:10,000	1:1,000	1:2,000	1:1,500	1:1,500	1:2,000
Cost / Gallon Treated						

TTP Assessment Chart



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