



AVIATION FUEL BIOCIDES

Biobor®JF is the original, industry standard microbicide used to kill and prevent microbial contamination in aviation turbine fuels. Biobor®JF provides highly effective, proven dual-phase chemistry to eliminate the growth of harmful bacteria and fungi that contaminate fuel systems, clog filters, corrode metal surfaces and cause service interruptions.

For contaminated aircraft or storage systems with microbial growth present, Biobor®JF should be used as a “curative treatment” to kill and control microorganisms in the fuel tank. Biobor®JF may also be used routinely in sterile systems as a preventative to ensure fuel quality and prevent contamination. Proactive use of a biocide prevents biomass accumulation in fuel tanks, extends fuel filter life and inhibits microbial influenced corrosion (MIC). As an added benefit, Biobor®JF has been proven to increase the lubricity properties of jet fuel, providing additional protection and reduced wear to fuel delivery components.

Biobor®JF is fully compatible with a wide variety of fuels, fuel system components and common materials. It does not affect fuel performance and is more stable, less corrosive and safer to handle than many other biocide chemistries.

Since 1965, Biobor®JF has proven highly effective and compatible by many of the world’s largest refineries, militaries, airlines, and GA aircraft operators globally, and is one of only two fuel biocides approved for aviation use.



**The Industry Standard
in Aviation since 1965**

BENEFITS:

- **Highly effective biocide to kill and prevent microbial growth in aviation fuels and aircraft (bacteria & fungi)**
- **Dual Phase – partitions to both the water and fuel phases for more effective and complete protection**
- **Prevents corrosion of fuel tanks and delivery systems caused by the acidic by-products of microbial growth**
- **Safer handling and less harsh/corrosive than competitive biocides**
- **The original, most widely used biocide since 1965**

APPROVALS:

- **EPA Biocide Registration # 65217-1**
- **MILITARY SPEC - MIL-S-53021A**
- **Aviation APPROVED** - approved for aviation use globally by FAA and IATA
- **ASTM D1655** - Listed in Table 2 - Additives for Aviation Turbine Fuels
- **OEM APPROVED** – Recommended & approved by turbine and airframe OEMs

Kills and prevents microbial growth that cause fuel contamination & corrosion

For use in all hydrocarbons including jet fuels, avgas, diesel, biodiesel, heating oils, heavy distillates and lubricants

➤ **MIL-S-53021A**

➤ **Aviation APPROVED**

➤ **OEM APPROVED**

Available in 8, 16, 32oz bottles. 1 gallon, 5 gallon, 55 gallon, 330 gallon containers.



Hammonds Fuel Additives, Inc.
6951 W Little York Dr.
Houston | Texas | 77040
281.999.2900 | 800.548.9166
sales@biobor.com
www.biobor.com

<u>Preventative Dosage (135 ppmW*)</u>	<u>Curative Dosage (270 ppmW*)</u>
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1 gal : 10,000 gal of jet fuel	1 gal : 5,000 gal of jet fuel
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1 oz : 80 gal of jet fuel	1 oz : 40 gal of jet fuel
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*equivalent to <u>100 ppmV</u>	*equivalent to <u>200 ppmV</u>
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*see next page for details

Application: For existing contamination, long term storage or periodic treatment, a curative dosage should be used for effective sterilization. Drain water bottoms prior to application and keep tanks dry with proper housekeeping. Monitor fuel filters after biocide application, drain tanks & replace filters at recommended intervals. Biocide may be applied by metered injection (recommended), by splash blending during fueling or with circulation to ensure uniform blending. Aircraft maintenance manuals should be referenced for recommended dosing practices.

Storage & Handling: Containers should be kept closed to atmosphere and protected from water contamination. It is a violation of Hammonds quality standards and EPA regulations to remove Biobor®JF from its original packaging. Please refer to the Safety Data Sheet for specific safety, handling and storage information. Shelf life is 3 years from date of manufacture.



AVIATION FUEL BIOCIDES

PRODUCT DATA

Chemical Composition

Active Ingredients

2,2-(1-methyltrimethylenedioxy) bis-(4-methyl-1,3,2-dioxaborinane) - CAS# 2665-13-6	67.6%
2,2'-oxybis (4,4,6-trimethyl-1, 3,2-dioxaborinane) - CAS# 14697-50-8	27.4%
<i>(Substituted dioxaborinanes: may be expressed as CAS# 8063-89-6)</i>	

Inert Ingredients

Petroleum Naphtha	4.5%
Inerts	0.5%
Total	100.0%

Boron Content

7.3%

Sulfur Content

<1ppm

Physical Properties (typical)

Density	8.75 lb/gal
Specific Gravity	1.05
Flash Point, Tag Closed Cup	+102°F min
Viscosity, (CST@ 40°C)	21.31
Pour Point	-27°F
Appearance	Clear Liquid

EPA Registration # 65217-1

EPA Establishment # 61897-TX-0001

CANADIAN PCP Registration # 10301

TREAT RATE

Preventative Treatment – 135 ppmW *100 ppmV	Curative Treatment – 270 ppmW *200 ppmV
1 gallon : 10,000 gallons of fuel	1 gallon : 5,000 gallons of fuel
1 ounce : 80 gallons of fuel	1 ounce : 40 gallons of fuel

By weight:

270 ppmW – Curative Treatment & Long Term Storage
135 ppmW – Preventative Treatment - Continuous Usage

For the most accurate determination of the amount of Biobor®JF required to treat aviation fuel, ppm by weight may be used with the following treat rate calculations.

270 ppmW: Ounces of Biobor®JF required = (total weight of fuel in lbs. x 0.004)

135 ppmW: Ounces of Biobor®JF required = (total weight of fuel in lbs. x 0.002)

By volume:*

200 ppmV – Curative Treatment & Long Term Storage
100 ppmV – Preventative Treatment - Continuous Usage

To determine the required dosage of Biobor®JF in jet fuel using ppm by volume, the ppmV dosage rates above may be used to arrive at a volumetric conversion substantially similar to the ppm by weight dose rate.

*This conversion uses a standardized jet fuel density of 6.47 lb/gal (0.775 kg/l) at 59°F (15°C), the minimum density of jet fuel per ASTM D1655, and may be used as reference when injecting or applying Biobor®JF by volume.

Metric Conversions:

To determine milliliters of Biobor®JF required to give a concentration of 270 ppmW, multiply kilograms of fuel by 0.26, and for 135 ppmW by 0.13.

Preventative Treatment – 135 ppmW *100 ppmV	Curative Treatment – 270 ppmW *200 ppmV
1 liter : 10,000 liters of fuel	1 liter : 5,000 liters of fuel
1 ml : 10 liters of fuel	1 ml : 5 liters of fuel

