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**GC ANALYSIS OF DMS AND DMSO**

1.0 Purpose

This is a gas chromatographic method to obtain a purity value for dimethyl sulfide (DMS) and dimethyl sulfoxide (DMSO).

2.0 Safety/Health

2.1 PPE

Wear standard safety equipment consisting of safety glasses or goggles, flame retardant clothing and laboratory nitrile gloves when using these materials.

2.2 Safety Systems

N/A

2.3 Health Hazards

N/A

3.0 Process Description

3.1 Process Overview

N/A

3.2 Scope/Boundaries

N/A

3.3 Equipment Involved

Agilent 6890 Gas Chromatograph (GC-5) equipped with Chemstation computer and software. Chromatograph is configured with a flame ionization detector and with a QUADREX 007 series bonded phase fused silica capillary column (CAT #07-1-15W-3.0F). Column specifications are: 15 meter, 0.32 mm ID, and 3.0 micron film thickness.

#### 4.0 Process Description

##### 4.1 Instrument Set-up

- A. The Agilent 6890 GC has all instrumental parameters stored in "Method" and "Sequence" files for each individual analysis. Usually the GC is always on. IF the GC is not on, depress the Power button located just below the oven door. The GC should start up without any further assistance. Allow about 15 minutes for gas flows to come up and FID to ignite. After 15 minutes, if the signal reading on the GC display panel is reading <1.0, contact the Analytical Laboratory Manager for assistance. If necessary, power up associated computer and monitor. If GC and computer are already on go to section B.
- B. For GC analysis of DMS and DMSO click on the **START** icon and move selector up to **Programs Files**, then over to **Chemstations**, and then click **Instrument 1 on-line**. This will load up the Chemstation software.
- C. When the Chemstation screen loads up click on **METHOD** in the toolbar. In the dropdown select **LOAD METHOD**. Scroll down through the methods and "double click" on the Customer Name (example: **EXXON**) or if performing the Daily analyses, the **DAILY** method. (Each customer is listed in the METHOD files). This will load the proper analytical method.
- D. Now click on **SEQUENCE** in the toolbar. In the dropdown select **LOAD SEQUENCE**. Scroll down through the sequences and "double click" on the Customer Name (example: **EXXON**) or if performing the Daily analyses, the **DAILY** sequence. (Each customer is listed in the SEQUENCE files). This will load the proper analytical sequence.

**NOTE:**

If there are any questions about the actual instrumental parameters or sequence parameters see attachment C. Click on **METHOD**, then **EDIT METHOD** and then start with the **INJECTORS** icon and work your way to the right filling in the required information as listed in attachment C. After completing this, click on **METHOD**, and then **SAVE METHOD**. The parameters that were put into the instrument are now saved to the proper method.

## 4.2 Analysis

- A. Fill a 2.0 mL autosampler vial to the neck with the product to be analyzed using the disposable Pasteur Pipettes. Place in position 1 of the autosampler turntable (Up to 100 samples can be analyzed automatically as listed in the sequence table.) Make sure that Solvent vials in the autosampler are filled and the rinse vials are empty. (Solvent A is methanol, and Solvent B is water.)
- B. Click on **SEQUENCE**, and then **SEQUENCE PARAMETERS**. At the **SEQUENCE PARAMETERS** screen type your name in the "Operator's Name" space. Use the mouse pointer to select "Prefix/Counter" and click. Then, under "Signal 2" column write the days date in YYMMDD format. Under the Counter column write 0001 (if necessary.) Now use the mouse pointer to select the "Subdirectory". If no subdirectory is listed type in the Customer name or if performing the Daily analyses, type in **DAILY**. (If the computer prompts that there is no subdirectory of this name and asks to create it, select **YES**.) Click **OK** at bottom of screen.
- C. Click on **SEQUENCE**, and then **SEQUENCE TABLE**. At the **SEQUENCE TABLE** screen type in the date and sample name in the SAMPLE INFO section. If the sample is for a customer shipment also type in the Order Number and the Lot Number below the date and sample name. Below the SAMPLE INFO section there is a list of the sequence particulars for each sample. It should appear as follows:

Line	Location	Sample Name	Method Name	Inj/Location	Sample Type
1	Vial 1	Product Name	Customer Name	1	Sample

If the particulars are not listed above use mouse to select each and correct as per the example and then click **OK**.

- D. Click on green START icon on Chemstation page. Instrument will inject sample and then generate a report on printer labeled GC-5 Printer.

## 5.0 Documentation

Data is automatically saved to the file path listed in the method parameters. The data is logged in either the Operator's lab notebook or the Analyst's personal lab notebook. The printed results chromatogram are saved for quick reference. (The actual data is on file in the computer if a report is required at a later time).

6.0 Glossary

None associated with this procedure.

7.0 References

None for this procedure.

8.0 Test Specification

DMS purity 99.2%

DMSO (Industrial Grade)purity 99.7%

Uncontrolled copy. For reference only.