



INTERNAL CORRESPONDENCE

CHEMICALS AND PLASTICS

P. O. BOX 8361, SOUTH CHARLESTON, WEST VIRGINIA 25303

To (Name) Mr. R. N. Wheeler

Date October 1, 1976

Division

Location 514

Originating Dept. Research and Development

Copy to

Mr. R. L. Barker, 514
Mr. M. E. Griffith, 514
Mr. J. B. Johnson, 511
Mr. N. H. Ketcham, 511
Mr. R. E. Peele, 511
Mr. J. L. Worstell, 514 ✓
Mr. W. C. Young, 514

Subject EPA Method 106, Determination
of Vinyl Chloride from Stationary
Sources

Dear Mr. Wheeler:

Results of analyses for vinyl chloride, which you requested on a cylinder containing four components in nitrogen are given in Table I. The analyses were run using the EPA Method Number 106 for vinyl chloride. The components and their calculated concentration in the cylinder are: vinyl chloride, 10 ppm; acetaldehyde, 50 ppm; acetone, 50 ppm; and vinyl acetate, 50 ppm. The gas chromatographic procedure given in Method 106 failed to separate vinyl chloride and acetaldehyde. The results in Table I, calculated as vinyl chloride, reflect the combined total of vinyl chloride and acetaldehyde because the two components elute together and are integrated as a single response. Table I also gives the results of the analysis of calibrating standards for vinyl chloride, prepared in nitrogen in a Tedlar bag, according to the instructions given in Method 106. Two bags were prepared and the analyses of the contents are shown under Bag A and Bag B.

Copies of the gas chromatographic scans illustrating the response obtained in analyzing the sample and standards are shown in the attached figures. Figure 1 is the chromatogram for a 10 ppm vinyl chloride in nitrogen standard prepared in a Tedlar bag as called for in Method 106, showing a retention time of 2.84 minutes. Figure 2 is for acetaldehyde prepared in a Tedlar bag, showing retention time of 2.71 minutes. Figure 3 is the chromatogram from the analysis of the four-component cylinder sample, illustrating that the vinyl chloride and acetaldehyde elute as a single peak at a retention time of 2.71 minutes.

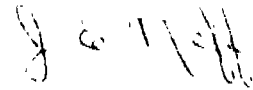
Table II gives the instrument parameters used with the Hewlett-Packard Model 5831A gas chromatograph to analyze the sample.

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Mr. R. N. Wheeler
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If you need any additional information, please let
me know.

Very truly yours,



J. E. Neff

JEN:lks

Attachments

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TABLE I

RESULTS OF ANALYSES ON KNOWN CONCENTRATIONS
OF VINYL CHLORIDE IN NITROGEN

Four-Component Standard in Nitrogen

<u>Run No.</u>	<u>Acetaldehyde plus Vinyl Chloride Calculated as ppm Vinyl Chloride</u>
1	63.51
2	61.63
3	65.03
4	63.23
5	<u>63.45</u>
Average	63.37

10 ppm by Volume Vinyl Chloride in Nitrogen Made in Tedlar Bag

EPA Method 106

<u>Run No.</u>	<u>ppm by Volume Vinyl Chloride</u>	
	<u>Bag A</u>	<u>Bag B</u>
1	9.98	10.00
2	9.98	9.52
3	10.05	9.50
4	<u>9.97</u>	
Average	9.995	9.67

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TABLE II

GAS CHROMATOGRAPHIC CONDITIONS

Instrument	Hewlett-Packard Model 5811A gas chromatograph with dual flame ionization detectors.
Column	2.5 m x 3.2 mm stainless steel packed with 80/100 mesh Chromosorb 102
Column Temperature	155°C., Isothermal
Detector Temperature	225°C.
Gas Sampling Loop Loop Temperature	2.0 cc 70°C.
Carrier Gas	Nitrogen at 15 cc/min

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FIGURE 1

GAS CHROMATOGRAPHIC SCAN OF 10 PPM BY VOLUME

VINYL CHLORIDE IN NITROGEN

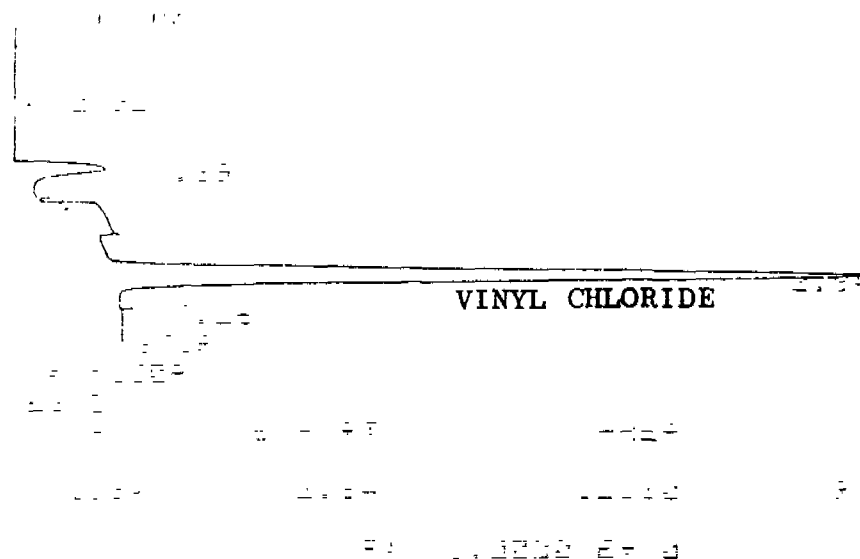
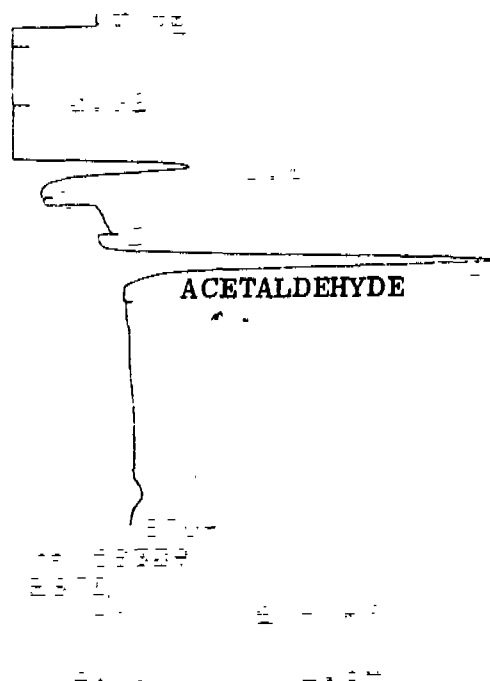


FIGURE 2

GAS CHROMATOGRAPHIC SCAN OF 10 PPM BY VOLUME

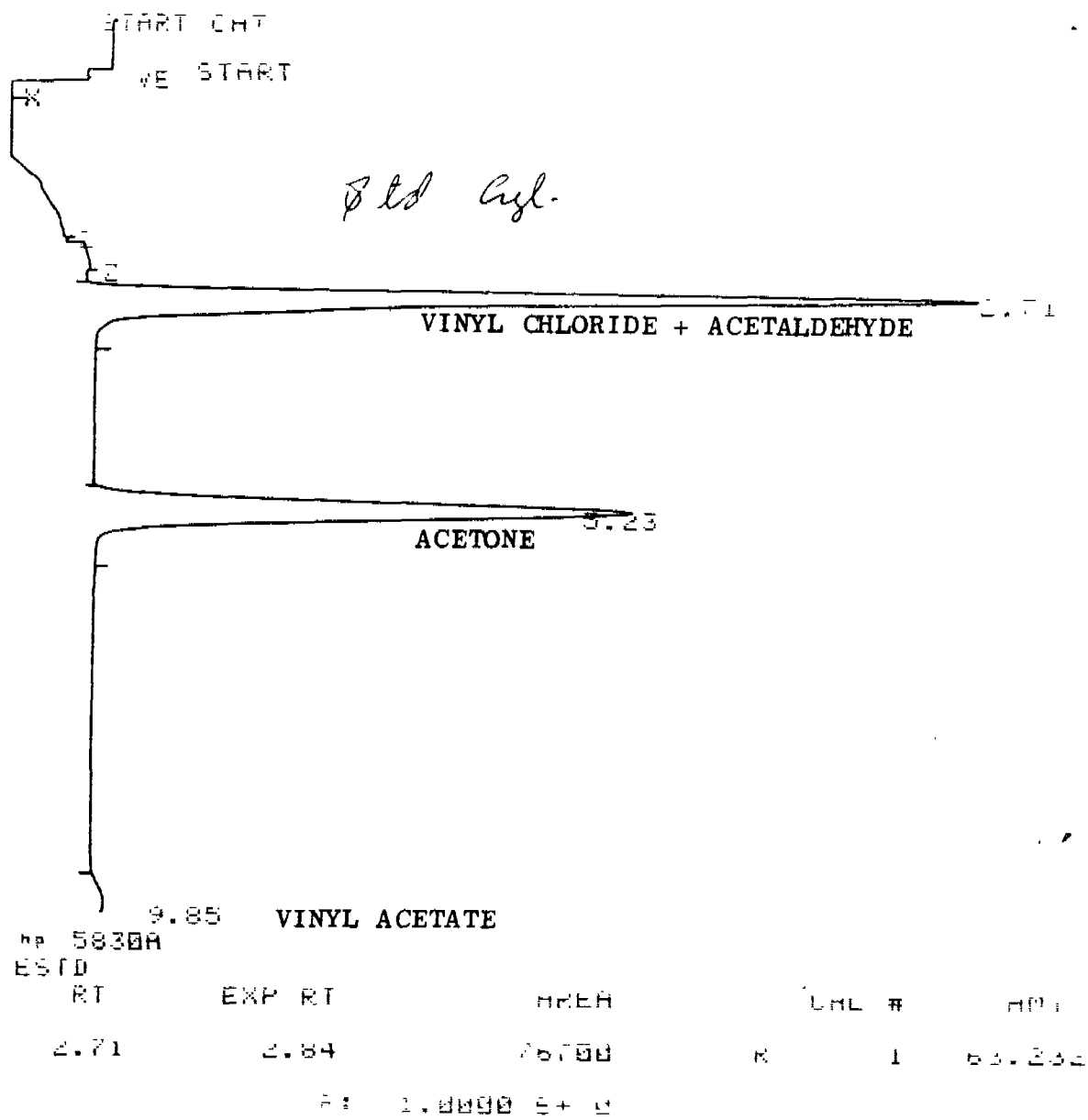
ACETALDEHYDE IN NITROGEN



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FIGURE 3

GAS CHROMATOGRAPHIC SCAN OF FOUR-COMPONENT
STANDARD FROM STAINLESS STEEL CYLINDER



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