



PT ETI FIRE SYSTEMS
Jl Magelang – Kopeng, KM 11
Tegalrejo, Magelang 56192
Central Java - Indonesia.

TECHNICAL BULLETIN
ISSUED : 17 July 2006
DOCUMENT : TB 006
Corrosion Tests ETI Foam Cylinders.

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ETI FOAM CYLINDERS

ETI Foam cylinders are manufactured to Australian Standard AS2470 and are maintained in the service program to AS2030.1 and AS2337.1. This entails the appropriate inspections and tests to guarantee safe use thereof. They are also manufactured under ISO 9001 and verified by Lloyds of London.

Competitors may attempt to make mileage of the difference in making cylinders from stainless steel as against carbon steel known as mild steel. We should be aware of this attempt to confuse the customer and damage confidence. Many fire systems handling clean water use carbon steel successfully. Contained fresh water exposed to carbon steel will provoke galvanic action in the form of corrosion. This however is limited as once the oxygen dissolved in the water is consumed the process stops as it is starved of oxygen. A well known example of this is fire sprinkler systems designed to AS2118. Normal carbon steel pipe is commonly used known as black pipe. These systems are manufactured to precise standards and are installed in critical locations protecting people and assets worth many millions of dollars. Corrosion is limited by the fact that the water contains a limited amount of oxygen and so does it limit any corrosion. This would also apply to the ETI fire system if there were any corrosion. Because ETI uses research, testing and development, we have been careful to select a foam additive that also acts as a corrosion inhibitor. Refer to the photos below:-



PHOTO 1 Specimen – Mild steel pin Diam 10mm high finish
Exposed to Foam Mix – 94% Potable Water + 6% ETI Foam
No visible corrosion whatsoever after 14 months.



PHOTO 2 Specimen – Mild steel pin Diam 10mm high finish
Exposed to – 100% Potable Water
Corrosion was visible within a short time and then stopped within 6 weeks.
Limited nett corrosion after 14 months.

ETI testing showed that if the approved ETI foam is used at the correct mix with water that is neutral in PH then no significant corrosion will be the result. It should also be noted that the service and inspection procedures under Australian standards provide for periodic inspection to confirm compliance.

If a water supply is in doubt then a PH test should be done or revert to using potable water. It should also be noted that other foams were tested and found not to be a corrosion inhibitor and some may even be a corrosion accelerator due to their tendency to unbalance the PH.



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Experience has also shown that stainless steel is not a guarantee against corrosion. The writer is aware of instances where stainless steel cylinders in this application have failed. This was in the areas adjacent to welding. During welding, the parent metal and the weld metal are elevated in temperature and the stainless property of the parent metal is sometimes affected allowing corrosion points. It is not normal practice of suppliers of these cylinders to warrant their product against corrosive water.

Another misconception is that a carbon steel cylinder is a lower quality. This is not true either. ETI cylinders are made of heavy gauge 3.2mm steel to Australian Standards under internationally recognised quality assurance. Also Mild steels are renowned for being resilient to impact rather than alloys that are more brittle. This heavier gauge construction combined with the higher toughness and resilience of mild steels provides a strong safety argument for resistance to impacts and mechanical damage.

The ETI cylinder also uses a heavily reinforced neck ring. This area has been a point of known failure previously in some stainless steel cylinders. Their lighter gauge construction combined with the heavy valve mounted on top under vibration resulted in fatigue failures. The heavier gauge steel and reinforced neck ring used in the ETI cylinder provides further safety factor against this type of failure.

All ETI components are warranted against defects in materials or workmanship for a period of three years from date of installation if installed correctly and maintained to ETI service procedures.

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