Physical Chemistry
Method 74-4
Job No. 1630022

GAS CHROMATOGRAPHIC DETERMINATION OF AREA PERCENT OF 4,4'-DICHLOROBIPHENYL IN AROCLOR PRODUCTS

PURPOSE OF ANALYSIS

To measure the 4,4'-dichlorobiphenyl content of Aroclor products. This method was developed because Physical Chemistry Method 70-20, which is used for complete isomer analysis of Aroclor products, does not always adequately resolve the 4,4'-isomer. Method 70-20 is still the best method for overall isomer resolution. It should be noted that this method only provides the area percent and not the true weight percent of 4,4'-dichlorobiphenyl.

CHROMATOGRAPHIC CONDITIONS

Instrument: Varian-Aerograph 1200

Type Detector: Flame Ionization

Column: 50' X 0.02" I.D. Apiezon L SCOT (support coated open tubular) Capillary (Perkin-Elmer Part No. 008-0804)

Column Temperature: 220°C

Detector Block Temperature: 250°C

Injection Port Temperature: 300°C

Sample Volume Injected: 0.0005 ml (split about 1 to 30)

Flow Rates

Helium: 6 ml/min. (10 psig)

Auxiliary Gas: 30 ml/min.

Hydrogen: 40 ml/min.

Air: 400 ml/min.

RETENTION TIMES (UNCORRECTED) OF COMPONENTS OF INTEREST (CHROMATOGRAM ATTACHED)

4,4'-Dichlorobiphenyl (7.0').

CALCULATION TECHNIQUE

The area of the 4,4'-dichlorobiphenyl peak is multiplied by 100 and then is divided by the sum of the areas of all the peaks in the chromatogram.

PRECISION

No determination of precision was made. The variability of a single GC analysis at the 95% confidence limits is usually ±1 to 2% relative.

db

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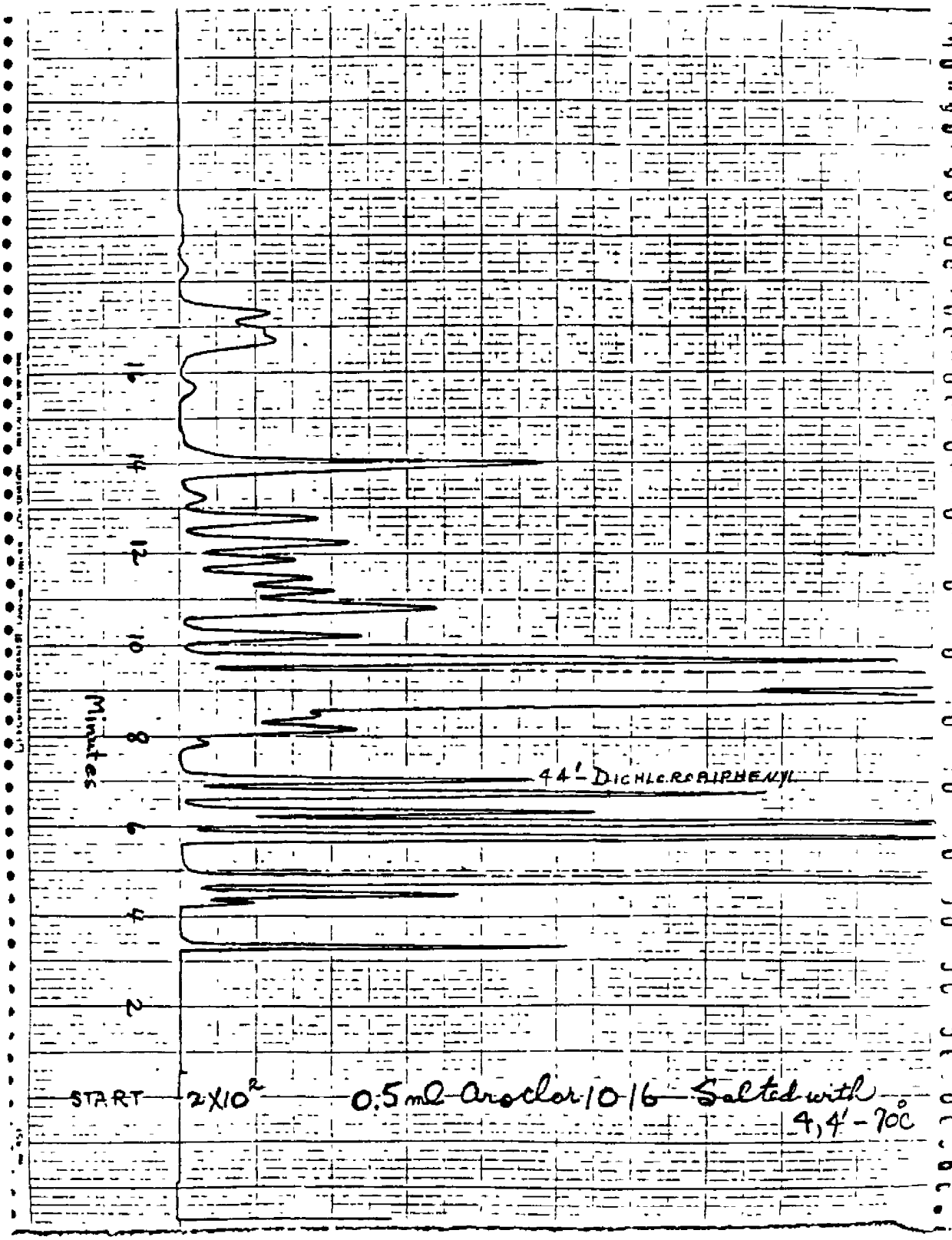
7-74 - G. M. Gasser, E. M. Emery


16
14
12
10
Minutes
8
6
4
2
START
4,4'-DICHLOROBIPHENYL
2X10²
0.5 mg Aroclor 1016 Salted with
4,4'-70C

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