WORLD CHEMICALS LTD.
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Technical Data Sheet: **Non-Phosphate Boiler Brick**

Description:

The most serious problem in the generation of steam is the formation of scale and sludge on the heating surfaces. The object of water softeners and boiler water treatments is to remove from the water Calcium and Magnesium Carbonates, Calcium and Magnesium Sulfates and other substances found in scale deposits. Boiler water treatments have the advantage over softeners because water treatments can dissolve past scale accumulations and make adjustments in the condition of the water already in the boiler.

The solubility of scale-forming salts decreases with an increase in temperature. As the temperature and pressure of the boiler rises, the solubility of the salts lowers to the point that the salts begin to crystallize and drop out of solution and form scale on the boiler heating surfaces. Major difficulties may develop from scale in a boiler. Scale acts as an insulator and retards the flow of heat from the fireside to the waterside of the boiler. The rate of heat transmission may be reduced as much as 10 to 12% by the presence of scale. Scale may cause overheating of boiler metal and tube failures resulting in costly repairs.

An equally important problem is the prevention and control of rusting and pitting on the metal surface. Metal corrosion in boilers occurs in water having a pH under 10.5. Pitting in a boiler permanently damages the metal surface, causes leaks and stimulates metal fatigue.

Boiler water treatments are designed to soften water by either sequestering or coagulating the hardness salts. The method used in softening is dependent on the condition of the water, type of boiler, operating pressure, and the function of the boiler. To these treatments may be added anti-foam to reduce potential priming, organics to help in breaking down scale, and metal treatments to act as inhibitors in the prevention of metal corrosion.

The most important factor in using this compound is to feed it directly into the boiler with feed water through injector or steam pump, leaving it to remain in your boiler for 12 to 16 hours before blowing out. If your boiler is not clean, repeat. This product should be used in conjunction with regular blow downs; at least one blow down per shift.

Proper boiler water treatment is a necessity, not a luxury and something no good operator can afford to be without. Tube burnouts and control sticking can be eliminated, maintenance costs will be greatly reduced, and the fuel savings affected by having scale-free heating surfaces will alone compensate for the cost of chemicals many times over.

To prevent the formation of hard scaling crystals, it is necessary to precipitate them out before they can form. Chemical requirements for your heating boiler will increase as weather becomes colder and water supplies become harder.

pH measurement on a regular daily basis following a blow down is the best method of controlling your feed of boiler chemical.

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Although they do not give an accurate interpretation of boiler water alkalinity, pH test papers provide a good means of controlling boiler chemical feed rates. A pH 10.5-11 indicates sufficient alkalinity is present to precipitate out all scaling salts present. If pH drops below 9.5 the boiler is in danger of scaling.

The alkalinity of boiler water should be sufficiently high enough to protect boiler components against acidic corrosion, but not high enough to produce carry over. A minimum value for alkalinity for adequate protection is 200ppm. Do not exceed 700ppm, high boiler alkalinity levels can lead to embrittlement of the steel.

Always use protective clothing and equipment when handling chemicals.

Directions:

On average treatment will be from 5 to 6 pounds daily in October and November to as high as 10 or 12 pounds in January or February temperatures. For best results add enough chemical to maintain a pH between 10-10.5. (1 brick = 1 pound approx.)

When the boilers are in bad condition (heavy or dense scale) double the does to enable the treatment to get through the scale and down to the metal.

Record results of blow down water by testing pH - Boiler water should maintain a pH 10.5-11. This product should be used along with regular blow downs; at least one blow down per shift.

The above amounts are guidelines only and it is recommended, for more accurate boiler water treatment, to test boiler water daily and add compound accordingly. Boiler water should be maintained at a pH of 10.5.

Safety and Additional Information: Please refer to SDS for further technical information.

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