JM

Do you need to change your chloride guard bed?

Johnson Matthey test kit lets you know for certain.

For over 25 years, Johnson Matthey (JM) has been a leader in chloride guards. Many of our customers struggle with sampling of their gas streams. While inorganic (HCl) monitoring is well understood, organic (RCl) and total chloride are often not measured which can create significant cost to downstream applications.

JM's test kit and methodology allows quick quantitative measurements of both HCl and RCl. The easy to use equipment is ready for field use and delivers feedback on chloride levels within minutes.

Benefits include:

- Quantitative measurement of HCl & RCl
- Easy detector tube methodology
- Cost-effective for daily/weekly sampling
- No hot work or special utility requirements
- Data can be analyzed and summarized by JM personnel for life prediction

Johnson Matthey
Inspiring science, enhancing life

Why is effective chloride removal needed?

When chlorides leave the catalytic reformer, it commonly leads to two problems. First, where water is present, vigorous corrosion occurs. Second, HCl will combine with any NH_3 present leading to precipitation of ammonium chloride. These usually lead to production restrictions or downtime. Organic chloride itself does not react the same way, but it will readily decompose at higher temperatures giving HCl. Therefore it is important to ensure that all chloride species are removed and that this can be measured.

Why and where does organic chloride form?

It is recognised that recombination of HCl and low levels of olefins can occur across acidic, catalytic surface sites. These acidic sites can also facilitate undesirable reactions forming green oils. The problems are generally more acute with CCRs than Semi-Regen Reformers as the levels of HCl and olefins are higher.

$CH_3 - CH = CH_2 + HCl \longrightarrow CH_3 - CH_2 - CH_2Cl$

The use of chemical absorbents, such as **PURASPEC ARMOR™** and **PURASPEC PERFORM™**, rather than more traditional aluminas, reduce the surface acidity and green oil formation potential.

What is the experience with the measuring technique?

The following examples illustrate the successful use of the method:

1. One refinery engineer used the measuring technique to monitor the performance of the CCR make gas chloride guard. He found when he detected RCl slip there was fouling on the local HDS units due to ammonium chloride formation if the chloride guard was not changed out. When using standard HCl 'sniffer' tubes, fouling had occurred before detecting any chloride breakthrough.
2. A refiner operating a lead-lag make gas chloride guard on a CCR suspected chloride slip and requested a survey. A level of 1.5-2 ppm chloride (all HCl) was detected at the lead bed inlet, with the result being the same with this technique and a standard HCl 'sniffer' tube. However, while the standard tube found no slip after the beds, this technique measured 1 ppm RCl slip leaving the lead bed and 0.6 ppm RCl leaving the lag bed and passing on to downstream equipment. Considering this data, the refiner decided to expedite replacement of the absorbent.

For more information about the Johnson Matthey's range of catalysts and associated services, please contact your JM representative or visit our website at www.matthey.com.

Billingham, UK
Tel +44 (0) 1642 553601
www.matthey.com

Johnson Matthey
Inspiring science, enhancing life

1505JM/0920/1/ENR