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APPLICATION NOTE

Non-Volatile Residue (NVR) Procedure

KYZEN recommends Non-Volatile Residue (NVR) testing for soil contaminant as a tool for bath life monitoring of certain KYZEN products. A sample of a used wash bath is placed into an aluminum weighing dish and dried at 105°C / 221°F for a minimum of four hours. The residue that remains in the dish is allowed to cool in a desiccator and is re-weighed. The weight of the bath residue is then compared to the residue of a virgin sample of the cleaning product at the same concentration and dried in the same manner.

APPARATUS

Forced Air Oven set at 105°C / 221°F Aluminum weighing dish
(See Tip Number 1 'Tips for Successful Use' at the end of the procedure) Analytical Balance
Desiccator

REAGENTS AND MATERIALS

Transfer pipettes
Virgin sample of the product to be tested

HAZARDS AND PRECAUTIONS

For specific safety information, reference the Material Safety Data Sheet for the product you are testing.

STATISTICAL CONTROL

Samples should be analyzed in triplicate. The average of the three analyses is reported.

CALCULATIONS

%NVR = [(c-a)/b] x 100

a = Initial weight of the aluminum dish, b = Initial weight of the sample, c = Weight of weighing dish and residue after heating

% NVR resulting from soil contamination = %NVR of sample - % NVR of virgin sample

PREPARATION

A. Set the forced air oven to 105°C / 221°F for a minimum of two hours to allow the temperature to stabilize.
B. Place the aluminum weighing dishes to be used into the forced air oven at 105°C / 221°F for a minimum of one hour to dry.
C. Place the dried weighing dishes into a desiccator and allow to cool.

PROCEDURE

A. Place a cool weighing dish on the analytical balance. Record the weight (*this is weight 'a'*).
B. Tare the balance and add approximately 10 grams of sample to the weighing dish [2]. Record the weight of the sample to the nearest 0.0001g (*weight 'b'*).
C. Place the dish in the oven at 105°C / 221°F for a minimum of four hours [3]. Remove the dish to a desiccator and allow to cool.
D. Weigh the cooled dish on the analytical balance and record the weight to the nearest 0.0001g (*weight 'c'*).
E. Repeat Procedure steps A through D a total of three times for both the sample and the virgin product.

TIPS FOR SUCCESSFUL USE

1. A beaker or ceramic dish can be used in place of the aluminum pan; however, these must be compatible with the cleaning product and able to withstand the required oven temperatures.
2. The amount of sample used for testing is not critical, but must be weighed accurately.
3. A dirtier bath will require longer than 4 hours to completely dry. To ensure that your sample is completely dry, return the sample to the oven for 30 minutes after taking the first weight. Cool in the desiccator and reweigh. Continue this until there is less than 5% change in the weight.