

Bell Performance Biocide Comparison: Bellicide vs ClearKill

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Eliminating microbial contamination in fuel and fuel systems requires, above all else, application of a biocide treatment. Biocides are highly regulated for a reason - they are the only fuel-borne chemicals formulated to kill living organisms as their essential functions. And there aren't that many treatments legally approved to do this. These options are divided by chemistry. All biocide chemistries must be registered and supported by test data that shows both their effectiveness and, more importantly, their safety and hazard information for both human and environmental exposure.

That's not to say all registered and approved biocides work equally well. Nor does it mean that there aren't significant differences between the chemistries. Some biocide chemistries are better at killing certain kinds of microbes than others. Some biocide chemistries kill a broad spectrum of common microbes but only do it at higher concentrations. Some biocide chemistries maintain complete kills at lower treats for longer periods of time. And there are some biocide chemistries that combine additional functionalities that benefit situations like stored fuel.

The Bell Performance Biocides: Bellicide & ClearKill

Bell Performance offers two outstanding biocide chemistries to meet the needs of the fuel storage and distribution industry.

Bellicide - thiocyanate chemistry

ClearKill - MBO (methylene bisoxaladine) chemistry

What They Both Do Well

Both ClearKill and Bellicide are excellent choices to remediate microbial contamination situations because they both offer excellent performance in the areas most critical to a biocide's performance in its primary function.

Broad Spectrum Effectiveness Against Microbes - BOTH

Both Bellicide and ClearKill have been proven highly effective at killing completely the most possible types of microbes commonly found in fuel and fuel systems. Not all biocides meet this standard.

Speed & Length of Kill - BOTH

Both Bellicide and ClearKill are shown in kill studies to outperform other common biocide chemistries in both speed of kill (hours vs days in some cases) and length of kill (maintaining complete kill of multiple kinds of microbes).

Works Well In Both Fuel and Water - BOTH

For a biocide to be effective, it must kill microbes well in both fuel and water. The best biocide chemistries move well from the fuel phase to the water phase. Both Bellicide and ClearKill are excellent at partitioning between both essential phases, eliminating microbial contamination in both fuel and water.

Effective At Low Treat Rates - BOTH





Both Bellicide and ClearKill have stock shock treat rates of 200 ppm by volume. That's equivalent to 1:5000. This compares favorably to many other biocide chemistries, some of which require significantly higher concentrations to achieve similar results.

ClearKill Vs. Bellicide - Which One Is Right For You?

As both Bellicide and ClearKill are highly effective biocides that kill the broad spectrum of microbes that cause problems in fuel and fuel systems, both formulations are excellent choices, in principles, for clearing up microbial contamination in infected fuel and systems.

So which one should you choose?

While both chemistries are highly effective, there are some differences between them. Highlighting these may help you decide which one is right for you and your situation.

	Bellicide (Thiocyanate)	ClearKill (Nitromorpholine)
Broad Spectrum Effectiveness		
Speed & Length of Kill		

Effectiveness in both fuel phase and water phase		
Effective at Low Treat Rates		
Does Not Contribute Sulfur		
Additional Protection Against Corrosion		
1-Gallon Size Availability		
Availability Across The Country		
	Bellicide (Thiocyanate)	ClearKill (Nitromorpholine)

Sulfur Content - BEST CHOICE = CLEARKILL

ClearKill is one of the few biocides on the market that does not contribute any sulfur to the fuel it is treating. Bellicide’s thiocyanate formula does contain some sulfur. For every 100 ppm of Bellicide used, about 2.4 ppm sulfur may be added to the fuel. If you have concerns about biocide treatment contributing to excess sulfur levels in low turn or ultra-low sulfur diesel fuel, ClearKill will eliminate that worry.

Corrosion Protection - BEST CHOICE = CLEARKILL

One unique aspect of ClearKill’s MBO chemistry is that it also functions as a filming amine corrosion protection - the same type of protection recommended by the EPA to protect tanks against microbially induced corrosion (MIC). If protection against microbially induced corrosion is valuable for you, ClearKill is the right biocide choice.

1-Gallon Product Size Availability - BEST CHOICE = EITHER CLEARKILL OR BELLICIDE



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Both Bellicide and ClearKill are available in 55-gallon drums and in totes for bulk fuel treatment. They also each have at least one smaller bottle size available – Bellicide is available in 16 oz. bottles (ideal for treating up to 640 gallons) and ClearKill is available in both 16-oz and 32-oz bottles (ideal for treating up to 1,280 gallons).

However, of the two biocides, only Bellicide is available in the 1-gallon product size (to treat up to 5,000 gallons), which may be preferred by commercial fuel handlers.

Will You Be Using It Outside Of The Southeast? - BEST CHOICE = BELLICIDE

One other substantial difference between ClearKill and Bellicide has nothing to do with effectiveness and everything to do with legal registrations. Regulations dictate that you can only use (or sell) a biocide if it is registered by the State's Department of the Environment that you are going to use it in. Of the two biocides, Bellicide has the broader nationwide availability.

ClearKill is registered and approved for use only in the southeastern states of Florida, Georgia, Alabama, South Carolina, and Texas. Bellicide is registered and approved for use in 44 out of the 50 states. The states it is not registered in are Connecticut, Delaware, Maine, New Mexico, Rhode Island, and Wisconsin.

Conclusion

Both Bellicide (thiocyanate) and ClearKill (MBO) are excellent choices when you need to use a biocide to eliminate microbial contamination.

They are both highly effective chemistries that kill a broad range of the types of microbes typically found in fuel storage and distribution systems. They both achieve full kills quickly and maintain those kills for long periods of time. They both maintain effectiveness in both the fuel phase and the water phase.

The biggest differences in them are not in effectiveness but in how you wish to use them.

ClearKill is better for situations where additional corrosion protection for the tank or system may be considered of value. ClearKill is also better when the fuel to be treated is both low-turn and may be in danger of approaching the 15 ppm sulfur threshold (because multiple treatments of some biocides may add enough additional sulfur to threaten this limit).

Bellicide, on the other hand, has logistical advantages of being legally approved for use in more states of the US. And Bellicide is available in a 1-gallon product size that is convenient for use in many common situations.