COMPANY CONFIDENTIAL

RESEARCH AND DEVELOPMENT REPORT
ANNISTON PLANT

Report No. 1
Job No. 446-516
Date 6/1/70

OTHER LOCATIONS	GENERAL OFFICE	ANNISTON PLANT
P. O. DeGarmo - So. 2nd St.	W. R. Richard J. R. Savage	G. L. Jessee H. L. Williams J. C. Landwehr R. A. Haydel V. R. Haupt E. E. Bowles G. W. Miller

Title: The Use of Trappings to Produce Electrical Grade Aroclors 1242 and 1254

Personnel: G. L. Arnett, (J. T. Bell)

Problem: Evaluate the use of trappings to produce electrical grade Aroclors 1242 and 1254

Justification: Utilization of 100,000 lbs./mo. trappings

Summary: Aroclor 1242 produced in the laboratory from trappings will not meet electrical grade specification due to isomer distribution, as indicated by differential IR analysis.

Electrical grade Aroclor 1254 can be produced from trappings.

G. L. Arnett

G. L. Arnett

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DSW 310212

STLCOPCB4070199

Background

At the present time, the Anniston plant produces approximately 100,000 lbs./mo. of trappings from the chlorination process of liquid Aroclors. The material is collected in a collection tank and approximately every 5 to 10 days is transferred to a chlorinator and chlorinated to make Aroclors 1148, 1160 or 1162. The material is then distilled and sold as nonelectrical grade Aroclor.

Due to pollution problems connected with Aroclors 1248, 1260 and 1262, it has been proposed that the production of these products be discontinued.

Electrical grade Aroclors 1242 and 1254 account for most of the liquid Aroclor presently produced. As a result, trappings were evaluated to produce electrical Aroclors 1242 and 1254.

Experimental

Trappings used in the preparation of Aroclors 1242 and 1254 were obtained from the plant collection tank. This material was collected from the production of Aroclors 1121, 1142, 1154 and 1160. The trappings used had a refractive index of 1.6154, which indicated that the chlorination level was approximately 20%.

Chlorination and distillation conditions were carried out to simulate as closely as possible the plant process. All analysis with the exception of electrical properties were performed on the untreated distilled material. (See Table I.) Free chlorides ran slightly higher than specification as a result of using untreated material. A sample of Aroclor 1242 that was earth treated had free chlorides of 0.009 ppm, which is typical of plant material. All specification test runs were normal with the exception of isomer distribution on the Aroclor 1242 (analyzed using differential IR analysis technique). (See attached IR charts.) The IR analysis indicates that the Aroclor 1242 is a mixture of high and low chlorinated compounds. This material would not be acceptable for General Electric Company. Since no specification is maintained on Aroclor 1254 isomer distribution, it would create no problems when blended with normal production material.

Conclusions

Aroclor 1242 made from trappings will not pass specification as electrical grade Aroclor for General Electric Company.

Aroclor 1254 produced from trappings can be used as electrical grade when blended with normal production.

Recommendation

Test electrical grade Aroclor 1254 produced in the plant from trappings so that plant material can be evaluated.

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TABLE I

	Aroclor 1242	Spec Limits	Aroclor 1254	Spec Limits
Color, APHA	< 10	40 Max.	< 10	50 Max.
Free Chlorides, ppm	0.08*	0.05 Max.	0.08	0.05 Max.
Hydrolysis Stability Test, ppm	0.21	0.5 Max.	0.18	1.0 Max.
Thermal Chemical Chlorides, ppm	0.23	0.65 Max.	0.27	---
Refractive Index @ 25°C	1.6247	1.6240-1.6260	1.6375	1.6370-1.6390
Infrared Analysis**	Not Acceptable	NS	---	NS
Resistivity as ohm-cm x 10^9	1,700 x 10^9	500 Min.	3,150 x 10^9	500 Min.
Dielectric Constant @ 100°C, 1000 cycles	4.81	4.70-4.90	4.30	4.15-4.35
Distillation, °C				
10% (by wt.)	327°C	325 Min.	367°C	366-378
50% (by wt.)	---	---	374°C	371-383
90% (by wt.)	353°C	360 Max.	387°C	379-394

*Treated 0.009
**Must show no essential difference from AI 242 (NS = No Spec)

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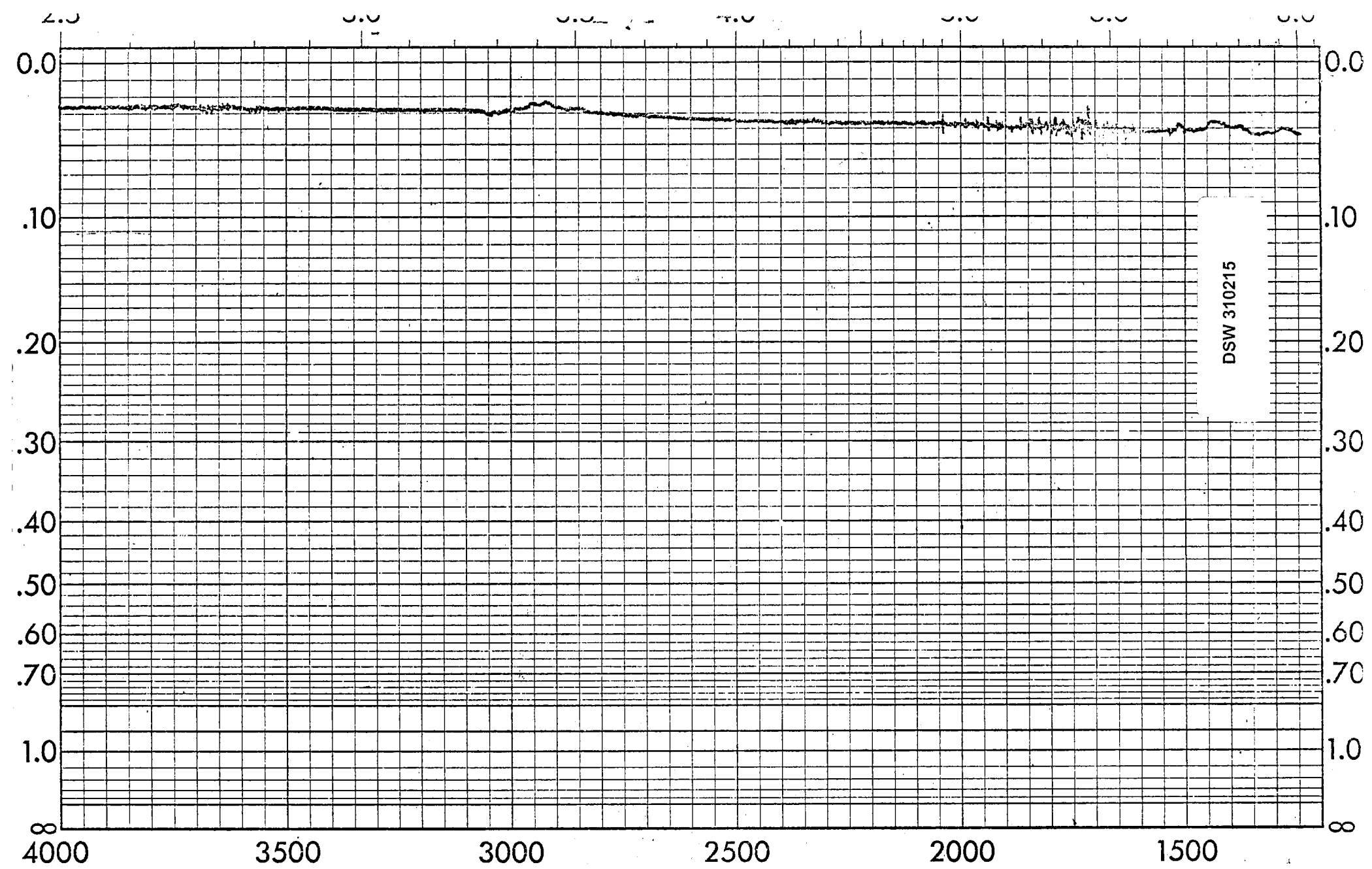

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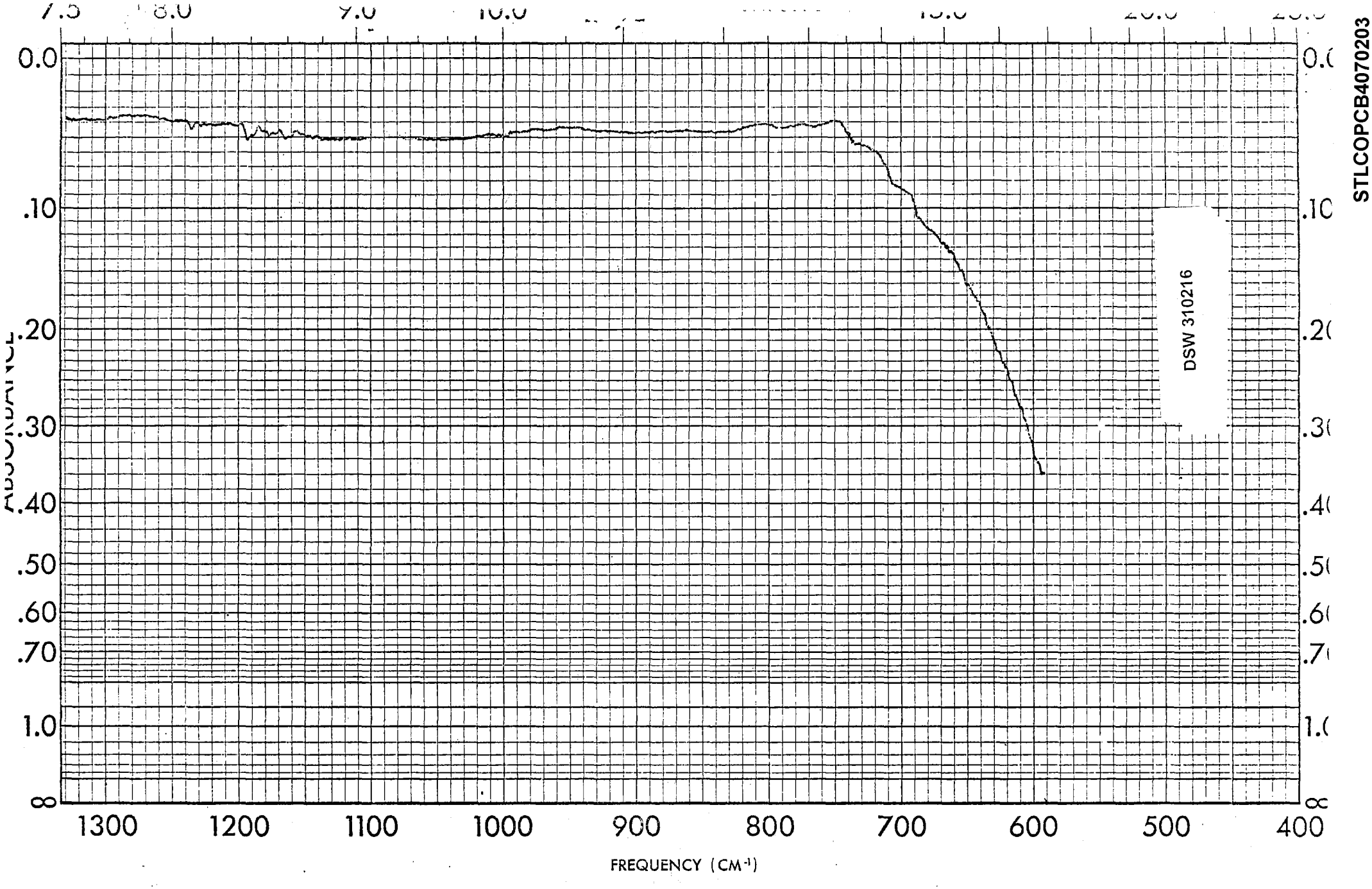
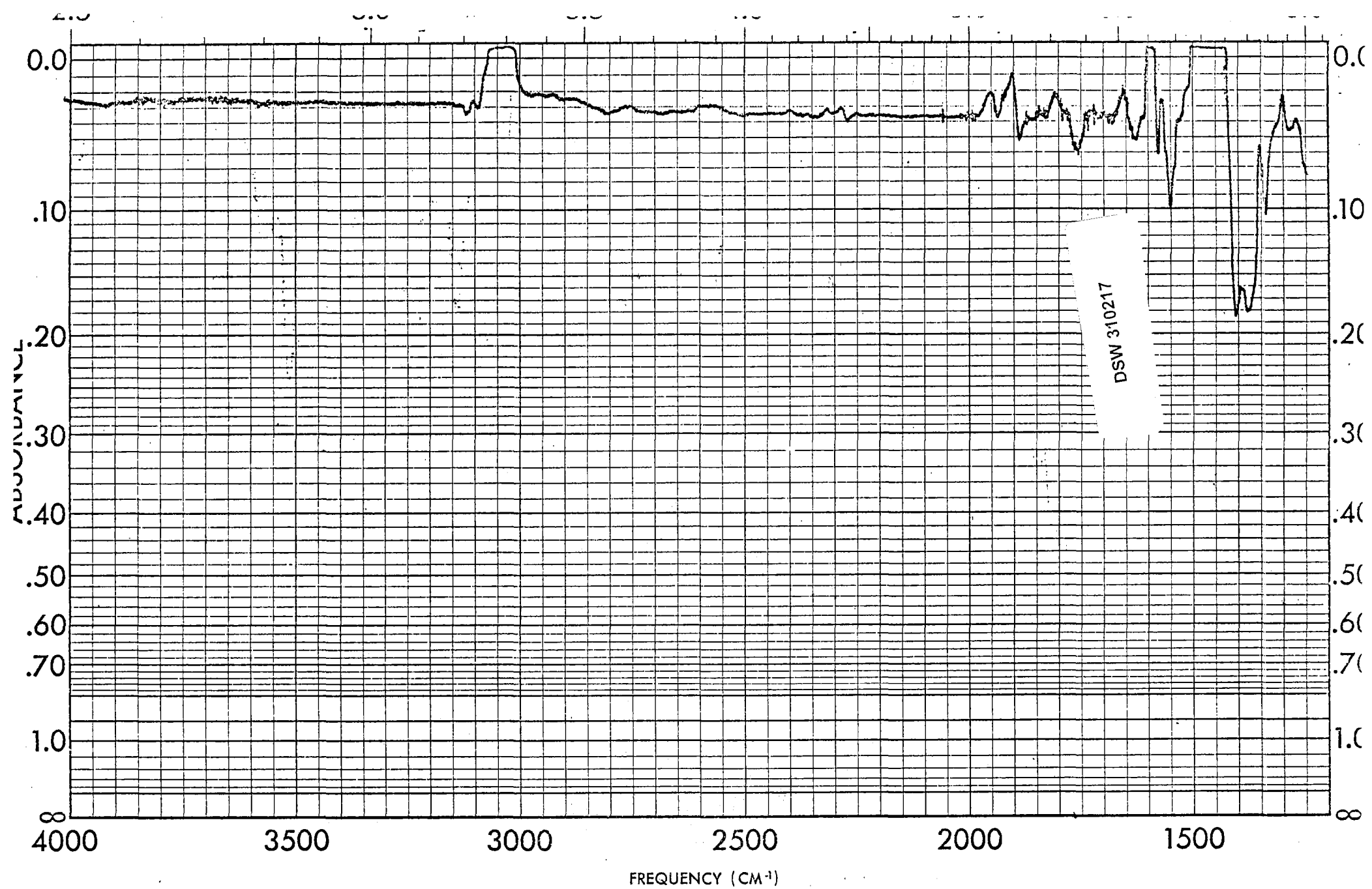
SAMPLE Reference	CURVE NO.	SCAN SPEED S	OPERATOR Amitt
Arsenic [illegible] AI-242	CONC.	SLIT W	DATE 5/26/1970
ORIGIN	CELL PATH 0.1 mm	REMARKS	
SOLVENT	REFERENCE Variable cell		



SAMPLE	CURVE NO.	SCAN SPEED	OPERATOR
	CONC.	SLIT	DATE
ORIGIN	CELL PATH	REMARKS	
SOLVENT	REFERENCE		



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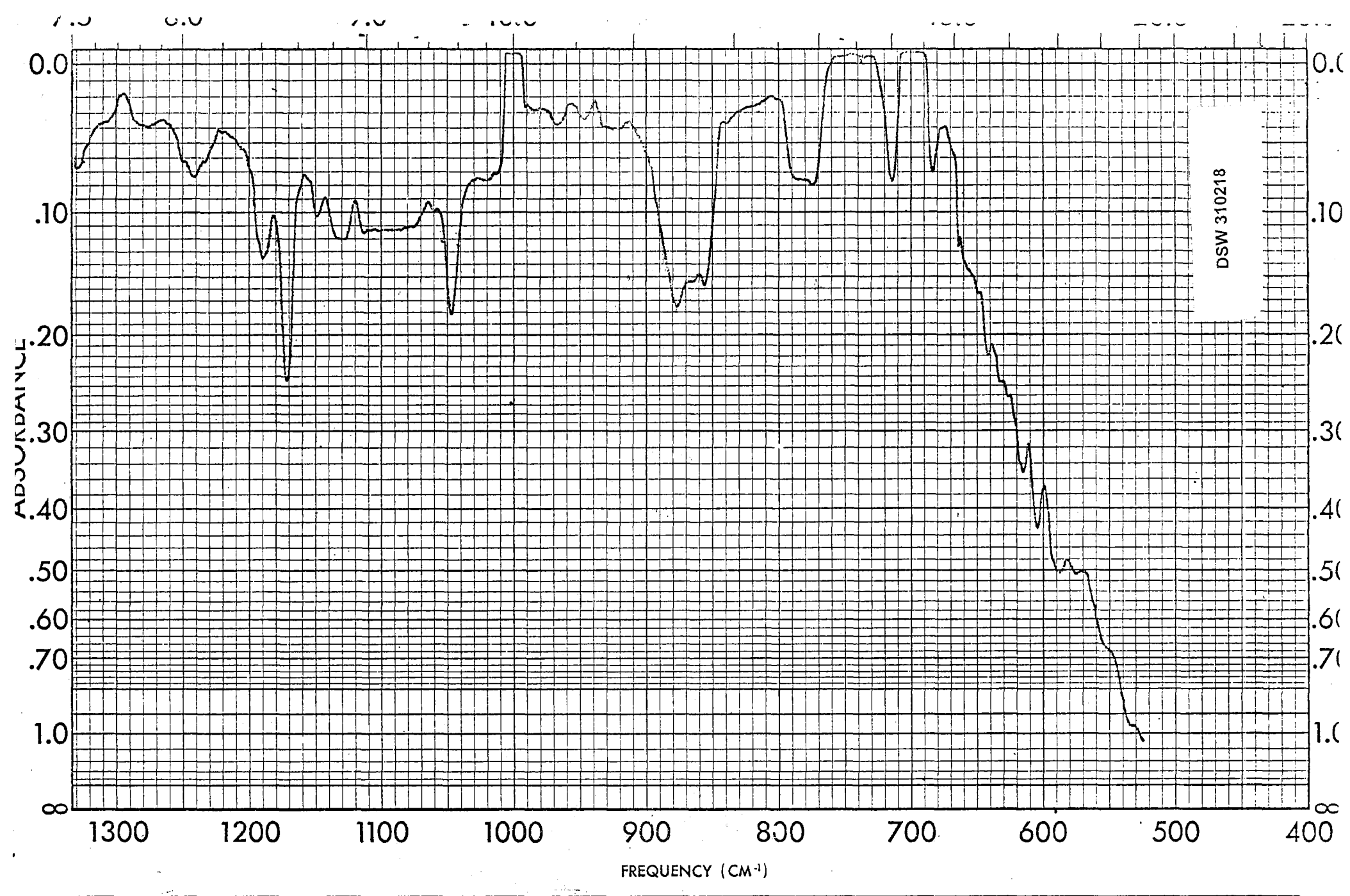
SAMPLE Lab Aroclor 1242 made from trappings	CURVE NO.	SCAN SPEED S	OPERATOR Arnett
	CONC.	SLIT N	DATE 5/26/1970
ORIGIN Index 1,6247	CELL PATH 0.1 mm	REMARKS	
SOLVENT	REFERENCE Vanilla oil with		



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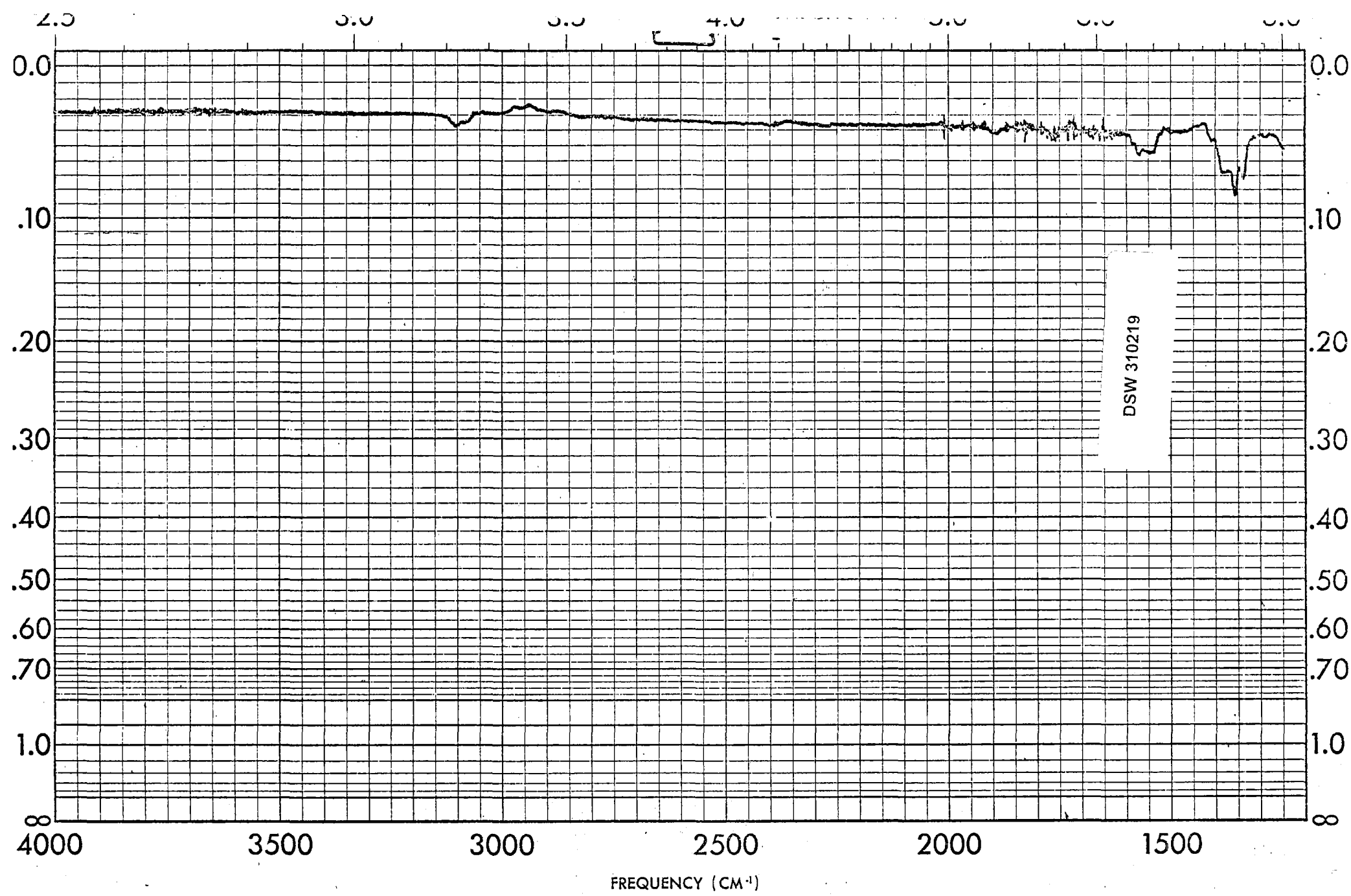
SAMPLE LAB ARUCLOR 1242 MADE FROM TRAPPINGS	CURVE NO.	SCAN SPEED	OPERATOR
	CONC.	SLIT	DATE
ORIGIN	CELL PATH	REMARKS	
SOLVENT	REFERENCE		



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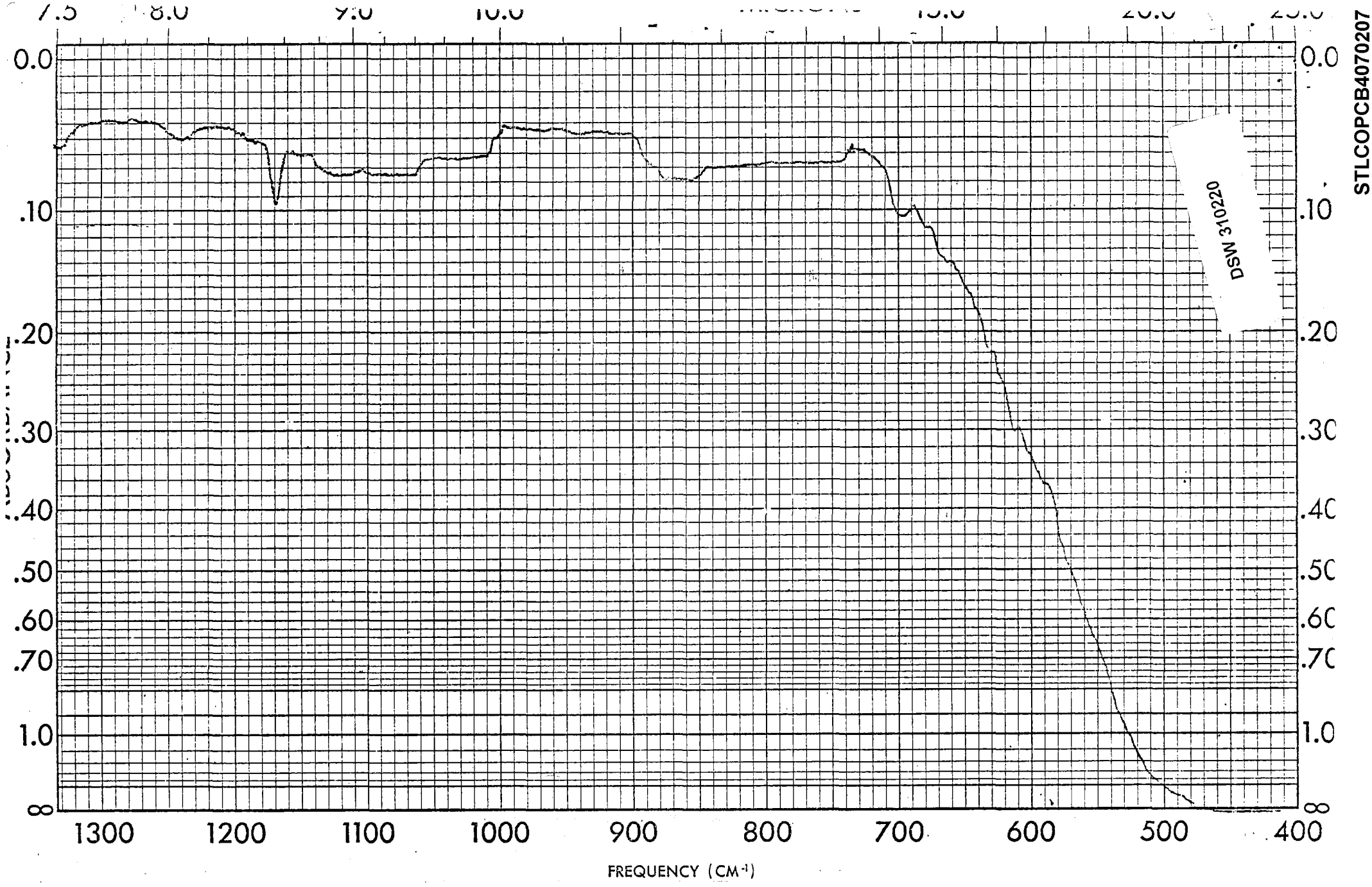
SAMPLE Aroclor 1242 AM-129	CURVE NO.	SCAN SPEED 5	OPERATOR
	CONC.	SLIT N	DATE 5/26/1994
ORIGIN NORMAL PLANT PRODUCTION	CELL PATH 0.1mm	REMARKS	
SOLVENT	REFERENCE Vapor Cell		



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SAMPLE Ab. c Lose 1242 Am-129	CURVE NO.	SCAN SPEED 5	OPERATOR [illegible]
	CONC.	SLIT N	DATE 5/26/1970
ORIGIN	CELL PATH 0.1 mm	REMARKS	
SOLVENT	REFERENCE Variable cell		