

ATTACHMENT II-1-4-1

ANALYTICAL PROCEDURES FOR FORMULA DEVELOPMENT  
FOR LIQUID WASTE SOLIDIFICATION

1. SCOPE, PURPOSE, AND APPLICATION

- a. This attachment outlines how the Permittee shall obtain information for the development of the formula by which liquid wastes are to be solidified at the Permittee's Mixed Waste Treatment Facility.
- b. To solidify a waste, the Permittee shall add solidification materials to the liquid waste to produce a waste that does not contain free liquids.
- c. The goal of solidification is to produce a waste that has no free liquids as determined by the Paint Filter Liquids Test ("PFLT") using, where possible, solidification materials that shall not interfere with any subsequent treatment of the waste.
- d. As a result of this method, the composition and amount of solidification materials to be used in solidification shall be determined.

2. APPARATUS AND MATERIALS

- a. Beaker or container, 200 ml minimum
- b. Balance (minimum 0-500g, +/- 1 g)
- c. Stirring device (glass rod, spatula, etc.)

3. SOLIDIFICATION MATERIALS

The Permittee shall only use the solidification materials listed below:

<u>Material</u>	<u>CAS Number</u>
Aquaset	14808-60-7
Aquaset II	14808-60-7
Aquaset II-H	None
Bentonite	1302-78-9
Cement Kiln Dust	None
Cement (Portland)	65997-15-1
Diatomaceous Earth	None

Fly Ash (Class C & F)	None
Gravel	None
Lime	1305-78-8
Lime Kiln Dust	None
Natural clay	None
Organoclay BM-Qt-199	None
Perlite	None
Petroset	1318-93-0
Petroset II	None
Petroset II-G	None
Petroset II-H	1318-93-0
Sand	None
Soil	None
Zeolites (Clinoptilolites, Aluminum Silicates, Instazorb)	None

4. SAMPLE PREPARATION

- a. The Permittee shall ensure that a free-liquid waste sample is obtained or, alternatively, a sample obtained from the moistest portion of the available material.

5. METHOD

- a. The Permittee shall place a minimum 100-g sample in a beaker.
- b. The Permittee shall determine and record the mass of the sample.
- c. The Permittee shall add selected solidification materials.
- d. If necessary, the Permittee shall stir the mixture in a similar manner for which the waste and solidification materials are planned to be mixed, considering the scale of the laboratory bench in comparison to the planned solidification effort.
- e. The Permittee shall repeat Steps 5.c. and 5.d. as necessary to make a solidified mixture.
- f. After stirring, the Permittee shall visually inspect the sample for the presence of free liquids.
- g. The Permittee shall perform the PFLT on the solidified sample to verify that the treated waste has no free liquids.
- h. If free liquids are present as determined by Step 5.f. or 5.g., the Permittee shall repeat Steps 5.e. through 5.g. as necessary.

- i. The Permittee shall determine and record the mass of the solidified sample.
- j. The Permittee shall record any observations or unexpected chemical reactions between the solidification materials and the waste. If hazardous conditions occur, other solidification materials shall be selected; the waste shall be developed for stabilization in accordance with applicable permit provisions; or, the waste shall be removed from consideration for either solidification or stabilization.

6. QUALITY CONTROL

- a. Once a solidified sample has been verified, the Permittee shall perform a duplicate analysis as precision check. The precision objectives listed below shall be met for the duplicate analysis:
  - i. Mass of sample +/- 10%
  - ii. Mass of solidification materials added: +/- 10%
  - iii. Final mass of solidified material: +/- 10%

7. SOLIDIFICATION FORMULA

- a. The solidification formula shall be developed using the information from the successful completion of this method.
- b. The information provided by the results of this method may be used to accomplish the solidification. Practical application and field experience may also be used to develop the formulas to solidify the waste. This method shall provide guidance and a starting point for the actual formula used to solidify waste.

8. SAFETY

- a. The Permittee shall wear appropriate PPE when performing this method.

9. SAMPLE MANAGEMENT AND DISPOSAL

- a. After the method has been performed, materials may be archived for future reference, replaced with the waste, managed as an on-site generated waste, sent out for additional analysis, or returned to the generator as a sample. This procedural step shall not preclude any other lawful management of sample material.

END OF ATTACHMENT II-1-4-1