Orono Spectral Solutions – Formaldehyde in Urea

Technologies that make environmental chemical sampling and analysis safer, faster and more accurate.

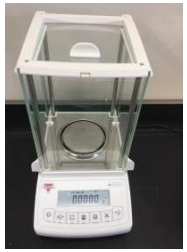
November 1, 2019

ORONO SPECTRAL SOLUTIONS, INC.
A FULL-SPECTRUM INNOVATOR

Quickly, Safely and Accurately Measure Formaldehyde Level in Urea Pellets

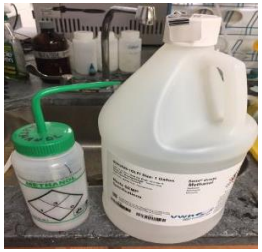
- OSS ClearSampler™ Patented Technology provides the precise method to deliver accurate results without additional staff
- Method gives manufacturing personnel the analytical data needed to make timely corrections in production process control
- Method allows testing for every delivery from a manufacturing site or terminal via truck, railcar or other transportation method
- Method provides the ability to generate a Certificate of Analysis containing the precise formaldehyde content in every shipment of Urea Pellets (Prill)

Equipment Required for Performing Formaldehyde in Urea Test Method



Lab
Balance

Weighing Pans
& Spatula



Lab Grade
Methanol

4 oz Wheaton Volumetric
Jar with PTFE Lid Liner

Stirring
Hot Plate

1 ml Pipette &
Disposable Tips

OSS ClearSampler Discs
and ClearSampler Holder

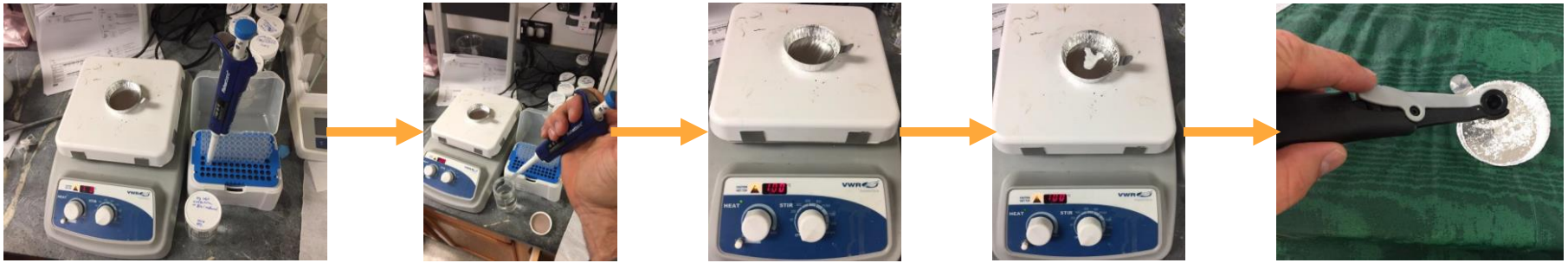
FTIR unit with ATR Attachment and
OSS Macro Software

Method – Urea Pellet Preparation

- Tare a clean aluminum weighing dish
- Weigh out 10 grams of Urea Pellets and add to Volumetric Bottle (e.g. Wheaton Volumetric Bottle)
- Fill to 80 ml mark, lab grade methanol (VWR BDH2029-1GLP)
- Mix the solution until homogenous (pellets completely dissolved) using hand shaking or stir plate

Method – Prepare Urea Solution for Capture by ClearSampler Disc

- Set the hotplate to 100 C and place weighing pan on plate
- Pipette 1 ml of the homogeneous sample into pan
- In less than 1 minute the methanol will evaporate
- Use the ClearSampler disc to crush and secure a sample



Method – Formaldehyde Concentration Measurement, Repeat & Results

- Ensure the ClearSampler #1 disc nub is completely covered
- Place the ClearSampler #1 disc on the clean ATR attachment and process using the OSS Macro
- Repeat 2 steps above for discs #2 and #3
- The average of the three tests will determine the amount of formaldehyde in the urea sample
- Ensure that the FTIR – ATR sensor is clean prior to each test

System Capability Highlights for Measuring Formaldehyde in Urea Pellets

- In order to account for potential different total amounts of urea pellet sampled and presented to the FTIR – ATR sensor, OSS has normalized the spectral absorbance relative to the sample amount.
- Calibrated formaldehyde signatures, urea pellet signatures and normalized adjustments are automated in the macro
- Triplicate analyses allows statistical processing of results to provide accurate measurement
- FTIR backgrounds and sample spectra are automatically saved for record keeping and post processing opportunities

OSS Offers Technical Support and Resources for this Method

- Method review at www.ossmaine.com
- Contact OSS for technical support at 866-269-8007
- Assistance is available for the development of specific macros and calibrations for your location
- On-site support is available for implementation, installation and validation of all testing equipment and training of personnel

Contact Us

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