

**CECO
Filters**

A CECO Environmental Brand

Sulfuric Acid Stick Test Procedure

GUIDE FOR OPERATORS

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Sulfuric Acid Stick Test Procedure

The following procedure is a basic guide or advise on how to perform stick tests in sulfuric acid plants. CECO Filters shall not be held accountable for any liabilities as result of this procedure. The operator must be held fully accountable for performing such procedures and take into consideration the safety procedures or rules of conduct related to their company before performing stick tests.

What is a stick test?

Stick tests are used to provide a visual understanding of the performance of your mist eliminators within the Drying Tower (DT), Intermediate and Final Absorption Towers (IAT & FAT). They are a simple and conventional method to collected fine and large acid droplets on the surface of wooden stick within the selected absorption tower. This helps operates to identify problems or source a solution to their malfunctioning mist elimination equipment. Furthermore, stick test are a great method to understand troubleshooting issues as they provide visual evidence of the performance of each plant.

Sulfuric acid leaves black burn marks on wood, this helps reveal the scope of acid mist carryover. The size distribution of burn marks on the wood are an indication of issues regarding the type of malfunction.

Why do stick tests?

Stick test are a cheap method of monitoring the performance of mist elimination equipment with the need of expensive sampling. They provide visual evidence of problems and how they develop over time. They reveal droplet removal or elimination performance after the mist eliminators. This methodology allows plants to develop a pattern or trend in performance of time. We recommend testing to be done once a month to develop a pattern of results. Each test must be recorded and photographs of each result from the respective tests should be taken. This trend information can then be taken into account when troubleshooting, and in conjunction with pressure loss records.

How to do a stick test?

Requirements

The following items are required and necessary to conduct a stick test during an operating absorption tower:

- Correct personal protective equipment (include gas mask or respirator or breathing apparatus)
- Rectangular stick long enough to reach the other side of the ducting or tower wall.
- Sampling or instrumentation nozzles, either above the mist eliminators within absorption tower or in the ducting straight after the absorption tower.

Procedure

The stick test should be done in the following order:

1. Ensure all participating colleagues are fully equipped with PPE and have taken the necessary safety precautions i.e. gas masks and acid resistance protection.
2. Source a nozzle above the mist eliminator equipment or straight after absorption tower ducting.
3. Locate a long rectangular stick with clean surface and to fit into the nozzle. The stick must be long enough to reach the other side of the vessel or ducting.
4. Remove nozzles and insert the stick fully into the vessel until reaching the end of the column wall or ducting.
5. Please refer to timing on Timeframe Table (below).
6. Remove stick from the nozzle.
7. Close nozzle.

Timeframe Table:

Identifying problems	Timeline
SO₃ gas slip	2 minutes
Acid mist bypass	5 minutes
Acid mist re-entrainment	10 minutes

Results

Photographs of stick test results can be sent to CECO Filters for evaluation of performance. CECO Filter can provide guidance and support to operators are frequently performing cheap and effective stick tests.

Added services

On-site services

CECO Filter provide on-site services with training course on how to perform stick test services. Our on-site at a one-off cost and will provide your employees with in depth training. This gives understanding of how to conduct safe and effective stick tests to help monitor plant performance. We will illustrate how to find solutions to troubleshooting situations.

Benefits

- Low Cost
- 1 day training course
- One-off payment
- Transfer of knowledge to your employees
- Understanding how to troubleshoot efficiently and find solutions to common problems
- Protect your plant operations and enhance production.

Contractual Services

CECO Filters can provide operators with outside consultancy on how to interpolate stick test results when completed on site. This service is conducted remotely and results are sent to CECO Filters for interpolation. These services are provided in the following timeframes; 6 months, 1 year or 2 years contracts.

Benefits

- Low cost service
- One-off payment
- Remote assistance from experienced engineers

Contact Details

Contact us today!

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