

NATO Codified Products & Services

Product	UK NATO Stock number	What it does.
MicrobMonitor ²	6640-99-834-3573	<i>Detects microbes in fuels, lubes and aqueous samples quantitatively.</i>
MicrobMonitor ² Sampling Kit	6640-99-454-8204	<i>Ensures test results relate to the sample not a dirty sample bottle. 1 litre sterile bottle with water separation chamber and alcohol wipe.</i>
Sig Sulphide	6640-99-666-5919	<i>Detects microbes capable of generating corrosive Sulphide. Good corrosion risk indicator.</i>
Incubator Bacteriological	6640-99-750-2331	<i>Electrical incubator, provides a steady incubation temperature.(110/220 volt)</i>
Biocide Rapide 25	6640-99-748-3636	<i>Quantitatively detects the presence of antimicrobial chemicals (biocides) in water or fuel.</i>
Biocide Rapide Incubator	6640-99-847-2071	<i>High temperature incubator required for the Biocide Rapide test.</i>
Grotamar 71 500ml	6840-12-370-0291	<i>Anti-microbial chemical (biocide) suitable for application to bilge waters and small volumes of fuel and lubes.</i>
Grotamar 71 10 Kilo	6840-12-370-0293	<i>Anti- Microbial chemical (biocide) suitable for application to larger quantities of fuel and lubes.</i>
Grotamar 71 200 Kilo	6840-12-370-0296	<i>Anti- Microbial chemical (biocide) suitable for application to large quantities of fuel and lubes.</i>
Grotamar 71 1000 Kilo	6840-12-370-0298	<i>Anti- Microbial chemical (biocide) suitable for application to very large qty's of fuel. Strategic stock pile.</i>
Attendance & Consultancy	-	<i>Consultants or technicians are available for microbiological sampling and / or onsite trouble shooting and expert witness attendance.</i>



Background information

Microbes can contaminate a wide range of petroleum fuels, from heavy residual fuel oils to gasolines, and cause very costly operational problems for suppliers, distributors and also end-users such as airlines, ship and small boat operators, haulage companies, bus and train operators and power generators. They also grow in lubricating and hydraulic oils and in water systems, causing major system failures. The problems include:

o Spoilage and Fouling

Fouling by slimes produced by bacteria, yeasts and moulds can cause severe filter plugging, blocking of fuel and oil lines and injectors, and consequently cause excessive wear and failure of engines and system components. Fuel fouled by microbial slimes can fail particulate specifications and filtration tests. Microbes can also grow in oils causing additive depletion, increased acidity and loss of functional properties. Although the microbes need water to grow they need very little. In practice there is often sufficient water in the bottom of tanks, pipelines and equipment or as condensate films on tank surfaces. The microbes tend to be most active at the interface between the water and fuel or oil. When the tank contents are disturbed, for example when a fuel tank is refilled, the microbes become suspended in the bulk fuel or oil where the slime they produce causes fouling and filter clogging. When they grow in terminal storage tanks they may be passed on down the fuel distribution chain to contaminate facilities and end-user tanks downstream.

o Corrosion

Microbial growth can result in rapid and severe corrosion. For example, occasional problems occur in aircraft wing tanks due to the growth of moulds, yeasts and/or bacteria which produce organic acids and also stimulate corrosion by creating oxygen gradients which enhance electrochemical corrosion cells. In steel storage tanks and in ships' bilges and ballast, cargo and bunker tanks, growth of Sulphate Reducing Bacteria (SRB) in water and sludge can cause pitting corrosion of steel which can proceed at rates of over 10 mm per annum. Growth of SRB in fuel tanks can cause sulphide spoilage of fuels; the fuel becomes corrosive and can fail specification tests. Microbial growth in lubricating oils can lead to severe corrosion of white metal journals and bearings and other system components. In cooling waters, microbes can destroy corrosion inhibitors leading to subsequent system corrosion.

o Increased water content

Microbial surfactants can stimulate the suspension of water in fuels and oils causing them to become hazy and causing failure of filter water separators.

Solutions

It is more cost effective to prevent problems by good housekeeping and by regular microbiological monitoring with ECHA test kits, such as **MicrobMonitor²** and **Sig Sulphide**. Costs for decontaminating heavily infected facilities and the consequential losses due to system and equipment failures are high. Early detection of contamination allows early action to prevent operational issues. Where necessary, effective biocides, such as **GrotaMar 71[®]** can be applied to treat or prevent contamination before growth becomes so extensive that system downtime for clean-up and repair is required.

ECHA can provide a wide range of products and services to prevent and solve microbiological problems in industry;

- **Training courses** in our Cardiff laboratory facility or worldwide, designed to specifically meet clients' requirements.
- **Consultancy** by on-site attendance worldwide or from our offices
- **Test kits** for general microbial contamination and for microbes with specific operational significance
- **Laboratory Analysis, Investigation and Research** in our fully equipped, professionally staffed laboratory in Cardiff.

For more information on how to order this product, please contact a member of our Sales Team using any of the details below. You can also find more information on our website.

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