

## SorbaSolv™ Absorbency Performance Test

The following is a reprint of a facsimile my father received after testing was done on the SorbaSolv™ particulate, September 21, 1992.

### Introduction:

From September 14<sup>th</sup> to September 18<sup>th</sup>, 1992, MMT Environmental Services, Inc. performed a series of tests to determine the collection efficiency of OMNI/ajax SorbaSolv™ organic compound sorbent. The collection efficiency of SorbaSolv™ was determined against several organic vapors. These organics included condensed Magie oil (typical printing ink solvent), Isopropanol, Acetone, 1,1,1 Trichloroethane and chloroform. Testing was performed by William Anderson of MMT Environmental Services, Inc.

### Procedure:

The laboratory procedure used to evaluate the SorbaSolv™ material is described in this section. The test apparatus used to make these determinations is shown in Figure 1 below. Analyses were performed using Greenburg Smith glass impinges (bubblers) which were used to vaporize water (to provide a sample airstream with 100% relative humidity), vaporize the organic solvent (to provide the organic vapor) and finally to contain the SorbaSolv™ sorbent material. The air exiting the organic solvent impinge and the air exiting the SorbaSolv™ impinge were monitored for total hydrocarbon compounds using a Ratfisch Model RS 55 Total Hydrocarbon analyzer. At the beginning and end of each test the analyzer was calibrated using United States EPA certified calibration gasses to assure accurate results.

For the first series of tests impinge #1 contained 100 ml of water, impinge #2 contained 100 ml of organic solvent and impinge #3 contained 12-14 grams (approximately 400 ml by volume) of SorbaSolv™. The results were drawn from impinge #2 and outlet results taken from impinge #3. The results are as follows:

Type	Average Inlet (ppm)	Average Outlet (ppm)	Absorbent used (g)	Flow Rate (1pm)	Collection Efficiency %
<b>Condensed Magie Oil</b>	375	168	12	2.75	55%
<b>Chloroform</b>	10,475	10,435	14	2.75	0%
<b>Acetone</b>	22,610	19,615	13	2.75	13%
<b>1,1,1 Trichloroethane</b>	14,485	13,925	12	2.75	4%
<b>Isopropanol</b>	13,375	10,205	12	2.75	24%

A second series of tests was performed to determine if the collection efficiency of the SorbaSolv™ material could be increased by adding water directly to the impinger which contained the SorbaSolv™. This modification had virtually no effect on the collection efficiency of the SorbaSolv™ material. Our observations concur with the manufactures

information that the SorbaSolv™ material will not absorb water and that its collection efficiency is dependent on water vapor not liquid water.

A third series of tests was performed after discussion with Mr. A.V.Ceaser of the OMNI/ajax company. Per Mr. Ceaser's recommendations to increase the collection efficiency of the material the residence time the solvent vapor spends in contact with the SorbaSolv™ material should be increased. To accomplish this increase, three (3) additional impingers were added to the test apparatus. These additional impingers were filled with SorbaSolv™ material and then connected to the sampling system. The results of this series of tests are as follows:

Type	Average Inlet (ppm)	Average Outlet (ppm)	Absorbent used (g)	Flow Rate (1pm)	Collection Efficiency %
<b>Condensed</b>					
<b>Magie Oil</b>	350	62	63	2.75	75%
<b>Chloroform</b>	11,444	11,402	67	2.75	0%
<b>Acetone</b>	19,570	13,065	70	2.75	33%
<b>1,1,1 Trichloroethane</b>	13,810	13,025	66	2.75	6%
<b>Isopropanol</b>	10,520	5,855	68	2.75	44%

**Comments:**

All of the above tests were conducted at room temperature. As can be seen from the above tables, the SorbaSolv™ material did not absorb chloroform. Its best collection efficiency was obtained against the condense Magie oil sample. The oil has the highest molecular weight of all the solvents tested. This oil was collected from a Condenser/Filter pollution control system which controls the exhaust emissions from a heatset web offset printing press. The Magie oils exhibit characteristics very similar that to No. 2 fuel oil. All other solvents were American Chemical Society Reagent Grade laboratory solvents of 99.99% purity.