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# TANDEX SOOT POWDER

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Regardless of the fuel used, the type of boiler or the care taken in tending the fire, complete combustion is impossibility.

The fuels of higher volatile content, such as the bituminous coals and fuel oils liberate large quantities of gaseous Hydrocarbons and heavy vapour. These are very unstable at the temperatures encountered in furnaces and form compounds of complex chemical structures. Unless they are mixed with sufficient air and generate a sufficiently high temperature, they will break down into Hydrogen-Carbon Monoxide and soot particles.

Where coal is used, fine particles of ash are also carried along and deposited with soot, thus adding to the thickness of the deposit. In the case of oil, very small drops of unconsumed oil are deposited with the carbon, resulting in an extremely sticky composition, very difficult to remove.

Statistics show that when soot and fireside scale accumulate on tubes and flues of boilers, the heat transfer through the heating surface is reduced by the following: -

0.8mm	- loss of 09.5%
1.6mm	- loss of 26.2%
2.4mm	- loss of 45.2%
3.2mm	- loss of 69.0%

Soot does burn, but to burn soot, a temperature of 621 °C is required, outside of the firebox itself. The temperature within the boiler is appreciably below 621 °C, thus soot accumulates, and each additional deposit further impairs the efficiency of the boiler operation. Obviously, for efficient operation, soot must be eliminated.

**Tandex Soot Powder** is a chemical which if used according to directions, vaporises when introduced into the fire. This vapour permeates the soot and reduces the ignition temperature from 621 °C to 315 °C, the treatment then makes it possible to simply burn the soot away because the boiler temperature is at most points above 315 °C. It will even help to remove soot at points where the temperature is below 315 °C, since it will gradually oxidise and disappear at temperatures below the actual ignition point.

After a weeks use of **Tandex Soot Powder**, inspection may reveal an apparently greater deposit than before. The condition exists because in burning the soot, it is transformed into a soft fluffy ash and has loosened as will any fire scale which may have been present. Although this accumulation can be removed by brushing, it will diminish with the continued use of treatment.

For economical use, excellent results are obtained by using the treatment for two weeks every month, but once commenced; treatment should be continued daily for two weeks. Do not economise on daily doses.

**IN GENERAL** - The object is to vaporise the chemical by means of an active fire, so that the fumes will penetrate into every recess of the boiler passages. When vaporisation has ceased, the draft should then be opened and the fire permitted to burn fiercely so that the soot which has been combined with the chemical will be consumed.

**HAND FIRE BOILERS** - When the fire is burning freely, scatter treatment over red hot fuel bed. Close the dampers and reduce the draft for 10 to 20 minutes. As soon as vaporisation has ceased, the damper can be fully opened and the fire permitted to burn under full draft. Leave the firing doors open a crack to permit excess air to enter.

**UNDERFEED STOKERS AND DOWN DRAFT BOILERS** - After a heavy bed of red hot coals is obtained on the lower grates, reduce the draft and spread the chemical over the bed. As soon as the chemical has vaporised (10 to 20 minutes), open the draft fully and permit the fire to burn freely, leave the firing door open to admit plenty of air.

**OIL FIRED BOILERS - Tandex Soot Powder** should be blown through the oil burner flame by means of an electric or compressed air blower. The powder should be directed downwards and towards the back of the combustion chamber. Often good results can be obtained by throwing the prescribed dosage of chemical into the hot fire box after the flame goes off. The hot refractory will vaporise the powder and when the flame goes on again it will burn away the soot which has been impregnated.

### TO REMOVE SOOT FROM LOW TEMPERATURE POINTS -

After one week's use, soot may be easily removed at low temperature points within the boiler by the following methods:

1. Wire brushing or blowing the tubes by air or steam.
2. Putting paper in the fire box, or some other light burning fuel that gives off sparks. Some of these sparks will be carried by the draft to the remote areas of the boiler and ignite the soot where the flames do not ordinarily reach.

**PREVENTS CORROSION** - When boilers that are filled with soot are allowed to stand idle, the soot absorbs moisture, which results in rust and corrosion. **Tandex Soot Powder** helps prevent rust and corrosion by eliminating soot.

### QUANTITY REQUIRED FOR DOSAGE IN KGS PER DAY

Use 0.5kgs of **Tandex Soot Powder** for every 1000 KW boiler rating per day in the beginning and reduce as warranted by improved operating conditions.

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The information contained herein to the best of our ability is believed to be true and correct. However, no representation, warranty or guarantee is made as to the suitability of any product for any particular application. Clients are requested to conduct their own trials to prove the acceptability of a product for their use.

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International Water Treatment Service