

# Application Note: Number AN3 Maintenance of Conductivity Cells

## Cleaning Cells

Conductivity cells can often become coated by grease, suspended solids, lime scale etc. over a period of time.

When coating occurs the conductivity indication will usually appear to be lower than real conductivity and the cell should be cleaned. If the measured solution is likely to cause coating of the cells electrodes then a regular cleaning routine should be established.

Cells are available with various cell constants  $K=1$  etc. This cell constant is determined by the distance between cell electrodes and the effective surface area of these electrodes. Coating of any part of the electrodes or a barrier formed between electrodes will change the effective area of the electrodes causing an error in conductivity reading.

### Cleaning Methods: -

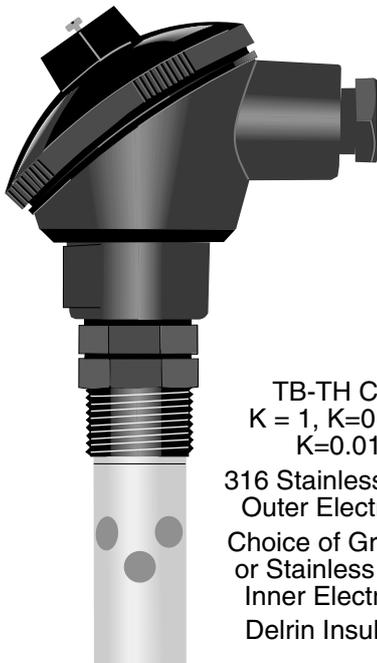
For general deposits such as grease the cells should be cleaned using a soft brush or tissue and a weak detergent solution. Most cells have at least one graphite electrode, these electrodes may be damaged if abrasives are used in cleaning. Stainless steel electrodes may be cleaned using a stiff brush or fine abrasive paper wetted in the detergent solution. Scouring powder may be used in the detergent solutions for stainless steel electrodes if the coating is difficult to remove.

Lime Scale deposits should be removed by immersing the electrodes in a 10% solution of hydrochloric or formic acid. If using acid solutions always adhere to the relevant safety procedures and ensure that the solution is disposed of according to local authority regulations. When placed in this solution the lime scale will react with the acid and form bubbles, when the bubbles cease the electrodes are cleaned of scale, this should normally take no more than 3-4 minutes.

When electrodes have been cleaned it important that any detergent or acid solution is rinsed off before the cell is placed back into the process solution. Ensure that the electrodes are not touched by hand after cleaning as this will deposit a thin layer of grease.

## Electrical Connections

Insecure or corroded electrical connections will also cause incorrect conductivity indication. Clean off any corrosion and tighten any loose connections found.



TB-TH Cell  
 $K = 1, K=0.1$  or  
 $K=0.01$   
316 Stainless Steel  
Outer Electrode.  
Choice of Graphite  
or Stainless Steel  
Inner Electrode.  
Delrin Insulator.



TB-PS Cell  
 $K = 0.1$

TB-PS Cells are available with graphite or 316 stainless steel electrodes.

Body material is polypropylene.

TB-PS Cell  
 $K = 1$