



## Product selection guide

### Section 1 - Boiler Water Products - Special Procedures

#### Appendix 2.A - Steam boiler passivation guidance

##### Introduction

"*Passivation*" is the process whereby a protective film is established on an exposed or actively corroding metal surface. New boilers, those that have had new tubes installed, or those that have suffered on-load oxygen corrosion attack will benefit greatly by being passivated before commissioning or return to service. The procedure outlined below uses Sodium Erythorbate, a powerful oxygen-scavenger with a low toxicity profile, as the passivation agent.

##### Procedure

The Material Safety Data Sheet for each product should be studied before the procedure is started and the recommended safety equipment used.

1. The boiler is made watertight with the top access hatch removed and then filled, to the normal working level, from the feed tank or water softener.
2. Chemicals are then added direct to the filled boiler, (*in proportion to the documented capacity of the boiler at normal water level*), as follows: -

| Product      | Composition                        | Addition rate   |
|--------------|------------------------------------|---|
| Amersite® 65 | <i>Sodium Erythorbate solution</i> | ~1.3 kg/m <sup>3</sup> (≡1.2 L /m <sup>3</sup> ) of water volume  |
| Adjunct® Alk | <i>Sodium Hydroxide solution</i>   | Add sufficient product to achieve pH 9.5 to 10<br>Adjunct® Alk - typically ~0.25 kg/m <sup>3</sup> (≡ 0.19 L/m <sup>3</sup> ) of water volume |

3. Note - In the case of a water-tube boiler where it is essential to replace access hatch covers before commencing filling, chemical additions can be made via the vent pipe on the top of the steam/waterdrum. However, sufficient water should be used to flush the valve thoroughly afterwards.
4. Once addition of chemicals is complete, the access cover should be replaced (*if appropriate*) and the boiler fired following the normal procedure for bringing the unit up to working conditions. Steam pressure should be limited to 5 psig (~0.3 barg) after which the burner should be switched off.
5. The boiler should be left in this condition for 6 to 8 hours, periodically firing the unit for short periods (~1 minute at a time) to maintain a slight pressure.
6. On completion of the passivation, the contents of the boiler should be drained to the normal blowdown receiver. The boiler should then be re-filled with feedwater at the normal operational temperature and the recommended fill up chemical additions.

Consult the Boiler water training manuals and the Product Data Sheets for appropriate product selection.  
Always read and respect the safety guidelines as described in the MSDS.

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