STANDARD OPERATING PROCEDURE
FOLEY PILOT PLANT

TITLE: Biomass Acid Soak Preparation

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APPROVALS: **Process Change Committee** **DATE:**
HHSM **DATE:**

CONTENTS

A. Scope

This procedure describes the methods to prepare the acid soak solution for the biomass.

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B. Safety and Training Requirements

Acid resistant gloves and eye protection are required when dealing with acid solutions.

C. Related Documents and SOPs

1. Biomass preparation SOP
2. OHAUS 5000 Series Xtreme W manual
3. Denver Instruments balance operation manual

D. Preparation/Materials/Equipment

1. 30-gal drums
2. 1-L plastic beaker
3. OHAUS 5000 Series Xtreme W balance
4. Denver Instruments balance operation manual
5. 85% phosphoric acid solution
6. Rubbermaid Roughneck 25 gal storage bin

E. Detailed Procedure

1. Calculate the amount of bagasse needed:

$$kg \text{ biomass needed} = \frac{(\#\ shots) * \left(\frac{0.5\ kg\ DW}{shot}\right)}{\%DW * 0.8}$$

2. Make sure that enough bagasse has been prepared using the Biomass Preparation SOP.
3. Calculate the amount of acid solution to be prepared:

$$kg \text{ soak solution} = kg \text{ biomass needed} * \%DW * \left(\frac{14\ kg \text{ solution}}{kg\ DW}\right)$$

4. Calculate the amount of acid to be added:

$$kg \text{ acid to be added} = \frac{kg \text{ acid solution} * \text{concentration acid desired}}{\text{assay concentration of } 85\% \text{ acid solution}}$$

5. Calculate the amount of water needed:

$$kg \text{ water needed} = kg \text{ acid solution} - kg \text{ acid added} - kg \text{ moisture}$$

$$kg \text{ moisture} = kg \text{ biomass needed} * \%DW$$

6. Prepare the soak solution:
    a. If kg biomass needed $* \%DW > 4.5\ kg$, divide the biomass and soak solution in more than one drum.
    b. Add the water to the 30-gal drum(s) by weight using the OHAUS 5000 Series Xtreme W balance.
    c. Weight the acid using a 1-L plastic beaker and a Denver Instruments balance and add to the drum(s).

7. Weight the biomass needed into a Rubbermaid Roughneck 25 gal storage bin using the OHAUS 5000 Series Xtreme W balance.
8. Put a lid on the drum with the soak solution and on the bin with the biomass.

F. Data Archival and Analysis

Record the data in the Acid Soak Preparation Log and store in the Batch Log Book.

G. Tickets

Acid Soak Preparation Log

Date _____

%DW Prepared Biomass _____

Total Biomass Needed(kg) _____

Total Soak Solution (kg) _____

Number of Drums _____

Acid Assay Concentration (%) _____

Acid/Drum (kg) _____

Water/Drum (kg) _____

Biomass/Drum (kg) _____