



BIOCIDAL ACTIVITY OF FTC COMBUSTION CATALYSTS

Microbiological growth in distillate fuels can be a problem and in recent months the manifestation of such growths in fuel with resultant filter blockage has been quite prevalent.

The microbial colonies propagate at the fuel-water interface and if water can be totally eliminated, the problem of microbial growth is also eliminated. However, total elimination of water is difficult to attain in practice.

One of the active components of FTC combustion catalysts is picric acid, a recognised anti-microbial agent (phenol coefficient = 6). At the recommended level of treatment fuel treated with FTC-1 or FTC-3 contains only about 5 ppm of picric acid — a safe level for handling, and not requiring certification by Australian health authorities.

Published independent laboratory tests on simulated samples and actual filters **used in the field** show that picric acid concentrates in any water present in the fuel and/or filter and can attain levels to prevent microbial growth.

The picric acid then becomes a biostat in the fuel tank and filter, preventing growth of colonies in the fuel system. The level of picric acid extracted from filters submitted for analysis was in the range 75 ppm to 300 ppm, depending on the water content of the filter.

The Ferrous Corporation of the USA has published a report of a controlled laboratory study which involved making up three aqueous picric acid solutions containing 88, 176 and 294 ppm of acid, and testing for biocidal effect. These concentrations correspond to the probable range of picric acid encountered in practice and the results are summarised below.

Samples of distilled water were inoculated with bacteria and treated with varying amounts of picric acid. These results are also shown below.

Sample	Picric Acid - ppm	Total Bacteria/mL
Control sample A	0	8,200
Control sample B	0	8,300
Control sample A *	0	8,800
Control sample B *	0	9,500
Test sample 1A *	88	720
Test sample 1B *	88	630
Test sample 2A *	176	1

Test sample 2B *	176	3
Test sample 3A *	294	0
Test sample 3B *	294	1

* After one hour's contact, solution plated, incubated and reading taken.

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