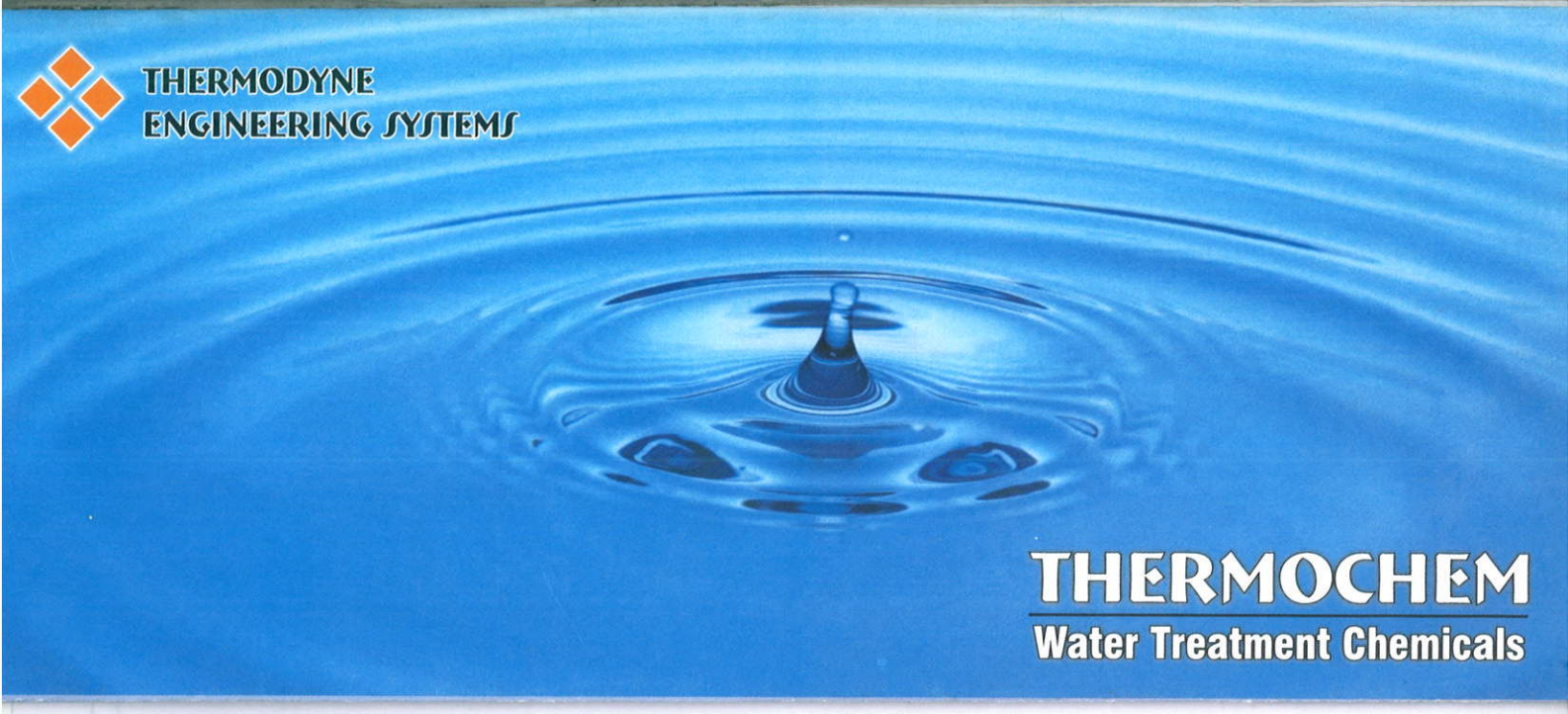
THERMODYNE
ENGINEERING SYSTEMS



THERMOCHEM

Water Treatment Chemicals

OTHER BOILER WATER TREATMENT CHEMICALS

THERMOCHEM TC – 0212	De-Scaling Compound
THERMOCHEM TC – 0312	Sludge Control & Scale Prevention
THERMOCHEM TC – 0315	Dispersant
THERMOCHEM TC – 0317	Non Food Grade Oxygen Scavenger
THERMOCHEM TC – 0318	Silica & Iron Sequester
THERMOCHEM TC – 0319	Vapour line Corrosion inhibitor
THERMOCHEM TC – 0320	Polyamine
THERMOCHEM TC – 0321	De-Foamer
THERMOCHEM TC – 0324	Fire-side treatment for soot/clinker

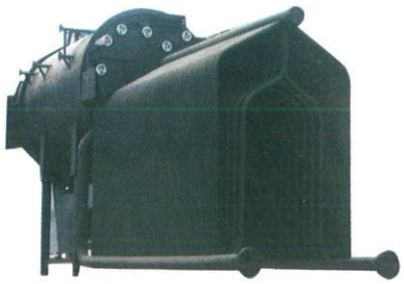
Call us, because:

Energy is precious, Efficiency is not!!

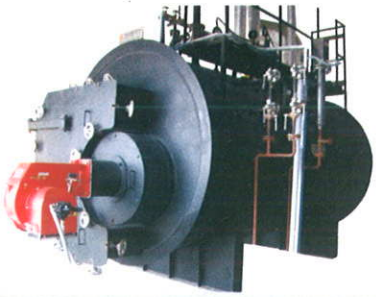
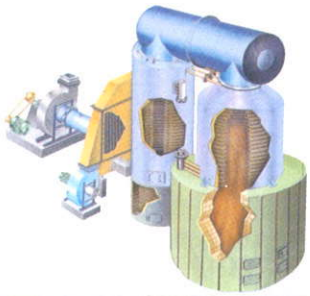
THERMODYNE ENGINEERING SYSTEMS

A-7/108 & 110, UPSIDC Industrial Area, SSGT Road,
Ghaziabad-201009, U.P. (INDIA)
Ph.No.: +91-120-2840618, Fax: +91-120-2841785
E-mail : thermodyneboilers@gmail.com, sales@thermodyneboilers.com
Website : www.thermodyneboilers.com

In today's dynamic environment, **THERMODYNE ENGINEERING SYSTEMS** is f
sound engineering and prompt after sales service. Ours is a team of engineers speciali
and allied equipments. We undertake turnkey jobs for supply & erection of equipment
valves and insulation material and many other related items.



emerging as a leading boiler company. We offer best quality products, backed by
g in the field of process heat equipments like Steam Boilers, Hot Water Generators
ke Chimneys, Oil storage and service tanks, fans & bowlers, steam piping including


Water Treatment Chemicals

Why is steam boiler water treatment essential?

A boiler is used for generating steam. The primary function of a boiler is to t
turns to steam. Did you know that when water is converted to steam it expand

Steam is a great carrier of heat energy around a site from a central boiler hou
suffer from scale formation and corrosion. Boiler feed water often contains im
water becomes more and more concentrated with salts and other impurities.
These scales are very damaging to the boiler because they interfere with th
shorter plant life and an operation which is unreliable. At worst, it can lead to

In order to keep your plant operation safe, efficiently and economically, **THE**
boiler but the whole steam system including the feed-tank, feed-lines, steam
injected directly into the feed water or steam.

sfer heat from hot gases generated by the combustion of fuel into water until it becomes hot or n volume over 1,000 times and that it travels a down a steam pipe at over 100 kilometres/hr?

o where it is needed, but without the right boiler feed water treatment, a steam-raising plant will rities, which impair boiler operation and efficiency. As more and more steam is evaporated, the nese are usually Calcium or Magnesium salts which on concentration, form scales or deposits. eat transfer and increase energy costs and can lead to poor quality steam, reduced efficiency, astrophic falure due to overheating and eventually boiler rupture and loss of life.

ODYNE has developed a comprehensive range of products and services to protect not just the l condensate system. To improve feed water quality, and steam purity, these chemicals can be

SCALE

Boiler scale is caused by impurities being precipitated out of the water directly on heat transfer surfaces or by suspended matter in water settling out on the metal and becoming hard and adherent. Evaporation in a boiler causes impurities to concentrate. Scaling mechanism is the exceeding of the solubility

limits of mineral substances due to elevated temperature and solids concentration at the

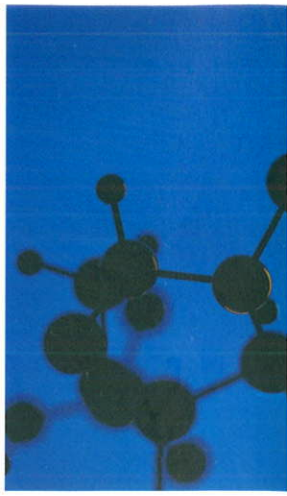
OXYGEN PITTING

Oxygen attack is the most common cause of corrosion inside boilers. Dissolved oxygen in feedwater can become very aggressive when heated and reacts with the boiler's internal surface to form corrosive components on the metal surface. Oxygen attack can cause further damage to steam drums, mud drums, boiler headers and condensate piping.

Oxygen is highly corrosive when present in hot water. Even small concentrations can cause serious problems: iron oxide generated by the corrosion can produce iron deposits in the boiler. Oxygen corrosion may be highly localized or may cover an extensive area

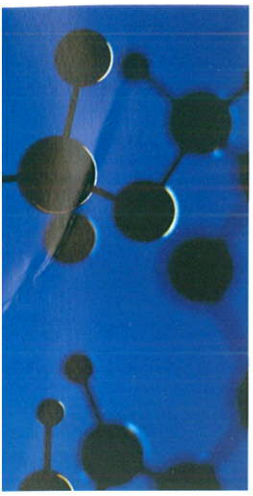
In the presence of steel, the corrosion rate of

CORROSION DU



The pH value of wa
alkalinity or acidity an

LOW pH



a measure of its
a direct bearing on

SLUDGE FORMATION

Deposits in boilers can be classified as one of two types:

- Scale that crystallized directly onto tube surfaces
- Sludge deposits that precipitated elsewhere and were transported to the metal surface by the flowing water

Sludge is the accumulation of solids that precipitate in the bulk boiler water or enter the boiler as suspended solids. Sludge deposits can be hard, dense, and tenacious.Once deposition starts, particles present in the circulating water can become bound to the deposit.

In addition to causing material damage by insulating the heat transfer path from the

MULTI-TREATMENT EXPERT

THERMOCHEM TC 0322 is the all-in-one product for scale control, pH control, oxygen scavenging, and sludge conditioning. It is a single chemical which performs all the functions to keep your boiler system in good health.

tube/water interface. The deposition of crystalline precipitates on the walls of the boiler interferes with heat transfer and may cause hot spots, leading to local overheating. The less heat they conduct, the more dangerous they are.

If unchecked, scaling causes progressive lowering of the boiler efficiency by heat retardation, acting as an insulator.

Thickness of Scale deposit	Heat Loss	Fuel consumption increase
0.8 mm	8%	2%
1.6 mm	12%	2.5%
3.2 mm	20%	4.0%

oxygen doubles for each 1°C rise in temperature. For example, in a boiler system operating at 400 PSIG and 230°C, the corrosion rate for oxygen is 256 times more reactive than at room temperature. As oxygen corrodes the boiler metal, it dissolves the iron surface. This weakens the metal site, but more importantly, sends dissolved iron into the boiler. This dissolved iron can deposit onto boiler tubes, causing overheating and tube failure.

the corrosive properti
alkaline (hydroxyl, OH)
ions. A pH below 7 i
indicates alkaline cond
areas is the second m
corrosion in mild st
condition can destro
therefore boiler water
alkaline range of a pH o

Low pH in local area
common cause of co
boilers. Above rough
corrosion results in the
a tight adherent that ac
boiler water and steel.
stops after a uniform ma

pH BOOSTER

All water contains
and hydrogen (H)
es acidity; over 7
Low pH in local
common cause of
oilers. An acidic
metal surfaces,
naintained in the
to 9.5.

the second most
on in mild steel
00@, mild steel
ition of magnetite,
a barrier between
corrosion reaction
te layer is formed.

boiler flame to the water, deposits restrict boiler water circulation. They roughen the tube surface and increase the drag coefficient in the boiler circuit. Reduced circulation in a generating tube contributes to accelerated deposition, overheating, and premature steam-water separation.

DOSAGE

The dosage of each type of treatment chemical would depend upon the Chemistry of your raw water. Our experts shall suggest the exact dosage of the chemical after a detailed analysis of your water report and usage.

ANTI-SCALANT

THERMOCHEM TC 0311 is a Phosphate based boiler feed water chemical which precipitates calcium or magnesium into a soft deposit rather than a hard scale. Additionally, it helps to promote the protective layer on boiler metal.

Advantages

- Prevents scale deposition on boiler heat transfer surfaces.
- Maintains good boiler efficiency
- Prevents overheating and rupture of tubes
- Reduces fuel consumption

OXYGEN SCAVENGER

THERMOCHEM TC 0316 is an effective oxygen scavenger recommended for low & medium pressure boiler to prevent their pitting & corrosion due to oxygen. This is a strong reducing agent, with a metal catalyst, which quickly removes oxygen from boiler feed water

or alkalinity builder ch
Boiler Water Treatmen
the alkalinity and pH
corrosion inhibition an
sludge or boiler depo
and prevention of scal
in boiler tubes. Throu
this, the Boiler feed wa
pH is maintained arou
8.5- 9.5 for avoid
boiler tubes corrosion
rusting due to aci
attack.

temperature and solids concentration at the

alkalinity or acidity and

is the pH booster
al is a multipurpose
mical that increases
boiler water for
aids in removal of

SLUDGE CONDITIONER

THERMOCHEM TC 0313 is the Boiler water Sludge conditioner that prevents deposition of sludge in the boiler by capturing calcium and magnesium salts, dispersing silica, chelating iron and breaking-up colloidal deposits like clay and silt that are otherwise gets deposited onto the boiler surface. It maintains the sludge in semi-liquid form, which can be removed through boiler blow-down.

PACKING

All products are normally packed in 25 Kg / 50kg food grade HDPE containers. In case of bulk supplies, other packings can also be arranged on special request.

CAUTION

The chemicals are not hazardous but may cause irritation on sensitive skin on human contact. In such case, wash with plenty of clean water & get medical attention. Contact with eyes must be avoided.

a direct bearing on insulating the heat transfer path from the