



## DEVELOPED SPECIALLY TO CLEAN ROLLS ROYCE GAS TURBINE COMPRESSORS

### PRODUCT DESCRIPTION

FYREWASH® F3-RR is a pure biodegradable water-based detergent which is approved by Rolls Royce (RR) for the on-line and off-line cleaning of its gas turbine compressors.

FYREWASH® F3-RR was specially formulated by Rochem to meet the very stringent quality and cleaning requirements of RR. It is also a true non-solvent, water based chemical which is non-hazardous, user friendly, readily biodegradable and very effective in the removal of compressor foulants.

Caution - some products are misleadingly sold as "non-solvent", water based detergents when they actually contain as much as 10% of solvent in order to boost their cleaning capabilities. So if you want a true non-solvent chemical always carefully check the Material Safety Data Sheet of the supplier before purchasing. And if you do want a solvent based cleaner, please ask for details of Rochem's FYREWASH® SB, F1 and F2 range of solvent-based cleaners

### APPLICATION

#### ON-LINE CLEANING

Is normally performed by mixing one part F3 RR concentrate with four (4) parts of water into a stable solution. For very light to medium fouling conditions based mainly on water-soluble contamination higher dilutions in the range of six (6) to eight (8) parts water can be used. Use distilled or good quality demineralised water as required by the engine manufacturer. The volume of chemical solution needed per wash and the optimum cleaning frequency will depend upon engine size, operating environment, fouling tendency etc. When using a Rochem injection system please consult your manual.

F3 RR can be used with any RR or Rochem on-line/off-line injection system. For optimum cleaning results and economic usage of chemicals, Rochem offers a full range of patented manual or fully automatic atomising injection systems to suit any RR engine type.

**NB** The low cost Rochem **Efficiency Plus** system is also now available to provide comprehensive on-line, real time performance and efficiency monitoring of any gas turbine. Please consult our web site for details.

#### OFF-LINE, CRANK WASHING

Concentrated F3 RR is normally mixed with four (4) parts of good quality water. This 20% chemical solution is injected at cranking speed, allowed to soak for 20 to 60 minutes then thoroughly rinsed off at cranking speed with good quality water acceptable to the engine manufacturer. When using a non-Rochem supplied wash system follow the engine manufacturers instructions for off-line washing.

**NEVER USE UNPROVEN CHEMICALS OR INJECTION SYSTEMS FOR COMPRESSOR CLEANING - ESPECIALLY FOR ON-LINE CLEANING!**

### FEATURES BENEFITS

- ▶ Tested and approved by Rolls Royce.
- ▶ Safely and effectively cleans RR compressors on-line when running at any speed and load.
- ▶ Ideal for light and frequent on-line washing of any type of RR industrial, marine or aviation gas turbine to maintain in-service output and fuel efficiency.
- ▶ On-line cleaning avoids damaging shutdown/start-up thermal cycles and starter wear and tear which result from off-line crank washing.
- ▶ Also ideal for off-line cleaning due to high biodegradability and cleaning ability.
- ▶ Non-flammable. Mixes readily with most antifreeze agents to allow sub-zero on-line/off-line cleaning.
- ▶ Supplied in concentrated form to reduce transport and handling costs and minimise storage requirements.
- ▶ Worldwide product support.
- ▶ Backed by Rochem's unique high value product liability insurance.

### APPLICATIONS

For on-line, fired wash cleaning of RR gas turbines.

Also for crank-wash, off-line cleaning of RR gas turbines.

## SAFETY AND HANDLING

|                            |  |
|----------------------------|--|
| <b>HAZARDS</b>             | EC Hazard rating: Xi, Irritant<br>US NFPA rating: 1, 0, 0  |
| <b>PROTECTIVE MEASURES</b> | Non-hazardous but avoid frequent prolonged direct contact with skin to prevent possibility of de-oiling skin and wear eye protection as a matter of course when handling any chemical. |
| <b>SPILLAGE</b>            | Absorb large spillages with sand or earth. Flush away small spillages with water.  |
| <b>FIRE</b>                | Use foam, carbon dioxide, dry chemicals, sand or earth.  |
| <b>FIRST AID EYES</b>      | Flush liberally with water. If any irritation persists seek medical attention.   |
| <b>SKIN</b>                | Wash skin with soap and water.   |
| <b>INHALATION</b>          | Remove patient to fresh air. If rapid recovery does not occur obtain medical attention.  |
| <b>IF SWALLOWED</b>        | Do NOT induce vomiting. Give nothing by mouth. Obtain medical attention.   |
| <b>HANDLING</b>            | Store in a cool, dry place and maintain adequate ventilation.  |
| <b>TRANSPORT</b>           | No restrictions on any type of transport, product is not classified.   |
| <b>PACKAGING</b>           | Non- returnable polyethylene containers. Approx 25 and 210 litres or available via bulk 'tote' bin delivery in some regions.   |

## TYPICAL PROPERTIES

|                      |                            |
|----------------------|----------------------------|
| APPEARANCE           | Clear liquid               |
| DENSITY              | In g/ml at 15°C: 0.99      |
| FLASH POINT          | No flash point             |
| pH (20% solution)    | 8 – 8.5                    |
| <b>COMPATIBILITY</b> |                            |
| Metal:               | No known effect            |
| Rubber:              | No known effect            |
| SOLUBILITY           | Mixable in all proportions |

## IMPORTANT ECOLOGICAL NOTES

FYREWASH® F3-RR is a safe and highly biodegradable chemical. However, for off-line, crank-wash cleaning **all** chemical solution and rinse water drainage should be collected and disposed of properly no matter what type of chemical (Solvent based or detergent based) is being used.

**DO NOT** make the potentially very costly mistake of thinking that the chemical and rinse water drainage from water-based detergents can simply be dumped to storm drains or direct to earth. Any chemical cleaning solution and rinse water may become polluted with potentially harmful deposits from the compressor and hot section so **all** drain off must be collected and disposed of responsibly and properly.

Rochem or any associated or subsidiary company's warranties of fitness and merchantability, if any, as well as any express warranties regarding the use of this product shall not be effective or actionable unless the goods are used as directed herein and in no other manner due to potential hazards from improper use of the goods described herein. Product might vary slightly depending on country of origin.



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