

**RECOVERY PROGRAM FOR  
SIGMA CAT 2185 (TEA) or SIGMA CAT 2190 (DMIPA) SPENT SCRUBBER  
SOLUTION**

The information contained in this packet is designed to familiarize you with the procedures necessary to qualify your Spent Scrubber Solution for Recovery.

1. Introduction to Superior Solvents and Chemicals
2. Typical Scrubber Operating Procedures
3. EPA / DOT Regulatory Definition for Sigma Cat (2185) TEA or Sigma Cat 2190 (DMIPA) Scrubber Solution
4. Sampling Requirements
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## **SUPERIOR SOLVENTS & CHEMICALS**

### **SIGMA CAT 2185 (TEA) or SIGMA CAT 2190 (DMIPA) RECOVERY PROGRAM**

Superior Solvents and Chemicals is a privately owned industrial chemical distribution company with six branch locations in the Midwest area. Each of the Superior locations has their own warehousing, bulk storage and transportation capabilities.

Superior Solvents and Chemicals have dedicated a part of the Indianapolis facility solely for the processing and reclaiming of hazardous and non-hazardous materials including spent scrubber solutions. Superior has built a relationship with HA International (HAI) to recover spent Amine scrubber solutions from HAI customers. The Indianapolis facility will be the final destination for receipt of all spent waste scrubber solution for processing.

## TYPICAL SCRUBBER OPERATING PROCEDURES

Scrubber equipment manufacturers' operating procedures should be followed at all times. Adherence to those procedures and following guidelines are required to make the amine recovery program feasible, to optimize the economics of the program, and to keep cost to the foundry at a minimum.

### Initial Charging of the Scrubber

At the initial charging of the scrubber, a specific concentration of sulfuric acid is required in the unit. (Caution: **Always add the acid to the water**).

For operations curing with Sigma Cat 2185 (TEA) or Sigma Cat 2190 (DMIPA), the scrubber should be charged with a water and acid solution consisting of 77-88% water and 22-23% sulfuric acid by weight (66 deg. Baume).

Note: 66 degree Baume sulfuric acid is approximately 93%. Other concentrations should be adjusted appropriately. When handling sulfuric acid or scrubber solution (safety goggles, acid resistant clothing, etc.) must be worn at all times. Refer to the MSDS.

During scrubber operation, water must be added to maintain the volume in the unit. In many units, this is done automatically. The pH of the scrubber solution should be monitored on a regular basis. When the pH reaches 4.2 to 4.5, the acid solution is spent, requires replacement, and should be suitable for recycling. In order to allow for sample transit and approval time, sample submission should take place when the pH reaches 4.0.

### Properties of Spent Scrubber Solutions

Triethylamine / Dimethylisopropylamine

Clear Amber Liquid

pH 4.0 minimum

Free Sulfuric Acid content 5% max Free

% Amine content 40% minimum

Upon removal from the scrubber, the customer must assure the solution meets corrosive criteria according to Federal and Local Regulations and maintain an analysis on file that so states. This solution contains free sulfuric as noted above and therefore, all handling materials should be constructed of compatible material. Always use proper eye and skin protection when handling.

## **EPA / DOT REGULATORY DEFINITION**

### **FOR SIGMA CAT 2185 (TEA) WASTE SCRUBBER SOLUTIONS**

Scrubber waste received by Superior is the result of using Sigma Cat 2185 (TEA) or Sigma Cat 2190 (DMIPA) in a scrubber to remove contaminants from the air discharge in a foundry. This material, by definition, (40 CFR 261) is a sludge. Sigma Cat 2185 (TEA) or Sigma Cat 2190 (DMIPA) is not listed, but the waste may exhibit either of 2 characteristics -- ignitability and corrosivity. If the waste is being disposed of, i.e., fuel blending, it may be a hazardous waste (D001 and/or D002).

Table 1 in 40 CFR 261 indicates that sludges to be recycled are exempt from RCRA hazardous waste regulations.

If it is determined that Superior cannot recover a marketable product from the Sigma Cat 2185 (TEA) or Sigma Cat 2190 (DMIPA) waste, we would work with the generator to properly dispose of the material. Superior is not permitted to accept D002 waste. **THE DETERMINATION OF MARKETABILITY WILL BE COMPLETED BEFORE THE MATERIAL IS ACCEPTED AND UNLOADED.**

The Sigma Cat 2185 (TEA) or Sigma Cat 2190 (DMIPA) waste is still a DOT hazardous material even if it is not RCRA regulated. It should be shipped on a Hazardous Materials Bill of Lading as follows:

**CORROSIVE LIQUID, N.O.S., (Contains: Sulfuric Acid), 8, UN 1760, PG II  
Not RCRA Regulated  
EMERGENCY RESPONSE GUIDE #154**

## **SAMPLING REQUIREMENTS**

Superior requires testing a sample of each waste stream to be received. This is a one time requirement in order to establish a "finger print" data base of future material to be received.

Superior requires a one quart representative sample of your waste scrubber solution. Do not mix the Sigma Cat 2185 (TEA) or Sigma Cat 2190 (DMIPA) waste sample with any other waste materials.

Please make sure you use a proper DOT approved sample container for shipment. Proper sample containers can be obtained from your foundry supply vendor. This waste material may be shipped via UPS.

Ship to: Superior Solvents and Chemicals  
400 West Regent Street  
Indianapolis, Indiana 46225  
Attn: Dave Menke  
Amine Scrubber Solution Recovery Program

## **GENERATOR WASTE MATERIAL PROFILE SHEET**

A Generator Waste Profile form must be completed, signed and accompany each waste sample presented to Superior for analysis.

Please contact Shane Cline if you have any questions concerning the information required to complete these forms.

On the following page, you will find an example of the Generator Waste Profile Sheet.

SUPERIOR GENERATOR WASTE  
MATERIAL PROFILE SHEET  
**Generator Information**

Generator Name: \_\_\_ Technical Contact:  
Facility Address: \_\_\_ Telephone: (\_\_\_\_) \_\_\_\_\_  
City/County:  
State: \_\_ Zip:  
US EPA ID#: \_\_\_ State ID #:

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**Waste Stream Information**

Name of Waste: Triethylamine / Dimethylisopropylamine  
Process generating waste: Spent Scrubber Solution  
Proper Shipping Name: Corrosive Liquid, N.O.S.  
Contains: (Sulfuric Acid) Hazard Class: 8  
UN/NA No.: UN 1760 Packing Group: II

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**Physical Properties**

Physical State	Phase Layers	pH	Flash Point
<u>90 - 95</u> % liquid	single	<3.0 &lt; 100°	
<u>5 - 10</u> % solid	multiple	&gt; 3.0 - 10.0	100 - 140°
% other, describe _	> 10.0	141 - 200°	

Exact : \_\_\_\_\_ Exact:

**Waste Composition Rate of Generation**

<u>Sulfuric Acid</u>	<u>3 - 5</u> %	Current Accumulation _ drums / bulk
<u>TEA / DMIPA</u>	<u>40 - 50</u> %	
<u>Water</u>	<u>45 - 55</u> %	Rate of Generator _____ drums / bulk

Salesperson: Shane Cline Telephone: (317) 781- 4400

I hereby certify by signature, as duly authorized representative, that all information contained herein is true, complete, and that all known or suspected hazards have been disclosed. I also warrant that our waste stream will not change in chemical composition, reactivity or metal content without the prior submission of new profile sheet and sample to Superior Oil Company, Inc. (40 CFR 264.13(a))

I also certify that the obtained sample is representative of the waste material described above and is exempt from RCRA Regulations 40CFR 261.

Signature \_\_\_\_\_ Title \_\_\_\_\_ Date \_\_\_\_\_

## **PRE-PRINTED LABELS**

After Superior's laboratory has evaluated your sample, you will receive a confirmation letter indicating acceptance of your material.

Superior can provide all necessary labels for movement of your waste material to the waste processing facility.

## **EMERGENCY RESPONSE TELEPHONE SERVICE**

On January 1, 1991, the U.S. Department of Transportation's rule regarding Shippers of Hazardous Materials providing a "24 hour emergency phone number" became effective. This requirement states that any "shipper of Hazardous Materials" must have a 24 hour emergency number on the shipping documents, whereby someone can be reached at all times to give emergency information to any responder in the event of an accident, spill, fire, etc.

## **WASTE CONTAINER REQUIREMENTS**

Spent waste scrubber solution may be shipped by bulk tank truck or in clean DOT approved plastic 55 gallon drums or totes. Always make sure that the shipping container is clean and free from any other waste material or products. Also insure to use an approved container specified for use in handling hazardous materials.

**SUPERIOR CONTACTS:**

Recovery Program Mgr.: Shane Cline

Superior Solvents and Chemicals  
1402 North Capitol Avenue  
Indianapolis, Indiana 46202  
Phone: 317-781-4400  
Fax: 317-781-4401

Customer Service Department /  
Scheduling Dave Menke

Superior Solvents and Chemicals  
400 West Regent Street  
Indianapolis, Indiana 46225  
Phone: 317-781-4490  
Fax: 317-781-4401