Introduction

Thin film membranes may require storage for extended periods either in-situ in the plant's pressure vessels or externally. This technical note provides guidance on how best to achieve safe preservation of membranes in either situation.

Preservation for Storage Within Membrane Pressure Vessels

When a system is to be shutdown for more than 4 or 5 days and daily flushing is not possible the membranes should be preserved to prevent biogrowth and dry out.

A number of options are available for preservation solutions these include:

1. 1% solution (food grade) Sodium Bisulphite
2. 1% solution RoCide IS2
3. 5% solution RoCide LC

The procedure detailed below is provided for SBS, as it requires ongoing monitoring. Steps 1-4 only are necessary for RoCide IS2 and LC. The selected solution should be applied as follows:

1. Prepare a system volume of 1% SBS in the CIP tank.
2. Shutdown the membrane train and flush out with permeate.
3. Push the SBS solution through the system slowly, displacing the flushing water to drain.
4. Close all inlet/outlet valves to the membrane system.
5. Sample pH of solution. It should be around 4.
6. Repeat pH sampling on a weekly basis. If the pH drops below 3 a fresh solution should be prepared and pushed through the system. (In hot weather solution replacement may be required every 2-3 weeks.) Note, if the pH drops the membranes are at risk of damage as SBS can be oxidised to sulphuric acid causing direct damage and allowing the growth of Sulphate Reducing Bacteria.

Preservation for Storage Out of the Plant

When membranes are removed from a system for storage they should be preserved to prevent biogrowth and drying out. Whatever solution is chosen the procedure should be followed as detailed below:

1. Clean and rinse the membrane to be preserved.
2. Flush the element in the preservation solution.
3. Remove the element from the system and pack the element in a polyethylene bag pouring about a litre of preservation solution in with the element.
4. Seal the bag having first extracted as much air as possible.
5. Store the preserved elements as advised for new membranes and check the ends for dryness or biological growth every 6 months.

The preservation solutions should be changed every 12 months.

Preservative should be flushed from membranes before being used in service.

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