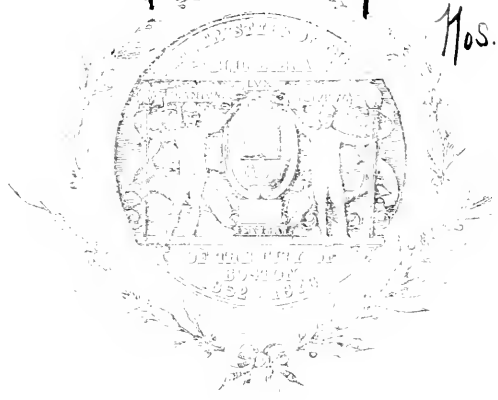

UNITED STATES TARIFF COMMISSION

WASHINGTON

PRODUCTION AND SALES

OF

DYES AND OTHER SYNTHETIC ORGANIC CHEMICALS

1933

REPORT No. 89

SECOND SERIES

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WASHINGTON, D.C.

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INTRODUCTION

This report of the domestic dye and synthetic organic chemical industry is the result of an investigation made by the United States Tariff Commission as part of its regular work. It includes production and sales tabulations of coal-tar crudes, intermediates, dyes, and other finished coal-tar chemicals and synthetic organic chemicals of non-coal-tar origin in 1933.

In the preparation of this report, the Tariff Commission had the services of Dexter North and P. K. Lawrence of the Chemical Division of the Commission's staff, and of others.

PART I

SUMMARY OF DYES AND OF OTHER SYNTHETIC ORGANIC CHEMICALS, 1933

Introduction

The data on the domestic production and sales of dyes and other synthetic organic chemicals for 1933 contained in this report were collected and compiled by the Tariff Commission as a part of its regular work. The usefulness of such information to governmental agencies and to the public, the Commission considers, warrants its collection and publication.

Detailed tabulations of imports of coal-tar products are not shown here, but are available in the monthly list of dye imports, published jointly by the Department of Commerce and the Tariff Commission.

In this report coal-tar products are grouped according to the Tariff Act of 1930 and conform in general to common practice. Crudes are duty-free under paragraph 1651; intermediates are dutiable at 40 percent and 7 cents per pound, and at 20 percent and 3½ cents per pound under paragraph 27; and dyes and other finished coal-tar products are dutiable under paragraph 28 at 45 percent and 7 cents per pound, except indigo and sulphur black which are dutiable at 20 percent and 3 cents per pound. Certain finished products listed under "Miscellaneous Coal-tar Products", page 34, are dutiable under paragraph 27.

The figures for 1933 were compiled from returns of 237 domestic producers, 98 of whom made synthetic organic chemicals of non-coal-tar origin, and 193 made synthetic organic chemicals of coal-tar origin. A directory of manufacturers who granted permission to publish their names is shown on page 45.

Data for individual products are given in as great detail as is possible without disclosing the operations of individual manufacturers. The policy of the Commission is to omit production and sales figures for a product unless at least three firms report a substantial production. If the total is not well distributed among the 3 or more manufacturers, or if 1 or 2 producers report the bulk of the total, production or sales figures are not published.

Summary of Domestic Production, 1933

COAL-TAR CRUDES

Production of coke-oven and coal-gas tar, reported to the Bureau of Mines for 1933, totaled 363,298,586 gallons, of which about 52 percent was distilled by purchasers of tar and a small percentage by the producers of tar. In addition 30,154,122 gallons of water-gas tar and 1,043,931 gallons of oil-gas tar were distilled.

A comparison of the production and sales of tar and of certain crudes with the average for 1925–30 and with 1932 is shown below:

TABLE 1.—*Comparison of production and sales of tar and certain crudes, 1925–30, 1932, and 1933*

		1925–30 average	1932	1933	Increase 1933 over 1932
					Percent
Tar produced	Thousands of gallons	630,536	303,812	363,299	+19.6
Benzol:					
Production	do	22,257	11,442	19,382	+69.4
Sales	do	22,257	11,908	19,723	+65.6
Sales value	Thousands of dollars	4,651	2,148	3,453	+60.8
Motor benzol:					
Production	Thousands of gallons	96,879	34,227	40,224	+17.5
Sales	do	96,879	34,136	38,655	+13.2
Sales value	Thousands of dollars	15,920	4,025	4,380	+8.8
Naphthalene:					
Production	Thousands of gallons	44,762	13,593	30,621	+125.3
Sales	do	44,762	12,979	25,253	+94.6
Sales value	Thousands of dollars	581	164	350	+113.4
Cresote oil:					
Production	Thousands of gallons	95,443	57,842	57,489	−.6
Sales	do	95,443	60,201	58,030	−3.6
Sales value	Thousands of dollars	11,742	5,594	4,779	−14.6

COAL-TAR INTERMEDIATES

In 1933 the production of intermediates by 59 firms was 370,753,749 pounds, or 69.9 percent more than was produced in 1932 and 38.6 percent more than the average for 1925–30. Five hundred and thirty-four chemicals were reported under this classification in 1933 as compared with 407 in 1930. Increased production in 1933 as compared with 1930 is shown for dye intermediates, such as aniline oil, 1 amino-2-naphthol-4-sulfonic acid, gamma acid, H acid, J acid, metanilic acid, and sulfanilic acid. Intermediates for resins, such as phenol and phthalic anhydride, increased remarkably, whereas refined cresylic acid decreased. Other important intermediates showing increased production are dinitrochlorobenzene, refined naphthalene, and nitrobenzene.

COAL-TAR DYES

The production of dyes by 46 firms was 100,952,778 pounds, or 7 percent more than the average for the period 1925–30, and 41.6 percent more than the output in 1932. Sales totaled 98,238,398 pounds, valued at $43,102,469, or 6.5 percent more in volume, and 9 percent more in value than the 1925–30 average, and exceeded 1932 by more than 33 percent in quantity. Sales of unclassified dyes, included in the total, increased to 7,734,981 pounds, valued at $7,794,740. No comparison with 1932 is made because of the incompleteness of data for unclassified dyes for that year.

The weighted average value per pound of dyes sold in 1933 was $0.439, as compared with $0.428 average for 1925–30, and $0.448 in 1932.

TABLE 2.—*Dyes and other coal-tar chemicals: Summary of production and sales, 1933*

	Number of manufacturers	Production	Sales		
			Quantity	Value	Unit value
		Pounds	*Pounds*		
Intermediates	59	370, 753, 749	163, 682, 560	$23, 704, 672	$0. 145
Finished products—total [1]	159	176, 206, 320	162, 092, 167	68, 992, 877	.426
Dyes:					
Classified		93, 172, 314	90, 503, 417	35, 307, 729	.390
Unclassified		7, 780, 491	7, 734, 981	7, 791, 740	1. 01
Total	46	100, 952, 778	98, 238, 398	43, 102, 469	.439
Color lakes	36	7, 584, 313	7, 574, 481	5, 224, 377	.690
Photographic chemicals	10	825, 887	688, 976	678, 564	.985
Medicinals	34	8, 715, 027	8, 670, 411	6, 827, 682	.846
Flavors	13	1, 738, 815	1, 739, 509	1, 796, 663	1. 03
Perfume materials	20	1, 420, 501	1, 225, 929	687, 141	.561
Synthetic resins [1]	33	41, 628, 485	31, 657, 653	7, 238, 560	.229
Miscellaneous [2]	27	13, 340, 514	12, 896, 810	3, 437, 121	.266

[1] Does not include coumarone and indene resins and resins derived from maleic acid.
[2] Includes benzoate of soda, benzoyl peroxide, stains and indicators, diazo salts, poisonous and tear gases, naphthol AS derivatives, rapid fast and rapidogene colors, research chemicals, tanning materials, textile assistants, and others.

Table 3 is a comparison of production and sales of dyes and other coal-tar chemicals in 1933 and in earlier years.

TABLE 3.—*Dyes and other coal-tar chemicals: Comparison of production and sales 1925–30, 1932, and 1933*

		1925–30 average	1932	1933	Increase 1933 over 1932
Intermediates:					*Percent*
Production	Thousands of pounds	267, 492	218, 143	370, 754	69. 9
Sales	do	109, 133	96, 960	163, 683	68. 8
Sales value	Thousands of dollars	22, 498	17, 259	23, 705	37. 3
Finished coal-tar products [1]:					
Production	Thousands of pounds	138, 078	118, 702	[2] 176, 206	48. 4
Sales	do	133, 964	114, 980	[2] 162, 092	41. 0
Sales value	Thousands of dollars	65, 027	52, 895	[2] 68, 993	30. 4
Dyes:					
Production	Thousands of pounds	94, 003	71, 269	100, 953	41. 6
Sales	do	92, 207	73, 591	98, 238	33. 5
Sales value	Thousands of dollars	39, 428	32, 944	43, 102	30. 8
Medicinals:					
Production	Thousands of pounds	4, 508	6, 365	8, 715	36. 9
Sales	do	4, 106	6, 090	8, 070	32. 5
Sales value	Thousands of dollars	7, 464	5, 880	6, 828	16. 1
Flavors and perfume materials:					
Production	Thousands of pounds	3, 966	2, 307	3, 159	36. 9
Sales	do	3, 819	2, 250	2, 965	31. 8
Sales value	Thousands of dollars	2, 901	2, 622	2, 484	[3] 5. 3
Coal-tar resins (1927–30):					
Production	Thousands of pounds	24, 442	29, 039	[2] 41, 628	43. 4
Sales	do	22, 135	23, 891	[2] 31, 658	32. 5
Sales value	Thousands of dollars	7, 756	5, 001	[2] 7, 239	44. 8

[1] Includes color lakes, photographic chemicals, and miscellaneous coal-tar products not shown separately.
[2] Does not include some resins.
[3] Decrease—due principally to low price of vanilla beans and other natural flavors.

SYNTHETIC ORGANIC CHEMICALS OF NON-COAL-TAR ORIGIN

Activities in synthetic organic chemicals not of coal-tar origin reached an all-time peak in 1933 with a production of 771,574,595 pounds and sales totaling 542,679,454 pounds, valued at $55,604,615. Production increased 27 percent and sales volume 24 percent over 1930, whereas sales value decreased 15 percent.

Comparison with 1930, the last year for which detailed statistics were collected, shows an increase of 129 percent in sales of amyl acetate and sec amyl acetate and a decline in unit sales value from $0.21 to $0.10 per pound. Sales of butyl acetate declined about 3 percent in quantity and in unit value from $0.17 to $0.09 per pound. Sales of carbon tetrachloride increased about 5 percent in quantity and unit value declined from $0.06 to $0.043 per pound. Sales of citral in 1933 were 20,937 pounds at $1.63 per pound as compared with 6,569 pounds at $1.91 in 1930. Sales of ethyl acetate declined 48 percent and unit value from $0.10 to $0.069 per pound. Production of formaldehyde increased 28 percent and synthetic methanol 35 percent over 1930.

Sales of non-coal-tar barbituric acid derivatives increased from 18,932 pounds valued at $13.17 per pound in 1930 to 69,018 pounds valued at $8.05 per pound in 1933.

Synthetic non-coal-tar resin sales increased 82 percent in quantity and 20 percent in unit value as compared with 1932.

TABLE 4.—*Synthetic organic chemicals of non-coal-tar origin: Comparison of production and sales, 1925–30, 1932, and 1933*

	1925–30 average	1932	1933	Increase 1933 over 1932
Synthetic non-coal-tar chemicals:				*Percent*
Production, Thousands of pounds	379,972	(1)	771,575	(1)
Sales, do	264,006	(1)	542,679	(1)
Sales value, Thousands of dollars	44,499	(1)	55,605	(1)
Non-coal-tar resins:				
Production, Thousands of pounds	(1)	1,898	3,572	88.2
Sales, do	(1)	1,787	3,256	82.2
Sales value, Thousands of dollars	(1)	796	1,745	119.2

[1] No data.

PART II

PRODUCTION OF DYES AND OTHER COAL-TAR CHEMICALS, 1933

Coal-tar Crudes

Table 5 shows the total commercial production of coal tar, quantities distilled, and the production and sales of light-oil products and tar products in 1933. These data were compiled from information obtained by the Bureau of Mines from producers of tar and by the Tariff Commission from purchasers of tar.

TABLE 5.—*Coal-tar crudes:*[1] *Production and sales, 1933*

[The numbers in the second column refer to the numbered alphabetical list of manufacturers given on p. 45. An X indicates that the corresponding product was made by a manufacturer who did not consent to the publication of his name in connection therewith. A blank in the third column indicates that the production figure cannot be published without revealing information in regard to the output of individual firms. A blank in the fourth and fifth columns indicates that the sales figure cannot be published without revealing information in regard to the output of individual firms. The figures thus concealed are, however, included in the total]

Tar distilled:[2]	
Oil-gas tar, 1,043,931 gallons	$52,438
Water-gas tar, 30,154,122 gallons	990,008
Coal tar, 189,657,715 gallons	8,343,580
Total, 220,855,768 gallons	9,386,026

	Manufacturers' identification numbers (according to list on p. 45)[2]	Production (quantity)	Sales		
			Quantity	Value	Unit value
Tar—gallons		[3] 363,298,586	241,000,100	$8,980,956	$0.037
Light oil and derivatives:					
Crude light oil—do	27, 84, 96, 139, 141, 148, 149, X, X, X.	103,023,997	7,843,234	741,082	.094
Benzol (except motor benzol)—gallons	18, 22, 50, 141	19,382,352	19,722,822	3,452,529	.175
Motor benzol—do		[3] 40,224,022	38,654,902	4,379,737	.113
Toluol, crude and refined—gallons		[3] 11,539,107	11,541,990	3,123,738	.271
Solvent naphtha—do		[3] 2,717,254	2,570,981	449,96	.175
Xylol—do		[3] 2,101,377	2,271,658	521,775	.230
Other light oil products—gallons	18, 50, 139, 141, 148, 149, X.	5,329,997	2,445,350	420,318	.172
Naphthalene, crude and refined—pounds	12, 18, 96, 141, 148, 149, X.	[4] 30,620,754	25,252,619	350,410	.014
Anthracene crude	96, 148				
Cresol or cresylic acid, crude	12, 18, 148				
Cumene	18				
Pyridine	18, 148				
Crude tar acids—gallons	11, 12, 18, 148, 149, X, X.	2,858,513	724,740	206,435	.285
Creosote oil—do	2, 11, 12, 18, 22, 27, 84, 88, 90, 96, 102, 148, 149, X, X, X, X, X, X.	57,489,356	58,030,083	4,779,076	.082
Tars, refined—do	2, 11, 12, 18, 22, 27, 50, 84, 96, 141, 148, 149, X, X, X.	[2] 6,902,851	6,550,278	658,160	.100
Tars, road—do	11, 12, 18, 27, 84, 90, 139, 141, 148, 149, X.	[2] 95,613,206	99,062,021	7,813,899	.079
Other distillates—do	12, 18, 27, 84, 88, 148, 149, X.	[2] 6,785,571	6,763,174	934,971	.138
Pitch of tar—tons	2, 11, 12, 18, 27, 84, 90, 96, 139, 148, 149, X, X, X.	588,728	323,065	3,742,675	11.585
Pitch of tar coke—do	12, 18, 22, 90, 148, 149	[2] 27,828	33,082	287,572	8.693

[1] Data for coke ovens and gas works reporting to Bureau of Mines; and for tar refineries and others reporting to United States Tariff Commission.
[2] Reported to United States Tariff Commission only.
[3] Reported to Bureau of Mines only.
[4] Includes crude and refined naphthalene reported to Bureau of Mines and crude naphthalene reported to United States Tariff Commission.

Coal-tar Intermediates

Outstanding among the coal-tar intermediates showing increased production in 1933 as compared with 1932 are aniline oil, 52 percent; refined naphthalene, 65 percent; phenol, 138 percent; and phthalic anhydride, 125 percent. These increases are due mainly to the increased demand for the synthetic resins derived from these materials. Total production of intermediates was 370,753,749 pounds, or 4.6 percent more than the peak year of 1929.

Among the intermediates reported in 1933 but not in 1930 are the following: Acetotoluide, a-aminoanthraquinone, aminoazoxylene-toluidine, amino-5-benzoyl aminoanthraquinone, 1-amino-2-bromo-4-p-toluidine anthraquinone, amyl phenol (tertiary), amino omega sulfonic acid, anthraquinone-a-sulfonic acid, azobenzene, benzotrichloride, cresols, 2:2-dibenzanthronyl, dibromoaminoanthraquinone, dinitroanthrarufin disodium sulfonate, diphenylguanidine phthalate, ethylbenzyl-m-toluidine sulfonic acid, nitrosoethyl benzylaniline, oxychlorobenzoyl benzoic acid, phenylated rosaniline and m-xylidine acetate.

TABLE 6.—*Coal-tar intermediates: Production and sales, 1933*

[The numbers in the second column refer to the numbered alphabetical list of manufacturers printed on p. 45. An X signifies that the manufacturer did not consent to the publication of his identification number with the designated product. A blank in the third column indicates that the production figure cannot be published without revealing information in regard to the output of individual firms. A blank in the fourth and fifth columns indicates that the sales of the corresponding product cannot be published without revealing information in regard to the individual firms. The figures thus concealed are, however, included in the total.]

Intermediates	Manufacturers' identification number (according to list on p. 45).	Production	Sales		
			Quantity	Value	Unit value
Total intermediates		*Pounds* 370,753,749	*Pounds* 163,682,560	$23,704,672	$0.145
Acetanilide, tech	5, 37, 54, 69	55,059			
p-Acetaniside	119				
Acetoacetanilide	54, X, X	77,087	31,709	22,644	.714
Acetoacetylnaphthylamide	138				
Acetotoluide	119, X				
Acetyldiaminoanthraquinone	6				
1-Acetylmethylamino-4-bromo-anthraquinone	54				
Acetyl-p-phenylenediamine (p-amino acetanilide)	5, 37, 54, 69, 119, X	86,494			
Acetyl-p-phenylenediamine sulfonic acid	69				
Acetyl-p-toluidine	54, 134, X				
Acridine yellow	119				
Aldehyde amine condensation products	54				
p-Amino acetanilide. (See Acetyl-p-phenylenediamine.)					
1-Amino-4-acetylamino-6 and 7-naphthylamine sulfonic acid (acetylamino Cleve's acid)	119				
p-Amino p'aminodiphenylamine (phenylene nerol acid)	54				
a-Aminoanthraquinone	54, 69				
b-Aminoanthraquinone	6, 54, 69, 119	362,869			
Aminoazobenzene and hydrochloride	37, 54, 119, X	179,502			
Aminoazobenzene disulfonic acid	6, 119				
Aminoazobenzene sulfonic acid	6, 37, 69, 119, X	38,142			
Aminoazotoluene	5, 54, 63, 119				
Aminoazoxylene	6, 69, 119	23,459			
Aminoazoxylene-toluidine	X				
Aminoazoxytidine	X				
p-Aminobenzene J acid	69				

TABLE 6.—*Coal-tar intermediates: Production and sales, 1933*—Continued

Intermediates	Manufacturers' identification number (according to list on p. 45)	Production	Sales		
			Quantity	Value	Unit value
		Pounds	*Pounds*		
o-Aminobenzoic acid (anthranilic acid).	53, 54				
p-Aminobenzoic acid	54				
Amino-5-benzoylaminoanthraquinone.	54				
5-Amino-2-benzoylamino-1:4-diethoxybenzene hydrochloride.	119				
Aminoazobenzoyl J acid	69				
p-Aminobenzoyl J acid	119				
1-Amino-2-bromo-4-p-toluidine anthraquinone.	54				
1-Amino-6-chloroanthraquinone	54				
2-Amino-4-chlorotoluene	119				
2-Amino-6-chlorotoluene	119				
m-Aminocresol methyl ether	37				
1-Amino-2:4-dibromoanthraquinone	54				
p-Aminodiethylaniline	69				
p-Aminodimethylamine	5				
p-Aminodiphenylamine	54				
Aminodiphenyl ether	138				
p-Aminoethylbenzylaniline sulfonic acid.	54				
p-Amino-p-methoxy diphenylamine (anisidine nerol acid).	54				
1-Amino-2-methoxy naphthalene	54				
1-Amino-2-naphthol-4-sulfonic acid.	37, 54, 69, 119, 142	1,277,921			
1-Amino-8-naphthol-4-sulfonic acid. acid.	37, 54, 119				
1-Amino-8-naphthol-2:4-disulfonic acid (Chicago acid).	37, 54, 69, 119	101,073			
1-Amino-8-naphthol-3:6-disulfonic acid (H acid).	54, 69, 116, 119	2,843,542			
2-Amino-5-naphthol-7-sulfonic acid (J acid).	5, 37, 54, 119	336,048			
2-Amino-8-naphthol-6-sulfonic acid (gamma acid).	37, 54, 69, 119	715,914			
2-Amino-8-naphthol-3:6-disulfonic acid.	5, 54, 119				
Amino 1-naphthylamine-6 and 7-sulfonic acid (amino Cleve's acid).	54				
o-Aminophenol	54, 187, 196, X				
o-Aminophenol sulfonic acid	37, 119				
p-Aminophenol and hydrochloride	5, 54, 58, 187, 196, X, X	266,852			
p-Aminophenyl-p-tolylamine sulfonic acid.	37				
Aminosalicylic acid	5, 6, 54, 69	44,821			
Amino Schaeffer ether	54, 69				
Amyl phenol (tertiary)	158				
Anhydroformaldehyde aniline (formanilide).	54, 69, 153, X				
Anhydroformaldehyde-p-toluidine	54				
Aniline disulfonic acid	37, 54, 119	20,245			
Aniline hydrochloride and sulfate	X				
Aniline methane sulfonic acid	69				
Aniline-a-naphthylamine	X				
Aniline oil	53, 54, 113, 119, X, X, X.	29,494,960	12,861,339	$1,427,765	$0.112
Aniline omega sulfonic acid	54, 119				
o-Anisidine	54, 69, X				
o-Anisidine omega sulfonic acid	119				
p-Anisidine	119				
Anthracene, refined	148, 155				
Anthranilic acid. (See o-aminobenzoic acid.)					
Anthraquinone (100 percent)	69, 119, 155, X				
Anthraquinone-a-sulfonic acid	54, 69, 119				
Anthraquinone-1:5-dihydroxy (anthrarufin).	54, 69, 119	190,477			
Anthraquinone-1:5-disulfonic acid	54, 69				
Anthraquinone-2:6-disulfonic acid	54, 69, 119				
Anthraquinone-2-sodium sulfonate (silver salt).	6, 54, 119				
Azobenzene	65				
Benzaldahyde, tech	79				
Benzaldehyde disulfonic acid	69				
Benzanthrone	6, 54, 69, 119, X, X	137,313			
Benzidine, base	5, 7, 37, 54, 58, 119	493,699			

TABLE 6.—*Coal-tar intermediates: Production and sales, 1933*—Continued

Intermediates	Manufacturers' identification number (according to list on p. 45)	Production	Sales		
			Quantity	Value	Unit value
		Pounds	*Pounds*		
Benzidine hydrochloride and sulfate.	7, 54, 58, 69, 119	1, 187, 533			
Benzidine sulfonic acids	6, 37, 138, X	3, 544			
Benzoic acid, tech	54, 79, 83, X				
Benzoic anhydride	83				
Benzotrichloride	X				
1-Benzoylamino-5-p-toluene sulfonic anthraquinone.	54				
Benzoyl benzoic acid	54, 119, X				
Benzoyl chloride	53, 79, 83, 119	691, 577	606, 425	$114, 387	$0. 189
Benzoyl J acid	37				
1-Benzoylamino-4-chloroanthraquinone.	54				
1-Benzoylamino-5-chloranthraquinone.	54				
Benzyl chloride	79, 83, X				
Broenner's acid. (See 2-Naphthylamine-6-sulfonic acid.)					
Bromobenzanthrone	54				
Bromobenzene	58				
p-Bromomethylaminoanthraquinone.	69				
p-Bromophenol	X				
Chicago acid. (See 1-Amino-8-naphthol-2:4-disulfonic acid.)					
Chloroacetoacetylnaphthylamide	138				
1-Chloro-5-aminoanthraquinone	54				
Chloroaminophenol sulfonic acid	37				
o-Chloroaniline	187, X				
p-Chloroaniline sulfonic acid	6				
Chloroanisidine	187				
Chloroanthraquinone	6, 54, 69, 119, X	298, 933			
Chlorobenzanthrone	6, 54, 119				
Chlorobenzene (mono)	53, 54, 83, 164, X		4, 907, 504	219, 183	.045
o-Chlorobenzoic acid	119				
b-Chlorobenzothiazole	X				
Chlorobenzoyl benzoic acid	54, 69, 119, X	638, 662			
2-Chloro-1:4-dihydroxy anthraquinone (chloroquinizarin).	119, 142				
Chlorometanilic acid	5, 54, 119				
Chloromethylanthraquinone	54, 119, X	44, 606			
Chloronaphthalene	83, X				
Chloronitroaminophenol	37				
o-Chloro-p-nitroaniline	5, 69, X				
p-Chloro-o-nitroaniline	119				
1-Chloro-5-nitroanthraquinone	54				
2-Chloro-6-nitrobenzothiazole	X				
o-Chlorophenol	X				
p-Chlorophenol	X				
Chlorophenylhydrazine-p-sulfonic acid.	69				
Chlorophenylmethylpyrazolone sulfonic acid.	69				
Chlorosulfophenylmethylpyrazolone	54				
Chlorotoluene	54, 83, 119				
o-Chloro-p-toluene sodium sulfonate.	X				
Chloro-o-toluidine	54, 119				
Chlorotoluidine sulfonic acid	6, 37, 54, X, X	220, 341			
Chlorotolylthioglycollic acid	54				
p-Chloro-p-xylidine	54				
p-Chloroxylyl thioglycollic acid	54				
Chromotropic acid. (See 1:8-Dihydroxynaphthalene-3:6-disulfonic acid.)					
Cleve's acid. (See 1-Naphthylamine-6 and 7-sulfonic acid.)					
Cresidine	54, 69				
Cresol, ortho, meta and para	12				
Cresol, meta-para	12, X				
Cresol, ortho	X				
Cresylic acid (refined)	12, 18, 108, 148, X	13, 813, 941	11, 975, 441	626, 496	.052
Crotilidine aniline	X				
Cumidine	19, 119, X				
Dehydrothio-p-toluidine	54				
Dehydrothio-p-toluidine sulfonic acid.	37, 119				
Dehydrothio-m-xylidine	54				

TABLE 6.—*Coal-tar intermediates: Production and sales, 1933*—Continued

Intermediates	Manufacturers' identification number (according to list on p. 45)	Production	Sales		
			Quantity	Value	Unit value
		Pounds	*Pounds*		
m-Diaminoanisole	187				
Diaminoanthrarufin	6, 54				
Diaminoanthraquinone	6, 54, 69				
2:6-Diaminoanthraquinone	54, 69, 119				
Diaminodibenzanthronyl	54				
1:4-Diamino-2:3-dichloroanthraquinone.	54				
2:6-Diamino-1:5-dimercapto anthraquinone.	54				
Diaminodimethylacridine	138				
4:4-Diamino-2:2:-dimethyldiphenylmethane.	54				
Diaminodimethylphenylacridine	138				
2:4-Diaminodiphenylamine	153				
Diaminodiphenylamine sulfonic acid.	5, 37				
4:4-Diaminodiphenyl-2-sulfonic acid.	119				
2:6-Diamino-3:7-disulfonic acid anthraquinone.	54				
2:6-Diamino-3:7-disulfonic-1:5-dichloroanthraquinone.	54				
Diaminomethylphenylacridine	138				
Diaminophenetol	X				
Diaminostilbene disulfonic acid	54, 69, 119				
Dianisidine	37, 54, 119				
1:1-Dianthrachinylamine	69				
1:1-Dianthraquinone imine	54				
1:1-Dianthraquinone imine diamino	54				
1:1-Dianthraquinone imine-4:4-dibenzoyl diamino.	54				
1:1-Dianthraquinone imine-4:5-dibenzoyl diamino.	54				
1:1-Dianthraquinone imine dinitro	54				
1-Diazo-2-naphthol-4-sulfonic acid	37, 69, 119, 142				
Diazosalicylic acid	69, 119				
Dibenzanthrone	54, X				
2:2-Dibenzanthronyl	54				
13:13-Dibenzanthronyl	54				
13:13-Dibenzanthronyl selenide	54				
Dibenzothyazyl disulfide	X				
1:5-Dibenzoyldiaminoanthraquinone.	54				
4:5-Dibenzoyldiamino-1:1-dianthramide.	119				
Dibenzylamine	X				
Dibenzyl aniline	54				
Dibromoaminoanthraquinone	54, 69				
Dibutyl phthalate	43, 97, 155, 184, X, X, X	2,311,811	1,921,758	$364,599	$0.190
Dicarboxylic-anthraquinone	54				
Dichloroaniline	37, 69, 187	104,721			
Dichloroaniline nitrosamine	69				
Dichloroaniline sulfonic acid	69, 119, 138				
1:8-Dichloroanthraquinone	54				
o-Dichlorobenzene	53, 54, 83, X	1,329,589	1,663,356	59,860	.036
p-Dichlorobenzene	53, 54, 83, 164, X	5,111,022	5,398,817	576,885	.107
1:5-Dichloro-2:6-diaminoanthraquinone.	54				
1:8-Dichloro-4:5-dinitroanthraquinone.	54				
2:5-Dichloro-1-nitrobenzene	119				
Dichlorophenylpyrazolone carboxylic acid.	138				
Dichlorosulfophenylpyrazolone	37				
Dichlorosulfophenylmethylpyrazolone.	138				
2:5-Diethoxy aniline	54				
Diethylamine	196				
Diethyl-m-aminophenol	54, 110				
Diethylaniline	53, 54				
Diethylaniline-m-sulfonic acid	54				
Diethyl a-napthylamine	54				
1:4-Dihydroxy anthraquinone (quinizarin).	5, 6, 54, 119, 142, X	73,721			
5:5-Dihydroxy-7:7-disulfonic-2:2-dinaphthylamine (Rhoduline acid).	54				

TABLE 6.—*Coal-tar intermediates: Production and sales, 1933*—Continued

Intermediates	Manufacturers' identification number (according to list on p. 45)	Production	Sales		
			Quantity	Value	Unit value
		Pounds	*Pounds*		
5:5 - Dihydroxy - 7:7 - disulfonic - 2:2-dinaphthylurea (J acid urea).	37, 54, 69, 119	150,607			
1:5-Dihydroxynaphthalene	69, 119				
1:8 - Dihydroxynaphthalene - 3:6 - disulfonic acid (chromotropic acid).	37, 119				
5:5 - Dihydroxy - di - b - naphthylamine - 7:7 - disulfonic acid (I acid imide).	119				
b-Di-p-hydroxyphenylpropane	X				
2:5-Dimethoxy aniline	54				
Dimethoxy - diphenyl - bis - diazoamino - trimethylamine sulfonate.	138				
Dimethylamine	43, 54				
p-Dimethylaminobenzaldehyde	135				
Dimethylaniline	53, 54, 119, X	2,824,270	966,949	$188,397	$0.195
Dimethyldianthraquinonyl	54, X				
Dimethyl phthalate	184				
Dinitroaniline	6, 54, 119, 138, X				
2:4-Dinitroanisole	187				
Dinitroanthraquinone	6, 54				
4:8-Dinitroanthrarufin	54				
Dinitroanthrarufin disodium sulfonate.	54				
Dinitrobenzene	54, 119				
Dinitrobenzene sulfonic acid	37, 69				
Dinitrochlorobenzene	54, 69, 119, X	6,889,558	913,320	107,167	.117
Dinitrochrysazin disodium sulfonate.	54				
Dinitrodibenzanthronyl	54				
4:8 - Dinitro - 1:5 - dinitrophenyl ether anthraquinone.	54				
Dinitrohydroxydiphenylamine	37, 69				
Dinitrophenetol	X				
Dinitrophenol	6, 54, 58, 69	158,985			
Dinitrostilbene	X				
Dinitrostilbene disulfonic acid	54, 119				
Dinitrotoluene	54, 119, X				
1:5-Dioxaminoanthraquinone	54				
1:8 - Dioxamino - 4:5 - dinitroanthraquinone.	54				
1:5 - Dioxamino - 4:8 - dinitroanthraquinone.	54				
Dioxy dibenzanthrone	54				
1:5-Diphenoxy anthraquinone	54				
Diphenyl and derivatives	X				
Diphenylamine	54				
Diphenyl epsilon acid	54				
Diphenylether - 2 - diazoaminodicarboxy pyrrolidine.	138				
Diphenylethylenediamine	77				
Diphenylguanidine	8, 53, 54, 153	1,516,963	1,299,063	414,403	.319
Diphenylguanidine phthalate	153				
Diphenylguanidine succinate	X				
Diphenylmethane sulfonate	119				
Diphenyl p-phenylenediamine	54				
Dipyrazol dianthrone	54				
Distilbenediphenol	119				
1:5-Di-p-toluidine anthraquinone	54				
1:8-Di-p-toluidine anthraquinone	54				
1:4 - Di - p - tolylaminoanthraquinone.	54				
Di-o-tolylethylenediamine	77				
Ditolylguanidine	8, 54				
Ditolylmethane	119				
Ditolylthiourea	54, 119, 153				
o - Ethoxy - p - amino - o - sulfodiphenylamine.	119				
Ethoxyethyl phthalate	184				
6-Ethoxy-3-oxy thionaphthalene	54				
Ethylacetanilide	119				
Ethyl-p-aminoacetanilide	119				
Ethyl-o-amino-p-cresol	54, 110				
Ethylaniline (mono)	54, 119				
Ethylbenzylaniline	54, 119				
Ethylbenzylaniline sulfonic acid	37, 54, 69, 110, 119	271,763			

TABLE 6.—*Coal-tar intermediates: Production and sales, 1933*—Continued

Intermediates	Manufacturers' identification number (according to list on p. 45)	Production	Sales		
			Quantity	Value	Unit value
		Pounds	*Pounds*		
Ethylbenzly benzoate	155				
Ethylbenzyl-m-toluidine	119				
Ethylbenzyl-m-toluidine sulfonic acid.	69, 119				
Ethylidine aniline	54				
Ethyl indamine	5				
Ethyl-b-naphthylamine	54				
Ethyl phenazine	5				
a-Ethyl-b-propylacrylaniline	77				
Ethyl-m-toluidine	119				
Ethyl-o-toluidine	54				
Ethyl-o-toluidine-p-sulfonic acid	54				
Ethyl-m-tolylenediamine	5				
Fast yellow L	5				
Fluorescein	9, X				
Formanilide. (See Anhydroformaldehyde aniline.)					
Formyl-m-tolylenediamine	5				
Fumaric acid	155				
4-Furoyl amino-2:5-diethoxy aniline	54				
Gamma acid. (See 2-Amino-8-naphthol-6-sulfonic acid.)					
H acid. (See 1-Amino-8-naphthol-3: 6-disulfonic acid.)					
Hexachlorobenzene	83				
2:1-2:1-Hydrazine dibromo anthraquinone.	54				
a-Hydroxyanthraquinone	6, 54				
1-Hydroxy2-:4-dianilido anthraquinone	54				
p-Hydroxydiphenylamine	54				
Hydroxymethylbenzothiazyl sulfide.	X				
b-Hydroxy naphthoic acid	54, 69, 119				
1-Hydroxy-4-p-tolyl aminoanthraquinone.	54				
Indamine	5				
Indophenol (blue and green)	5				
Isatin	187				
Isodibenzanthrone	54				
Isopropyl ester p-toluidine sulfonic acid.	54				
Iso violanthrone	6				
Laurent's acid. (See 1-Naphthylamine-5-sulfonic acid.)					
Leuco-1:4-dimethyldiaminoanthraquinone.	54				
Leuco quinizarin	54				
Maleic acid and anhydride	119, 155, X				
Mercaptobenzothiazole	153, X				
Metanilic acid	5, 37, 54, 69, 119	520, 129			
Methoxychlorobenzene diazoaminocarboxypyrrolidine.	138				
Methoxyethyl phthalate	184				
Methoxy omega sulfonic acid	54				
Methylaminoanthraquinone	69				
1-Methylamino-4-bromoanthraquinone.	54				
4-Methyl-4-aminodiphenylamine-2-sulfonic acid.	69				
1-Methylamino-4-p-toluidine anthraquinone.	54				
b-Methylanthraquinone	X				
2-Methylbenzanthrone	119				
2-Methyl-diphenylether-2-diazoamino-b-hydroxy-a-carboxy pyrrolidine.	138				
Methylene dianilide	54				
Methyl ester p-tolyl sulfonic acid	54				
Methylnitroanisole	69				
Methylpyridone-4-bromo-anthraquinone.	54				
Methylpyridone-4-p-toluidine anthraquinone.	54				
2-Methyl quinoline (quinaldine)	119				

TABLE 6.—*Coal-tar intermediates: Production and sales, 1933*—Continued

Intermediates	Manufacturers' identification number (according to list on p. 45)	Production	Sales		
			Quantity	Value	Unit value
Michler's hydrol. (See Tetramethyldiaminobenzhydrol.)					
Michler's ketone. (See Tetramethyldiaminobenzophenone.)		*Pounds*	*Pounds*		
Monobenzene-p-aminophenol	54				
Naphthalene, solidifying 79° C. or above (refined, flake).	18, 54, 148, 193, X, X, X	42, 707, 648	28, 658, 301	$1, 065, 044	$0.037
1:5-Naphthalene disulfonic acid	37, 54, 69				
2:7-Naphthalene disulfonic acid	54, X				
Naphthalene sodium sulfonate	X				
b-Naphthalene sulfonic acid	54, X				
Naphthalene-b-thioglycollic acid	54				
Naphthalene-1:3:6-trisulfonic acid	69				
Naphthionic acid. (See 1-Naphthylamine-4-sulfonic acid.)					
a-Naphthol	37, 54, 69, 119	638, 685	264, 043	138, 003	.523
a-Naphthol-3:6-disulfonic acid	119				
b-Naphthol, tech	37, 119, X				
1-Naphthol-4-sulfonic acid (Nevile & Winther's acid).	5, 37, 54, 119	113, 501			
1-Naphthol-5-sulfonic acid	37, 54, 69, 119	102, 379			
1-Naphthol-8-chloro-3: 6-disulfonic acid (chloro H acid).	119				
1-Naphthol-2:4:7-trisulfonic acid	X				
2-Naphthol sulfonic acid	54				
2-Naphthol-6-sulfonic acid (Schaeffer's acid).	5, 37, 54, 119, X	136, 863			
2-Naphthol-7-sulfonic acid	5, 37, 54, X		23, 360	26, 440	1.13
2-Naphthol-8-sulfonic acid	37				
2-Naphthol-3:6-disulfonic acid	5, 37, 54, 69, 119, X	294, 520	153, 022	59, 902	.391
2-Naphthol-6:8-disulfonic acid	5, 37, 54, 69, 119	610, 799			
Naphthylamine - 1:5 - disulfonic acid.	119				
Naphthylamine - 2:7 - disulfonic acid.	119				
a-Naphthylamine	54, 69, 119, X				
a-Naphthylamine disulfonic acid	54				
a-Naphthylamine sulfonic acid	X				
b-Naphthylamine	37, 54, 119, X	985, 365	68, 713	29, 888	.435
1-Naphthylamine-2-sulfonic acid	54				
1-Naphthylamine-4-sulfonic acid (naphthionic acid).	5, 37, 54, 119, X	938, 479			
1-Naphthylamine-5-sulfonic acid (Laurent's acid).	5, 37, 54, 69, 119	122, 982	28, 177	9, 943	.353
1-Naphthylamine-6-sulfonic acid	37, 54, 119				
1-Naphthylamine-6 and 7-sulfonic acid (Cleve's acid).	5, 37, 54, 119	174, 361			
1-Naphthylamine-7-sulfonic acid	37				
1-Naphthylamine-8-sulfonic acid	5, 54, 69, 119	318, 944			
1-Naphthylamine - 3:8 - disulfonic acid.	54, 119				
1 - Naphthylamine - 4:8 - disulfonic acid.	37, 54, 119	211, 236			
1-Naphthylamine - 2:4:8 - trisulfonic acid.	69				
1-Naphthylamine - 3:6:8 - trisulfonic acid.	54, 69, 116, 119	3, 773, 198			
2-Naphthylamine - 1 - sulfonic acid (Tobias acid).	5, 37, 54, 119, X	593, 243	366, 210	238, 556	.652
2-Naphthylamine - 6 - sulfonic acid (Broenner's acid).	37, 54, 119				
2-Naphthylamine-7-sulfonic acid	X				
2-Naphthylamine - 3:6 - disulfonic acid.	37, 119				
2-Naphthylamine - 4:8 - disulfonic acid.	37, 54, 119	55, 241			
2-Naphthylamine - 5:7 - disulfonic acid.	37, 54, 119	562, 182			
2-Naphthylamine - 6:8 - disulfonic acid.	37, 54, 119	981, 457			
b-Naphthylmethyl ether	54				
Nevile & Winther's acid. (See 1-Naphthol-4-sulfonic acid.)					
p-Nitroacetanilide	5, 37, 69	24, 021			
Nitroacetoacetylnaphthylamide	138				
3-Nitro-4-aminoanisole	119				
4-Nitro-2-aminoanisole	119				
Nitroaminophenol	6, 37, 54, 69, 119, 138	93, 107			
o-Nitroaniline	X				

TABLE 6.—*Coal-tar intermediates: Production and sales, 1933*—Continued

Intermediates	Manufacturers' identification number (according to list on p. 45)	Production	Sales		
			Quantity	Value	Unit value
		Pounds	*Pounds*		
m-Nitroaniline	54, 110, 187, X	88,009	65,693	$34,791	$0.530
p-Nitroaniline	5, X				
p-Nitroaniline sulfonic acid	37, 54, 69, 119, X	62,834			
p-Nitro-o-anisidine	54				
o-Nitroanisole	37, 54, 69, X	706,833			
p-Nitroanisole	119				
Nitrobenzene	54, 119, X, X, X	41,441,521	2,546,212	184,317	.072
Nitrobenzene-2:5-disulfonic acid	37				
p-Nitrobenzene J acid	69				
Nitrobenzene sulfonic acid	54, 69, 119, X	102,302			
Nitrobenzene-m-sulfonic acid	6, 119				
p-Nitrobenzoic acid	54				
6-Nitrobenzothiazyldiethyldithiocarbamate	X				
m-Nitrobenzoyl chloride	83				
p-Nitrobenzoyl chloride	54, 83				
Nitrochloroanisole	138				
o-Nitrochlorobenzene	54, 194, X				
o-Nitrochlorobenzene - p - sulfonic acid.	119				
p-Nitrochlorobenzene	54, X				
p-Nitrochlorobenzene - o - sulfonic acid.	37, 54, 119, X	124,069			
2-Nitro-4-chlorotoluene	119				
Nitrocresol	54				
m-Nitro-p-cresol	37				
Nitrocresol methyl ether	54				
8-Nitro-1-diazo-2-naphthol-4-sulfonic acid.	69, 119, 142	38,218			
Nitro-p-dichlorobenzene	37, 69, 187	142,953			
Nitrohydrazine	138				
1-Nitro-2-methoxy naphthalene	54				
1-Nitro-2-methyl anthraquinone	54				
Nitronaphthalene	54, 69, 119				
2-Nitronaphthalene-4:8-disulfonic acid.	37				
o-Nitrophenetol	69				
o-Nitrophenol	54, 187				
p-Nitrophenol	54, 69, 187, X, X				
Nitrophenylmethylpyrazolone	138				
Nitrosalicylic acid	69				
Nitrosodiethylaniline	69				
Nitrosodimethylaniline	69, 119, X				
Nitrosoethylbenzylaniline	69				
Nitroso-b-naphthol	7				
Nitrosophenol	37, 54, 58, 119, 196, X	365,184			
Nitrotoluene	54, 119				
o-Nitrotoluene	54, 119				
o-Nitrotoluene sulfonic acid	37, X				
m-Nitrotoluene	54				
p-Nitrotoluene	54, 119				
p-Nitrotoluene-o-sulfonic acid	5, 37, 54, 69, 119	724,239			
o-Nitro-p-toluidine	54				
m-Nitro-p-toluidine	54, 134, X, X	443,219	401,493	506,290	1.26
p-Nitro-o-toluidine	37, 54				
Nitroxylene	54, 119				
Oxalyl-p-nitroaniline	54, 69, 119				
Oxalyl-m-phenylenediamine	54, 119				
Oxalyl-p-phenylenediamine	54, 69, 119				
Oxychlorobenzoyl benzoic acid	119				
Oxydichlorobenzoyl benzoic acid	119				
Oxyphenyl-b-naphthylamine	54				
Penta anthramide	54				
Penta-methylenediamine disulfide ester of mercaptobenzothiazole.	X				
Phenazine	5				
o-Phenetidine	69				
p-Phenetidine	X, X				
Phenol	12, 18, 53, 108, 148, X, X	33,219,798	27,922,707	2,881,434	.103
Phenyl acetic acid and derivatives	X				
Phenyl-2-amino-5-naphthol-7-sulfonic acid (phenyl J acid).	5, 37, 54, 119	36,650			
Phenyl-2-amino-8-naphthol-6-sulfonic acid (phenyl gamma acid).	5, 37, 54				

TABLE 6.—*Coal-tar intermediates: Production and sales, 1933*—Continued

Intermediates	Manufacturers' identification number (according to list on p. 45).	Production	Sales		
			Quantity	Value	Unit value
		Pounds	*Pounds*		
Phenylammonium naphtholate	X				
Phenylated rosaniline	X				
m-Phenylenediamine	5, 37, 54, 119, 142, X	534, 140			
m-Phenylenediamine sulfonic acid	37, 54, 69, 119	59, 727			
p-Phenylenediamine	187, X				
p-Phenylenediamine sulfonic acid	37, X				
Phenylethyl malonic ester	1				
Phenylglycine, sodium salt	53, 54, 119	8, 725, 992			
Phenylhydrazine and hydrochloride	7, 53, 138, X				
Phenylhydrazine-o-sulfonic acid	69				
Phenylhydrazine-p-sulfonic acid	69, 138, 168	31, 314			
Phenyl malonic ester and derivatives	X				
Phenylmethylpyrazolone	54, 138, X				
Phenyl-a-naphthylamine	54, 119				
Phenyl-b-naphthylamine	54, 69, 73				
Phenyl 1 - naphthylamine - 8 - sulfonic acid.	5, 54, 69, 119	306, 597			
Phenyl-b-naphthylnitrosamine	X				
p-Phenylphenol	53				
Phloroglucinol	134				
Phthalamide	155				
Phthalic acid and anhydride	54, 119, 155, X	14, 075, 844	11, 593, 716	$1, 271, 887	$0.110
Picramic acid	7, 54, 119, X				
Primuline, base	37, 54, 119	272, 977			
Pyrazol anthrone	54				
Pyrazolone	138				
Quinaldine. (See 2-Methyl quinoline.)					
Quinaldine yellow base	54, 119				
Red KB base	119				
Resorcinol, tech	54, 134				
Rhoduline acid. (See 5:5-Dihydroxy-7:7-disulfonic-2:2-dinaphthylamine.)					
Rosaniline base	X				
Rubber chemicals, other		5, 115, 585			
Acetaldehyde plus aniline oil	X				
Acetaldehyde plus aniline condensation products	153				
Acetone and aniline condensation products	153				
Benzothiazol thiobenzoate	153				
Butylaldehyde and aniline condensation products	153				
Butyric aldehyde plus aniline oil	X				
Condensation product of diphenylamine and acetone	X				
Crotonylidine-a-naphthylamine	73				
p-p-Diaminodiphenylmethane	X				
s-Di (b-naphthol) p-phenylenediamine	73				
Dinitrophenylbenzothiazyl sulfide	153				
Dinitrophenylester of dimethyldithiocarbamic acid	X				
Di-o-tolylthiourea	73				
Ditolylamines	73				
Heptaldehyde plus aniline oil	X				
Methylene-p-toluidine	73				
Mixture of diphenylguanidine acetate and dinitrophenyl ester of mercapto benzothiazol	X				
Polyethylenepolyamine plus b-naphthol	X				
Polybutylidine aniline	73				
Other	54				
Salicylic acid, tech	53, 54, 119, X				
Salicylic anilide	54				
Scarlet TR base	119				
Schaeffer's acid. (See 2-Naphthol-6-sulfonic acid.)					
Silver salt. (See Anthraquinone-2-sodium sulfonate.)					
Sodium benzene disulfonate	54				
Sodium naphthionate	X				
Sodium picramate	X				
Sodium sulfanilate	6				

TABLE 6.—*Coal-tar intermediates: Production and sales, 1933*—Continued

Intermediates	Manufacturers' identification number (according to list on p. 45).	Production	Sales		
			Quantity	Value	Unit value
		Pounds	*Pounds*		
Sulfanilic acid	7, 37, 119, 187, X	1,458,315			
Sulfanilide	X				
o-Sulfobenzaldehyde	54, 119				
1-Sulfo-5-nitroanthraquinone	54				
Sulfophenylmethylpyrazolone	6				
p-Tertiary butyl phenol	53				
Tetraaminoditolylmethane	54				
Tetrachlorofluorescein	X				
Tetrachlorophthalic anhydride	119				
Tetramethyldiaminoacridine	138				
Tetramethyldiaminobenzhydrol (Michler's hydrol)	54, 69				
Tetramethyldiaminobenzophenone (Michler's ketone)	54, 69				
Tetramethyldiaminodiphenylmethane	54, 69, 110, 119, 138, X	774,570			
Thioaniline	5, 119				
Thiocarbanilide	54, 73, 119, 153	134,564	135,807	$25,561	$0.188
Thiophenyl-b-naphthylamine	X				
Tolazine base	119				
Tolidine and salts	37, 54, 58, 119	190,922			
Tolidine disulfonic acid	138				
o-Toluene sulfamide	X				
p-Toluene sulfamide	X				
p-Toluene sulfochloride	X				
p-Toluene sulfonic acid ethyl ester	6, 187				
Toluidine	54, 119, X				
Toluidine disulfonic acid	X				
o-Toluidine	54, 119, X				
o-Toluidine sulfonic acid	54, 119, X				
m-Toluidine	54, 119				
p-Toluidine	54, 119, 194				
p-Toluidine sulfonic acid	5, 37, 54				
Tolyl aldehyde	X				
p-Tolyl-o-benzoic acid	54, 119, X	87,500			
m-Tolylenediamine	5, 37, 54, 119, X	687,248	260,665	160,438	.615
m-Tolylenediamine sulfonic acid	119				
p-Tolyl-b-naphthylamine	54				
Tolyl-1-naphthylamine-8-sulfonic acid (tolyl peri acid)	5, 69, 119				
Trichlorobenzene	83				
Tricresylphosphate	93, X, X	1,471,507	1,282,500	252,625	.197
Trinitrophenol	54, 119				
Triphenylguanidine	54, 119				
Triphenylphosphate	53, 93, X	507,796	497,858	158,120	.318
m-Xylene	54				
Xylidine and salt	37, 54, 119, X	242,130			
Xylidine, ortho and para	5, 54, X	29,991			
Xylidine	54, 119				
m-Xylidine acetate	5, 6, 119				
m-Xylidine sulfonic acid	54, 119				
Other coal-tar intermediates	54				

DYES AND OTHER FINISHED COAL-TAR PRODUCTS

INTRODUCTION

Finished coal-tar products may be divided into the following classes: (1) Dyes, (2) color lakes, (3) photographic chemicals, (4) medicinals, (5) flavors, (6) perfume materials, (7) synthetic resins, and (8) miscellaneous products.

DYES

The production of 100,952,778 pounds of dyes in 1933 is exceeded only by the 111,421,505 pounds produced in 1929 and is 7 percent more than the average for the period 1925–30. Sales totaled 98,238,398 pounds valued at $43,102,469 or $0.439 per pound or 6.5 percent more

in quantity, and 9 percent more in value than the 1925–30 period. Sales in 1933 exceeded 1932 by more than 30 percent in quantity. Sales of unclassified and special dyes included in this total increased to 7,734,981 pounds valued at $7,794,740 or $1.01 per pound.

COLOR LAKES

Increased activity is noted in this industry in 1933 as compared with 1932, production having increased 19 percent and sales volume 22 percent, and the unit value of sales having increased from $0.655 to $0.69. Comparison with 1930 shows a decrease of 21 percent in production and sales and an increase in unit value from $0.59 to $0.69 per pound. Increased sales in 1933 as against 1930 are shown for black, lithol red, orange, and para red lakes.

PHOTOGRAPHIC CHEMICALS

The production of photographic chemicals was 825,887 pounds in 1933, as compared with 818,000 pounds in 1932, and 624,828 pounds in 1930. Sales, however, declined to 688,976 pounds, valued at $678,564, as compared with 714,000 pounds, valued at $797,000 in 1932, and 605,635 pounds valued at $761,572 in 1930. Data for hydroquinol are shown separately in this report.

MEDICINALS

Sales of 8,070,411 pounds of coal-tar medicinals, valued at $6,827,682 exceeded in quantity any year since 1919 and were 48 percent higher than 1930. The unit value of sales averaged $0.85 per pound as compared with $0.97 in 1932 and $1.45 in 1930. Sales of acetylsalicylic acid (aspirin), by quantity, increased 45 percent over 1930. The price declined from $0.77 to $0.62 per pound. Sales of arsphenamine and derivatives totaled 5,390 pounds, at an average of $152.34 per pound, as compared with 6,488 pounds at $138.45 in 1932 and 5,553 pounds at $226.09 per pound in 1930. Sales of phenobarbital amounting to 60,197 pounds at $6.99 per pound, as compared with 24,069 pounds at $55.04 per pound, were outstanding, as was the increase in sales of phenolphthalein to 451,418 pounds, at $0.44 per pound, from 384,931 pounds, at $0.94 per pound, in 1930.

See table 9, part III, for synthetic medicinals of non-coal-tar origin.

FLAVORS

Sales of flavors declined 14 percent in volume as compared with 1930 and 6 percent as compared with 1932. Sales of coumarin, however, increased 19 percent by volume over 1930; the unit value of sales declined from $3.27 per pound in 1930 to $2.42 in 1933. Sales of vanillin totaled 191,039 pounds at $4.06 per pound, a substantial decline from the 296,161 pounds sold in 1930 at $5.34 per pound, and slightly less than the 192,864 pounds sold at $4.40 per pound in 1932.

PERFUME MATERIALS

Quantitatively, sales of perfume materials were greater in 1933 than in 1930, amounting to 1,225,929 pounds and 1,018,867 pounds, re-

spectively, in the 2 years. Sales value, however, declined to $687,141 or $0.56 per pound as compared with $745,208 or $0.73 per pound in 1930.

SYNTHETIC COAL-TAR RESINS

Remarkable increases are noted for synthetic resins derived from phenol and cresol. In quantity, sales increased 61 percent over 1930 and 86 percent over 1932, while unit values declined from $0.38 per pound in 1930 to $0.23 in 1933. Separate data for resins derived from phthalic anhydride are published for the first time.

See table 9, part III, for synthetic resins of non-coal-tar origin.

MISCELLANEOUS PRODUCTS

Production and sales data as shown for this group of products are not comparable with data for earlier years because of the inclusion of certain products not heretofore considered under this classification, such as synthetic insecticides, biological stains and indicators, poisonous and tear gases, and textile assistants derived from coal tar.

TABLE 7.—*Dyes and other finished coal-tar products: Production and sales, 1933*

[The numbers in the third column refer to the numbered alphabetical list of manufacturers printed on p. 45. An X signifies that the manufacturer did not consent to the publication of his identification number with the designated product. A blank in the fourth column indicates that the production figure cannot be published without revealing information in regard to the output of individual firms. A blank in the fifth and sixth columns indicates that the sales of the corresponding product cannot be published without revealing information in regard to the individual firms. The figures thus concealed are, however, included in the total]

Colour Index No.	Name of product	Manufacturers' identification number (according to list on p. 45)	Production	Sales		
				Quantity	Value	Unit value
	Total finished coal-tar products [1]		*Pounds* 176,206,320	*Pounds* 162,092,167	$68,992,877	$0.426
	CLASSIFIED DYES					
	NITROSO DYES					
2	Fast printing green	69				
5	Naphthol green	5, X				
	NITRO DYES					
10	Naphthol yellow S	37, 119, X				
	AZO DYES					
	Monoazo Dyes					
16	Acid yellow G	6				
17	Spirit yellow R	6, 44, 63, 119				
19	Butter yellow	6, 44, 63, 69	15,291			
20	Chrysoidine Y	69,119 X	466,832	457,706	140,688	.307
21	Chrysoidine R	5, 44, 54, 69, 119, X				
23	Oil orange	44				
24	Sudan I	6, 44, 54, 63, 69, 119, X	155,976	167,955	94,376	.562
26	Croceine orange	6, 57, 119, X				
27	Orange G	37, 54, 69, 119				
29	Chromotrope 2R	54, 119				
30	Fast acid fuchsine B	6, 119				
31	Amido naphthol red G	5, 6, 37, 54, 69, 119, X	256,118	265,362	85,152	.322
36	Chrome yellow 2G	6, 37, 44, 69	102,856	124,733	43,314	.347
40	Chrome yellow R	5, 6, 37, 69, X	48,326	50,614	29,259	.578
52	Mordant yellow 4G	6, 37				
53	Victoria violet	37, 54, 69, 119, X	51,521	53,337	34,065	.639
55	Azo coralline	69, X				

[1] Does not include coumarone and indene resins and resins derived from maleic acid.

TABLE 7.—*Dyes and other finished coal-tar products: Production and sales, 1933*—Continued

Colour Index No.	Name of product	Manufacturers' identification number (according to list on p. 45)	Production	Sales		
				Quantity	Value	Unit value
	AZO DYES—continued					
	Monoazo Dyes—continued		*Pounds*	*Pounds*		
56	Chromotrope 6B	119				
57	Amido naphthol red 6B	5, 6, 37, 54, 69, 119, X	167,883	182,744	$81,001	$0.443
69	Toluidine red RL	X, X				
73	Sudan II	44, 63, 69, 119				
79	Ponceau 2R	6, 37, 54, 69, 119, X, X.	299,331	317,970	112,413	.354
80	Ponceau 3R	6				
81	Oil brown	69				
83	Acid brown 3R	X				
84	Double ponceau R	54				
88	Bordeaux B	5, 37, 54, 119, X		75,851	32,549	.429
90	Chromotrope 10B	54				
98	Chrome brown R	37				
101	Chromate brown B	119, 142, X				
105	Acid chrome brown R	5, 54, 69				
110	Chrome flavine G	69				
113	Sudan R	63				
114	Azo eosine G	54				
119	Eosamine G	54				
122	Chrome yellow 5G	37				
126	Direct pink E2GN	54				
128	Direct pink	119				
130	Direct pink EBN	54				
138	Metanil yellow	5, 37, 54, 69, 119	458,114	459,570	235,540	.513
142	Methyl orange	7				
143	Orange IV	6				
145	Azo flavine 2R	69				
146	Azo yellow	6, 54, 69, 119	52,770	49,745	34,114	.686
148	Resorcin yellow	119, X				
150	Orange I	6				
151	Orange II	5, 37, 69, 119, X	1,128,249			
153	Azo fuchsine G	69				
156	Permanent orange R	6				
160	Hansa rubine	69				
161	Orange R	54, 119, X				
163	Lake red 4B	37, 54, X	54,788	64,960	71,354	1.10
165	Lake red C	6, 54, 69, 82, 111, 179, X, X, X, X, X	454,220	386,319	399,430	1.03
167	Acid chrome brown B	119				
168	Acid chrome garnet R	37, 69, 119				
169	Chrome violet R	37, 54, 119, X		9,101	8,301	.883
170	Chrome black PV	69, 119				
175	Acid chrome brown N	69				
176	Fast red A	37, 54, 69, 119, X, X	83,207	78,799	42,595	.541
179	Azo rubine	37, 54, 69, 119, X	116,528	124,775	63,952	.513
180	Fast red VR	37, 69, 119, 197	84,030	92,147	45,985	.499
182	Fast red E	5				
183	Croceine scarlet 3BX	37				
184	Amaranth	6, 37, 54, 69, 119, X	21,401	20,581	9,761	.474
185	Cochineal red	37, 69, 119	75,772	77,592	34,591	.446
189	Lake red R (100 percent)	37, 54, 69, 162, X, X				
195	Mordant yellow	37, 119				
197	Chrome yellow RN	119				
201	Chrome blue black B	36, 37, 54, 119				
202	Chrome blue black U	5, 37, 44, 54, 69, 119	1,630,005	1,708,301	456,659	.267
203	Chrome black T	37, 54, 69, 119				
204	Chrome black A	37, 54, 69, 119, 142				
208	Fast acid blue R	5, 54, 69, 119	165,389	159,739	71,581	.448
209	Fast acid blue B	5, 54, 69, 119				
211	Methyl red	7				
214	Lake red D	179				
216	Chrome red B	5, 37, 44, 54, 69, 119, X, X.	89,391	85,116	47,182	.554
225	Direct pink R	54, X				
	Disazo Dyes					
234	Resorcin brown B	5, 6, 37, 44, 54, 69, 119, X.	291,839	249,631	125,181	.501
235	Resorcin dark brown	5, 44, 119, X				
238	Acid chrome brown G	54				
216	Acid black 10B	5, 6, 37, 54, 69, 119, 142, 197, X, X.	1,227,654	1,198,129	438,072	.366
247	Acid dark green A	37, 44, 54, X	18,330	15,389	8,319	.540
248	Sudan G	6				

TABLE 7.—*Dyes and other finished coal-tar products: Production and sales, 1933*—Continued

Colour Index No.	Name of product	Manufacturers' identification number (according to list on p. 45)	Production	Sales		
				Quantity	Value	Unit value
	AZO DYES—continued					
	Disazo Dyes—Continued		*Pounds*	*Pounds*		
249	Cloth red R	37				
252	Brilliant croceine	37, 54, 69, 119, X	277,495	273,087	$197,261	$0.722
254	Ponceau 5R	69				
256	Cloth red 3G	54				
258	Sudan IV	37, 44, 54, 63, 119, 144				
261	Cloth red G	69				
262	Cloth red 2B	6, 37, 69, 119		22,085	13,637	.617
267	Neutral gray G	54				
271	Fast acid black R	69				
274	Milling orange G	5, 6, 36, 37				
275	Cloth scarlet G	37, 54, X	26,408	18,019	16,934	.940
277	Croceine scarlet	5				
278	Direct fast red 8BL	5, 6, 54, 119, 197, X	92,774	81,431	156,564	1.92
280	Scarlet EC	6, 119				
288	Fast cyanine G	5, 36, 119				
289	Fast cyanine 5R	5, 36, 54, 69, 119	623,695	629,067	338,938	.539
294	Acid black B	119				
299	Chrome black F	5, 37, 54, 69, 119	230,399	227,808	98,492	.432
302	Chrome blue green B	5, 54, 69				
304	Fast acid black N2B	37, 54				
306	Fast acid black F	69				
307	Fast cyanine black B	5, 36, 54, 69, 119	254,420	276,042	162,337	.588
308	Naphthylamine black D	5, 54, 69		3,667	2,654	.724
312	Blue black B	5				
315	Naphtnol black 2B	44				
316	Developed blue NA	54, 69, 119				
317	Developed blue B	54, 119				
319	Direct fast heliotrope 2B	54				
324	Developed brilliant orange GR.	54, 69, 138				
326	Direct fast scarlet	37, 54, 119	410,344	394,949	376,009	.952
327	Direct fast scarlet 4BS	37				
331	Bismarck brown	54, 69, 119, X	57,385	68,634	32,446	.473
332	Bismarck brown 2R	5, 37, 54, 69, 119, X	456,525	450,911	165,957	.368
336	Acid chrome black F	69				
343	Chrome fast yellow C	5, 69				
346	Direct fast yellow 5GL	54				
349	Direct fast yellow 4GL	37				
353	Direct fast pink 2BL	54, 119, X	18,181	18,022	31,143	1.73
364	Paper yellow	54, 69, 119, X	136,553	141,128	99,802	.707
365	Chrysophenine G	54, 119				
370	Congo red	54, 119				
374	Direct orange TA	119				
375	Congo corinth G	5, 6, 54, 119, 197, X	127,648	109,224	77,917	.713
376	Direct rubine	37, X				
382	Direct scarlet B	5, 6, 37, 69, 119, 197, X, X.	147,124	159,840	140,193	.877
385	Direct violet	37				
387	Direct violet B	5, 37, 54, 119				
394	Direct violet N	37, 54, 69, 119, X	45,326	55,200	45,856	.831
395	Developed black RO	6				
401	Developed black BHN	6, 37, 54, 69, 119, 197, X.	2,045,530	2,000,034	625,089	.313
405	Direct cyanine R	119				
406	Direct blue 2B	5, 6, 37, 44, 54, 69, 119, 197, X.	875,699	843,601	212,396	.252
409	Direct orange DB	54				
410	Chrysamine G	5, 37, 54, X	16,386			
411	Cresotine yellow G	119				
415	Direct orange R	5, 37, 54, 69	36,825	42,705	18,234	.427
419	Direct fast red F	5, 6, 37, 54, 69, 119, 197, X.	160,130	174,969	110,617	.632
420	Direct brown M	5, 6, 37, 44, 54, 69, 119, X.	252,823	222,575	112,591	.506
423	Direct brown B	5, 197				
430	Polar red G	36, 37, 54, 119, X				
431	Acid chrome red	54				
436	Direct brilliant red 8B	5, 37				
441	Chrome fast yellow RD	69				
443	Milling red 2G	37, X				
446	Direct orange RT	119				

TABLE 7.—*Dyes and other finished coal-tar products: Production and sales, 1933*—Continued

Colour Index No.	Name of product	Manufacturers' identification number (according to list on p. 45)	Production	Sales		
				Quantity	Value	Unit value
	AZO DYES—continued					
	Disazo Dyes—Continued		*Pounds*	*Pounds*		
448	Benzopurpurine 4B	37, 54, 119	444,250	454,914	$198,196	$0.436
450	Benzopurpurine B	5				
464	Direct blue R	54				
468	Direct mauve B	119				
471	Direct blue 3R	119				
472	Direct blue BX	37, 54, 119	16,214	19,141	8,201	.428
473	Direct blue G	54				
477	Direct blue 3B	6, 37, 44, 54, 119				
478	Direct orange G	6, 37, 69, 119	38,345			
487	Acid milling red B	5, 6, 36, 37, 69, 138, X	18,738	20,912	19,592	.937
495	Benzopurpurine 10B	37, 54, 119				
502	Direct azurine G	37, 54, 119	63,958	67,494	45,969	.681
508	Direct brilliant blue G	54				
512	Direct blue RW	6, 37, 54, 69, 119	233,465	260,169	190,605	.733
515	Direct blue B	119				
518	Direct pure blue 6B	6, 37, 54, 69, 119	357,292	349,984	283,788	.811
	Trisazo Dyes					
520	Direct pure blue	5, 37, 54, 69, 119, X	100,530	100,460	47,613	.474
533	Direct fast blue FR	54, 69				
539	Direct fast black FF	5, 37, 54, 69, 119	271,645	306,695	152,738	.498
545	Plutoform black L	36				
552	Diazo black RS	54, 119				
561	Direct brown BT	5, 54, 119, 138				
567	Direct fast blue R	37				
576	Direct fast blue B	37, 54, 119		96,118	132,131	1.37
581	Direct black EW	5, 37, 54, 69, 119, 197, X	6,857,158	6,835,679	1,807,057	.264
582	Direct black RX	5, 37, 54, 69, 119, 197, X	648,174	553,598	189,339	.342
583	Direct green ET	5, 6, 37, 54, 119, 197, X	39,556	32,132	13,994	.436
589	Chloramine green B	5, 37, 54, 119, 197, X	29,075	37,774	13,615	.360
590	Direct steel blue G	54				
593	Direct green B	5, 6, 37, 54, 69, 119, 142, 197, X	606,781	579,255	188,340	.325
594	Direct green G	5, 37, 54, 197, X		83,180	36,376	.437
596	Direct brown 3GO	5, 37, 44, 54, 69, 119, 197, X	693,422	628,573	200,228	.319
598	Congo brown G	6, 37, 54, 69, 119, X				
601	Congo brown R	5, 54				
	Tetrakisazo Dyes					
606	Direct brown G	44, 69, 197, X	19,627			
	Total classified azo dyes		30,750,478	30,573,603	13,209,978	.432
	STILBENE DYES					
620	Direct yellow R	5, 37, 54, 119, X	298,155	330,512	121,587	.368
621	Chloramine orange G	5, 54, 119, X		103,273	64,395	.624
622	Stilbene yellow	54				
	PYRAZOLONE DYES					
631	Direct chrysoine G	37				
636	Fast light yellow 2G	54, 69, 119, 138	47,874	52,061	55,264	1.06
639	Fast light yellow	36, 37, 54, 69, 119, 138				
640	Tartrazine	36, 69, 119, 138, X, X	484,198	525,813	339,708	.646
652	Chrome red B	36, 37, 54, 69, 119, X				
653	Pyrazol orange G	6, 119, 138				
654	Developed fast yellow 2G	54				
	Total pyrazolone dyes		900,710	944,156	729,029	.772
	KETONIMINE DYES					
655	Auramine	54, 110, 119, X	869,073	794,168	782,031	.985

TABLE 7.—*Dyes and other finished coal-tar products: Production and sales, 1933*—Continued

Colour Index No.	Name of product	Manufacturers' identification number (according to list on p. 45)	Production	Sales		
				Quantity	Value	Unit value
	TRIPHENYLMETHANE AND DIPHENYLNAPHTHYLMETHANE DYES		*Pounds*	*Pounds*		
657	Malachite green	119, X				
658	Rhoduline blue 6G	69, 119				
666	Acid green B	37, 54, 69, 119, X	67,246	56,213	$50,011	$0.890
667	Fast acid green B	69, 119, X				
670	Acid light green	54, 69				
671	Acid glaucine blue	54, 119				
676	Para fuchsine	9				
677	Magenta	37, 107, X, X				
680	Methyl violet and base	54, 55, 69, 82, 95, 119, X	819,334	730,716	534,715	.732
681	Crystal violet	54, 69, 119				
682	Ethyl violet	69				
689	Spirit blue	9				
690	Victoria blue 4R	69				
691	Fast green bluish	6				
696	Fast acid violet 10B	54				
698	Acid violet	37, 54, 69, 119, X	229,872	215,567	190,225	.882
699	Acid fast violet BG	119				
703	Alkali blue 6B	9				
704	Alkali blue	107, X, X	319,231			
705	Methyl blue	9				
707	Soluble blue	69, 107, X	38,401	49,119	85,457	1.74
710	Brilliant sky blue 5G	69				
712	Patent blue	69, 119				
714	Patent blue A	69, 119				
720	Eriochrome azurol B	119				
722	Eriochrome cyanine R	119				
724	Aurine	54				
728	Victoria blue R	69				
729	Victoria blue B	54, 69, 119				
733	Fast acid blue B	54				
735	Naphthalene green V	54, 119				
737	Wool green S	54, 69, X	111,194	117,605	68,052	.578
	Total triphenylmethane and diphenylnaphthylmethane dyes.		2,865,972	2,486,566	2,621,134	1.05
	XANTHENE DYES					
749	Rhodamine B	54, 110				
752	Rhodamine 6G	54				
758	Fast acid violet A2R	X				
759	Acid rosamine A	X				
766	Uranine	9, X				
768	Eosine	6, 9, 92, 119, X	164,441	181,771	264,515	1.46
772	Erythrosine	6				
773	Erythrosine B	9, X				
774	Phloxine B	9				
777	Rose bengale	9, X				
	ACRIDINE DYES					
788	Acridine orange A	69, 138				
793	Phosphine	37, 54, 69, 119, 138, X	103,516	114,054	88,972	.780
794	Phosphine 2G	69				
797	Euchrysine	69				
	QUINOLINE DYES					
801	Quinoline yellow	54, 119				
	THIAZOLE DYES					
812	Primuline	54, 119, X				
813	Direct pure yellow M	54				
814	Direct fast yellow	37, 54, 119, X	216,664	219,815	200,422	.912
815	Thioflavine T	54				
816	Direct brilliant flavine S	X				

TABLE 7.—*Dyes and other finished coal-tar products: Production and sales, 1933*—Continued

Colour Index No.	Name of product	Manufacturers' identification number (according to list on p. 45)	Production	Sales		
				Quantity	Value	Unit value
	AZINE DYES		*Pounds*	*Pounds*		
833	Wool fast blue GL	54, 69, 119				
841	Safranine	54, 119				
860	Induline (spirit-soluble)	69, 119, X				
861	Induline (water-soluble)	69, 119, X	28, 633	35, 354	$26, 368	$0.746
864	Nigrosine (spirit-soluble)	69, 119, X	566, 142	694, 356	196, 191	.325
865	Nigrosine (water-soluble)	69, 119, X	1, 294, 125	1, 350, 874	445, 183	.330
	ANILINE BLACK AND ALLIED DYES					
873	New fast gray	54, 138, X				
875	Fur black	69, X				
	OXAZINE DYES					
878	Delphine blue B	119				
883	Gallocyanine	X, X				
909	Cotton blue	6, 119, X	58, 055	41, 387	53, 045	1.28
913	Nile blue BX	69				
	THIAZINE DYES					
922	Methylene blue	54, 69, 119, X		409, 141	343, 641	.840
924	Methylene green B	X				
931	Brilliant chrome blue	69, X				
	SULFIDE DYES					
969	Carbazole vat blue R	54	(2)			
971	Carbazole vat blue G	54	(2)			
	Sulfur black	54, 69, 119, X	16, 020, 531	14, 951, 341	2, 034, 449	.136
	Sulfur blue	5, 37, 54, 69, 87, 119, X	1, 357, 303	1, 283, 858	504, 934	.393
	Sulfur brown	5, 37, 47, 54, 69, 87, 119, X	1, 522, 320	1, 450, 521	402, 790	.278
	Sulfur green	5, 54, 69, 87, 119	150, 288	164. 145	125, 234	.763
	Sulfur maroon	5, 54, 69, 119	459, 670	421, 056	220, 023	.523
	Sulfur olive	54, 69, 119, X	48, 343	86, 732	28, 766	.332
	Sulfur orange	37, 54, 69, 119		23, 920	9, 664	.404
	Sulfur tan	5, 37, 54, 69, 87, X	303, 017	306. 003	82, 800	.271
	Sulfur yellow	5, 37, 54, 69, 87, 119, X	202, 699	212, 170	80, 402	.379
	Other sulfide dyes	5, 37, X				
	Total sulfide dyes		20, 188, 008	18. 989, 801	3, 516, 559	.185
	ANTHRAQUINONE DYES					
1027	Alizarin	6, 119, X				
1034	Alizarin red S	6, 119, X		27, 211	46, 439	1.71
1035	Alizarin brown	119, X				
1037	Alizarin red PS	69				
1039	Alizarin GI	54				
1040	Alizarin SX	119				
1053	Acid alizarin blue SE	54, 69				
1054	Acid alizarin blue B	54, 69, 119	451, 177	415, 293	682, 404	1.64
1059	Anthracene blue WG	16				
1060	Anthracene blue SWGG	16				
1062	Anthracene blue WR	36, 119				
1063	Anthracene blue WRS	16				
1073	Alizarin irisol R	16, 54				
1075	Alizarin astrol B	54, 69				
1076	Cyananthrol R	54				
1078	Alizarin cyanine green E	5, 6, 16, 54, 69, 119, X	67, 546	58, 346	119, 019	2.04
1080	Acid anthraquinone violet B	16, 54				
1085	Anthraquinone blue black B	54, 69, 119, X	86, 681	83, 162	121, 429	1.46
1088	Acid anthraquinone blue B	54, 69, 119		25, 143	80, 696	3.21
1091	Acid alizarin rubine	69				
	Total anthraquinone dyes		1, 024, 605	944, 711	1, 480, 964	1.57

[2] Totals not included under sulfide dyes. In the dyes classified by method of application, these 2 dyes are included in the vat dyes.

TABLE 7.—*Dyes and other finished coal-tar products: Production and sales, 1933*—Continued

Colour Index No.	Name of product	Manufacturers' identification number (according to list on p. 45)	Production	Sales		
				Quantity	Value	Unit value
	ANTHRAQUINONE VAT DYES (SINGLE STRENGTH)		*Pounds*	*Pounds*		
1095	Anthraquinone vat yellow GC.	54, 69				
1096	Anthraquinone vat golden orange G.	54, 69, 119, X	113, 320	124, 551	$185, 735	$1.49
1097	Anthraquinone vat golden orange R.	119				
1098	Anthraquinone vat scarlet G.	119				
1099	Anthraquinone vat dark blue BO.	54, 69, 119, X, X	93, 447	100, 810	121, 261	1.20
1101	Anthraquinone vat jade green	54				
1102	Anthraquinone vat green B and black.	54, 69, 119, X				
1104	Anthraquinone vat violet RR.	6, 54, 69, 119, X	96, 423	96, 170	160, 950	1.67
1107	Anthraquinone vat blue RS.	54, 69				
1109	Anthraquinone vat blue 3G.	54				
1113	Anthraquinone vat blue GCD.	53, 54, 69, 119	423, 326	523, 026	299, 189	.572
1114	Anthraquinone vat blue BCS.	54, 69, 119	453, 253	411, 475	394, 345	.958
1115	Anthraquinone vat blue RCD.	69				
1118	Anthraquinone vat yellow G.	6, 53, 54, 69, 119	153, 042	227, 455	246, 875	1.09
1120	Anthraquinone vat brown B.	54, 119				
1129	Anthraquinone vat scarlet R.	69				
1131	Anthraquinone vat red 5GK.	54				
1132	Anthraquinone vat yellow GK.	6, 54				
1133	Anthraquinone vat red FF.	54				
1134	Anthraquinone vat brilliant violet B.	54				
1135	Anthraquinone vat brilliant violet R.	54				
1150	Anthraquinone vat olive R.	54, 69, 119				
1151	Anthraquinone vat brown R.	54, 69, 119				
1152	Anthraquinone vat brown G.	54, 69, 119				
1161	Anthraquinone vat red violet RRN.	54, 69				
1162	Anthraquinone vat red BN.	54, 119				
1163	Anthraquinone vat violet BNX.	54				
1169	Anthraquinone vat orange R.	54				
1170	Anthraquinone vat yellow 3G.	54, X				
1173	Anthraquinone vat blue green FFB.	119				
	Total anthraquinone vat dyes.		3, 532, 834	3, 705, 978	4, 035, 688	1.09
	INDIGOID AND THIOINDIGOID DYES					
1177	Indigo, synthetic, 20 percent paste.	53, 54, 119	23, 412, 400	22, 500, 721	3, 506, 985	.156
1178	Indigo white	119				
1180	Indigo extract	54, 119				
1183	Tribromindigo RB	53				
1184	Bromindigo blue 2B, 2BD	53, 69, 119				
1186	Bromindigo 6B	53				
1207	Vat red B	54				
1210	Vat brilliant pink R	69				
1212	Vat red 3B	53, 54, 69, 119	59, 299	74, 681	86, 070	1.15
1217	Vat orange R	54, 69, 119, X, X, X	329, 769	352, 938	473, 508	1.34
1222	Vat violet BR	53, 54				
1228	Vat scarlet G	53				
1229	Vat red R	53				
	FOOD DYES					
22	Yellow AB	56, 119, 168, X				
61	Yellow OB	56, 119, 168, X				
80	Ponceau 3R	19, 119, 168, 189, X	26, 081	25, 818	112, 526	4.36
150	Orange 1	19, 119, 168, 189, X	83, 348	84, 325	148, 812	1.76

TABLE 7.—*Dyes and other finished coal-tar products: Production and sales, 1933*—Continued

Colour Index No.	Name of product	Manufacturers' identification number (according to list on p. 45)	Production	Sales		
				Quantity	Value	Unit value
	FOOD DYES—continued		*Pounds*	*Pounds*		
184	Amaranth	19, 119, 168, 189, X	39,818	43,251	$93,694	$2.17
640	Tartrazine	19, 119, 168, 189, X	51,771	51,366	111,343	2.17
666	Guinea green B	119, 168, 189, X		709	8,553	12.06
670	Light green SF (yellowish)	119, 168, 189, X		512	7,803	15.24
773	Erythrosine	19, 119, 168, X	4,713	4,533	66,904	14.76
1180	Indigo disulfonic acid	119, 168, X				
	Brilliant blue FCF	119, 168, 189				
	Fast green FCF	168, 189				
	Ponceau SX	119, 168, 189				
	Sunset yellow FCF	119, 168, 189		7,474	15,020	2.01
	Total food dyes		232,403	241,648	636,058	2.63
	Total classified dyes		93,172,314	90,503,417	35,307,729	.390
	UNCLASSIFIED DYES					
	Acetate black	X				
	Acetate silk blacks (III, IV, IV dbl.)	6				
	Acetate silk blues (R supra, 5RB, III, IV, VII, XII)	5, 6				
	Acetate silk brilliant cerise	5				
	Acetate silk brilliant oranges (3R conc., GF conc.)	5				
	Acetate silk brilliant sky blue G	5				
	Acetate silk brilliant yellow (G, R)	5				
	Acetate silk developed black (W, G supra, LF conc., B supra)	5				
	Acetate silk fast orange 2R supra	5				
	Acetate silk fast red Y	5				
	Acetate silk golden orange (I, III)	6				
	Acetate silk golden yellow (F, F special, VII, IX, XII, XIII)	5, 6				
	Acetate silk heliotrope, I	5, 6				
	Acetate silk orange (I, II, III)	6				
	Acetate silk pure yellow (I, II)	6				
	Acetate silk red (I, III, VI–X, VII)	6				
	Acetate silk scarlet	5				
	Acetate silk violet II	6				
	Acid alizarin blue	X				
	Acid alizarin brown 5R	69				
	Acid alizarin flavine R	69				
	Acid alizarin green	X				
	Acid anthracene brown (B, PG)	69				
	Acid anthracene orange GR	X				
	Acid anthracene yellow GR extra	36				
	Acid anthraquinone blue (BGA, WSA, SWB)	54				
	Acid anthraquinone rubine R conc.	54				
	Acid black (AR, BG conc., 8B, DB conc., GRF, 3G, J, NBJ, RB, USD, 640, 773)	44, 54, 119, X, X				
	Acid blue BL	138				
	Acid brilliant blue (3B, RR)	6, 54				
	Acid brilliant red G	54				
	Acid browns (N, Y, R conc.)	X, 5, 138	6,889			
	Acid fast Black BBN	54				
	Acid fast blue (IB, NB)	54				
	Acid fast brown CGS	54				
	Acid fast orange LW	6				
	Acid fast red BL	X				
	Acid fast yellow RS	6				

TABLE 7.—*Dyes and other finished coal-tar products: Production and sales, 1933*—Continued

Name of product	Manufacturers' identification number (according to list on p. 45)	Production	Sales		
			Quantity	Value	Unit value
UNCLASSIFIED DYES—Contd.		*Pounds*	*Pounds*		
Acid Lapis blue	6				
Acid light red 4BL	54				
Acid light rubine (BS, BL)	69				
Acid milling scarlet G	6				
Acid milling yellow (G, 2GX)	37, 138				
Acid naphthol blue black	37				
Acid navy blue (M4B, conc.)	54, X				
Acid orange 2R	138				
Acid red (OA, 3B)	37, 138				
Acid scarlet G conc	138				
Acid violet (RL, B)	37, 138				
Acid wool blue BL	54				
Acid yellow (R, G, HM conc.)	5, 138, X				
Alizarin blue GS	119				
Alizarin blue black AWC	69				
Alizarin direct blue (A2G, AR)	69				
Alizarin IT	6				
Alizarin supra blue	69				
Alizarin yellow GG	X				
Alkali fast green 10G	69				
Anthra yellow GD	69				
Anthracene blue SWN	119				
Anthraquinone vat black (NM, J, 3G)	6, 54, 119				
Anthraquinone vat blue (RCL, 3BCS, BCX, GCS, 2GCD, RCX, CLX)	6, 54, 69				
Anthraquinone vat blue green (FFB, Y)	54, 69				
Anthraquinone vat brilliant blue RCL	69				
Anthraquinone vat brilliant orange RK	69				
Anthraquinone vat brilliant pink B	69				
Anthraquinone vat brilliant violet (4R, 2RN)	69				
Anthraquinone vat brown (GG, RR, RT, G)	54, 69				
Anthraquinone vat flavine GC	119				
Anthraquinone vat golden orange (3G, R, RRT)	54, 69, X				
Anthraquinone vat green (IB, IBW, G, 2G, GGF, RC)	54, 69				
Anthraquinone vat khaki 2G	54, 69				
Anthraquinone vat navy blue (BN)	6, 54				
Anthraquinone vat orange (RRF, RRT)	69				
Anthraquinone vat printing brown D	69				
Anthraquinone vat printing green (B suprafix, BG suprafix)	69				
Anthraquinone vat printing violet (2R, 4RN)	69				
Anthraquinone vat red violet (3CRH, 2RM)	69				
Anthraquinone vat scarlet (3B, 3BM, GGN)	69				
Anthraquinone vat yellow (PG, 8G, 4G)	54, 69				
Anthraquinone vat yellow brown 3G	69				
Artificial silk black G	37				
Azo ceresine	X				
Azo eosine 2B	54				
Azo fast blue (G, B, 2R)	119				
Azo fast violet	119				
Azo oil black	119				
Azo orange	138				
Azo red F	5				

TABLE 7.—*Dyes and other finished coal-tar products: Production and sales, 1933*—Continued

Name of product	Manufacturers' identification number (according to list on p. 45)	Production	Sales		
			Quantity	Value	Unit value
UNCLASSIFIED DYES—Contd.		*Pounds*	*Pounds*		
Azo scarlet G conc	138				
Azo violet 2B	5				
Azoxylene azo b-naphthol	X				
Azoxylene azo N-1700	X				
Azoxylene yellow T-7463	X				
Basic black APX	54				
Basic navy blue	69				
Bis benzene diazo a-naphthol	X				
Bis xylene diazo a-naphthol	X				
Bordeaux BP	69				
Brilliant acid blue 3BP	138				
Brilliant benzo violet B	54				
Brilliant green crystals	X				
Brilliant milling blue B	54, 69				
Brilliant milling green B conc.	54				
Brilliant red lake R paste	X				
Brilliant wool blue (FFR, G extra, N).	69, 119				
Celanthrene black	54				
Celanthrene Blue G	54				
Celanthrene brilliant blue	54				
Celanthrene brilliant red	54				
Celanthrene brown (BR, Y, AN).	54				
Celanthrene fast light yellow	54				
Celanthrene navy blue (R, BN, CB, CBR).	54				
Celanthrene orange, ex	54				
Celanthrene purple R	54				
Celanthrene red Y	54				
Celanthrene red violet R	54				
Celanthrene sky blue (B, BR).	54				
Celanthrene violet CB	54				
Cherry red toner no. 1	69				
Chromate blue black B	37				
Chromate brilliant brown (R, RL).	36				
Chromate brown (EBS conc., EB, EG, BC, EBR).	5, 36, 54, 69, X, X, X	113, 298	110, 707	$89, 461	$0.808
Chrome black (3G, 77, SW, NSE).	5, 54, 119, 144, X	8, 427	15, 888	15, 429	.971
Chrome blue ATX	54, 144				
Chrome brown (B, 3B, EB, G, PG, RH).	6, 36, 37, 54, 119	129, 951			
Chrome fast garnet R	37				
Chrome green (B, 3B, SN, 5W, G, CB).	5, 37, 119, 144, X				
Chrome orange 3B	119				
Chrome red (B, BGA)	36				
Chrome red brown 3R	69				
Chrome violet	144				
Chrome yellow (DS, 5G, SS, SW, G, 3G, 2G).	5, 37, 54, 69, 119, X	53, 879	62, 231	23, 883	.384
Chromovane cyanine R	69				
Chromoxane pure blue B	69				
Cloth red (R, 2R)	119				
Croceine scarlet FP conc	119				
Developed black (G, 2BN, OB, OT, ZV conc).	37, 54, 69, 119	165, 551	153, 801	77, 001	.501
Developed blue (B, BR, B553, B555, NA, 5G1).	37, 44, 54, 119				
Developed Bordeaux (7B, 7B conc.).	54, 119				
Developed brilliant scarlet (2BL, 5BL).	54				
Developed brown R	54				
Developed fast blue (B, 2RW, NBB).	37, 54				
Developed fast red 7BL	54				
Developed fast violet BL	54				
Developed green (BL, 2GL)	54				
Developed indigo blue 4GL	5, 54				
Developed orange (RR, WD)	54				

TABLE 7.—*Dyes and other finished coal-tar products: Production and sales, 1933*—Continued

Name of product	Manufacturers' identification number (according to list on p. 45)	Production	Sales		
			Quantity	Value	Unit value
UNCLASSIFIED DYES—Contd.		*Pounds*	*Pounds*		
Developed red 7BL	5				
Developed scarlet (A, R)	119				
Developed seal brown	X				
Developed violet RR	54				
Developed yellow 2G	119				
Diaminogene extra	69				
Direct black (3G, 3GR, B, NCW)	5, 37, 119, X	109, 134			
Direct blue (3RX, FF, NR)	37, 54, 119				
Direct Bordeaux (B, 6B)	6, 69, 119	64, 409	52, 947	$44, 765	$0.845
Direct brilliant green (BB, 3G)	6, 69				
Direct brilliant red 12B	119				
Direct brilliant scarlet RO	69				
Direct brown (FW, RY, G2R, G3R, K, R, NR, 3RB, N, TS, CN, 3G, BN, GB)	5, 37, 44, 69, 119, X, X, X	108, 907	112, 939	64, 899	.575
Direct catechine G	54, 119				
Direct catechine brown GR	6				
Direct chrome black blue B	5				
Direct chrome brown (BS, 5G)	5				
Direct copper blue RRX	54				
Direct dark green (B, 2B)	69				
Direct fast black (B, L, FTC, LB, PG ex)	5, 6, 37, 54, 69, 119	255, 323	258, 311	202, 991	.786
Direct fast blue (G, 2GL, 4GL, 8GL, FF, R, SRL, RL)	37, 54, 69, 119	116, 395	132, 083	140, 000	1.06
Direct fast brown (R, 4R, RK, 4GL, RL, 2RL, 4RL, 3YL)	54, 119				
Direct fast gray (BL, GL, 2GL, R)	54, 69, 119	22, 063	21, 682	46, 842	2.16
Direct fast light blue FF	37				
Direct fast olive brown RL	6				
Direct fast orange (R, 2R, EG, ER, RE, L7G, L3R, S, G, 2G conc., 4G, 7R, 2GL)	36, 37, 54, 69, 87, 119, X	117, 668	130, 126	155, 433	1.19
Direct fast red (5BL, 8BL, 8BLN, 4B)	36, 37, 69, 119				
Direct fast rubine B conc	119				
Direct fast scarlet 4BA	5				
Direct fast violet (F, SRL)	5, 54				
Direct fast yellow (RL, 5GL, 2G)	37, 54, 69, 119		59, 420	87, 440	1.47
Direct garnet R	37				
Direct gray (G, B)	44, X				
Direct green (54FS, BG, 2Y, Special)	5, 54, 69		41, 070	19, 500	.475
Direct green black	37				
Direct indigo blue (BRR, 4GL, 4RL)	69				
Direct light brown (GR, 4YL)	54				
Direct light yellow RL	37				
Direct navy blue (DB, R)	5, 54, X				
Direct orange (GL, 4G, G, 2R)	5, 36, 119				
Direct rhoduline red B	54				
Direct rubine B	69				
Direct sky blue 3GL	69				
Direct violet BB	119				
Direct violet black	37				
Direct yellow (4GL, RL)	5, 119				
Discharge brown RB	54				
Dressing jet black	69				
Fast acid black BR	5, 69				
Fast acid blue CM	69				
Fast acid gray	119				
Fast acid light red B	37				
Fast acid red (3B, 2G, BL)	54, 69				

TABLE 7.—*Dyes and other finished coal-tar products: Production and sales, 1933*—Continued

Name of product	Manufacturers' identification number (according to list on p. 45)	Production	Sales		
			Quantity	Value	Unit value
UNCLASSIFIED DYES—Contd.		*Pounds*	*Pounds*		
Fast acid violet (VR, ERR ex).	54, 138				
Fast acid yellow R	69				
Fast black V	54				
Fast crimson R	119				
Fast light red (B, 4B)	69				
Fast light yellow (3G, E2G)	69				
Fast silk Bordeaux	5				
Fast silk red RT	5				
Fast wool black GRF conc.	119				
Fast wool red (BL, GL)	119				
Fast wool violet B	119				
Formal fast black G	5, 37				
Gas yellow	X				
Hansa yellow G	54, 69, 92				
Helio Bordeaux BL	69				
Helio fast rubine 4BL	69				
Helio red RMT	69				
Indamine navy blue 2B	5				
Indigo vat brown G	119				
Indigo vat pink FF	54, 119, X, X	118,045			
Indocyanine B	69				
Ink blue BJTBNA	69				
Lacquer maroon	X				
Lake orange	X				
Lake pink RL	119				
Lake red	X				
Lake scarlet GC	119				
Lenafuchsine B	54				
Leather brown	44				
Light fast violet	X				
Lithosol fast blue BL conc.	54				
Lithosol fast yellow 10G	54				
Methyl violet (L conc., NFB, 5B crystal).	69, 119				
Milling fast garnet R	36				
Milling fast red BA	36				
Milling fast yellow 5GL	36				
Milling green 10G	X				
Milling orange (G, RN, R, R conc.).	54, 119, 138				
Milling red (B, G, R)	119, X				
Milling yellow (CR, 3G, GN, R, O conc.)	5, 54, 119, 138, X	34,016	28,107	$29,748	$1.06
Naphthogene blue 2R	5				
Naphthylamine black V	54				
Neptune blue BR	69				
Neutral discharge red BW	6				
New methylene blue	X				
Nigrosine base (B, N, NB, R, 2R).	119				
Oil brown (M, Y, D)	63, 119				
Oil fast orange A	119				
Oil fast red M	119				
Oil fast yellow 3G	119				
Oil green	X				
Oil orange (30, Y, RR)	44, 63, 195				
Oil pink R	119				
Oil red (3B, G, O, RO, Y, EG 430, 322).	6, 44, 63, 119, 195, X	32,664	37,483	37,656	1.00
Oil violet	X				
Oil yellow N	54, X				
Oxydiamine black C	69				
Paper red (Ad ex)	69				
Paper scarlet B	69				
Para brown DK	119				
Para yellow GW	119				
Patent blue (AF, 2RG, B conc.)	69, 119				
Pharmasol scarlet G	138				
Pharmasol yellow G	138				
Pharmol blue B	138				
Pharmol yellow G	138				
Phenamine black (B, BN)	69				
Phenoform orange (G, R)	69				

TABLE 7.—*Dyes and other finished coal-tar products: Production and sales, 1933*—Continued

Name of product	Manufacturers' identification number (according to list on p. 45)	Production	Sales		
			Quantity	Value	Unit value
UNCLASSIFIED DYES—Contd.		*Pounds*	*Pounds*		
Phloxine BN	X				
Pigment orange	X				
Pigment red RR	X				
Pigment yellow G	X				
Plutoform black C	69				
Polar orange (GS, R)	37				
Polar red (B, 3B, G)	5, 37				
Polar yellow (2G, 5G, R, G)	5, 37				
Printing violet R	119				
Rapid printing orange	X				
Rapid printing scarlet	X				
Rayon black (B, MS)	54				
Rayon Bordeaux (B, 3B)	54				
Rayon brown (G, M)	54				
Rayon navy blue N	54				
Rayon violet (B, 3B, 4R)	54				
Resin brilliant orange RR	119				
Resin brilliant red R	119				
Resin brilliant scarlet 6G	119				
Resin brown Z	119				
Resin violet B	119				
Resorcin brown YX	44				
Rhodamine 6GDN	X				
Rosanthrene (A, R)	54				
Roto orange (IT, IPI)	69				
Rubber colors	54				
Safranine 8B	119				
Silk black 4BF	37				
Silk blue (10G, 3G)	51				
Silk brown (R, G, B)	37, X				
Silk red (10B, 2B)	X				
Silk white blue O	69				
Silk yellow N	X				
Sudan blue G	69				
Sudan orange (G, RT)	69				
Sudan red BB	69				
Sudan yellow (2G, R)	69				
Sulfon navy blue (2BN, 4B).	69				
Sulfon orange G	69				
Sulfon yellow R	69				
Supranol red (PBX, PG, PRX, R).	69				
Thionine blue GA	X				
Toluene azo b-naphthol	X				
Union fast gray	119				
Universal black	69				
Vat black	155				
Vat red	155				
Victoria fast violet	X				
Victoria pure blue (BOA, BGO).	69				
Violet toner	X				
Vulcan blue G	5				
Wool blue (CG, CB)	119				
Wool fast orange G	69				
Wool green B	119				
Wool navy blue B	119				
Wool red special	138				
Zambesi black (BG, PC, V, D, VD).	5, 37, 69, 119				
All other	54, X				
Total unclassified dyes		7,780,464	7,734,981	$7,794,740	$1.01
Grand total of dyes		100,952,778	98,238,398	43,102,469	.439
COLOR LAKES					
Black lakes	41, 98, X, X, X, X, X.	151,111	163,875	115,224	.703
Blue lakes	24, 30, 41, 57, 82, 96, 98, 99, 101, 111, 162, 171, 179, 195, X, X, X, X, X, X, X, X, X, X, X.	754,614	757,961	649,540	.857

TABLE 7.—*Dyes and other finished coal-tar products: Production and sales, 1933*—Continued

Name of product	Manufacturers' identification number (according to list on p. 45)	Production	Sales		
			Quantity	Value	Unit value
COLOR LAKES—Continued		*Pounds*	*Pounds*		
Eosine lakes	24, 30, 57, 92, 98, 99, 101, 111, 162, 171, 179, X, X, X, X, X, X, X, X, X.	369,262	374,104	$370,534	$0.990
Green lakes	3, 24, 30, 41, 57, 82, 92, 96, 98, 99, 101, 111, 140, 162, 179, 195, X, X, X, X, X, X, X, X, X, X, X.	350,934	347,019	342,214	.986
Lithol red lakes	24, 41, 82, 92, 96, 98, 99, 101, 103, 111, 140, 162, 179, 195, X, X, X, X, X, X, X, X, X.	836,544	806,749	490,002	.607
Maroon lakes	3, 24, 30, 57, 82, 96, 98, 99, 101, 103, 111, 114, 140, 162, 179, 195, X, X, X, X, X, X, X.	500,324	504,236	503,625	.999
Orange lakes	3, 24, 30, 41, 57, 92, 96, 98, 101, 111, 162, 171, 179, 195, X, X, X, X, X, X, X, X, X, X, X.	503,938	507,984	172,520	.340
Para red lakes	3, 24, 30, 57, 82, 92, 96, 98, 99, 101, 103, 111, 140, 162, 179, 195, X, X, X, X, X, X, X, X, X.	1,196,669	1,180,080	560,327	.475
Red lakes	24, 30, 41, 57, 82, 96, 98, 99, 101, 103, 111, 114, 140, 162, 171, 179, 195, X, X, X, X, X, X, X, X, X, X, X.	1,566,232	1,578,203	1,218,634	.772
Scarlet lakes	3, 24, 30, 57, 82, 96, 98, 99, 101, 103, 140, 162, 179, X, X, X, X, X, X, X, X, X.	510,908	491,378	232,688	.474
Violet lakes	24, 30, 41, 55, 57, 82, 92, 95, 98, 101, 103, 111, 162, 171, 179, 195, X, X, X, X, X, X, X, X, X.	422,430	438,805	309,155	.705
Yellow lakes	30, 41, 82, 92, 98, 99, 111, 162, 171, X, X, X, X, X, X, X, X, X, X.	357,887	365,067	232,775	.638
Other lakes	30, 98, 103, 111, X, X, X, X, X.	63,460	59,020	27,139	.460
Total color lakes		7,584,313	7,574,481	5,224,377	.690
PHOTOGRAPHIC CHEMICALS					
Catechol (pyrocatechin)	134				
Diaminophenol hydrochloride (amidol)	67				
Hydroquinol	54, 58, 187, X, X	580,616	537,213	405,743	.755
p-Hydroxy phenylglycine	54, 58, 87, X				
Methyl p-aminophenol sulfate (metol) (rhodol)	54, 58, 87, 194				
Total photographic chemicals		825,887	688,976	678,564	.985
MEDICINALS					
Acetanilide, USP	38, 53, 93, 113, 123, X	510,353	617,840	128,503	.208
Acetphenetidin	53, X				
Acetyl-p-aminophenyl salicylate (salophen)	X				

TABLE 7.—*Dyes and other finished coal-tar products: Production and sales, 1933*—Continued

Name of product	Manufacturers' identification number (according to list on p. 45)	Production	Sales		
			Quantity	Value	Unit value
MEDICINALS—Continued					
		Pounds	*Pounds*		
Acetyl salicylic acid (aspirin)	53, X, X, X	3,153,796	3,010,090	$1,850,206	$0.615
Acid sulfosalicylic	X				
Acriflavine. (See 3:6-Diamino-10-methyl acridine chloride)					
Acriviolet	119				
Ambazin	119				
p-Aminobenzoyldiethylamino-ethanol (procaine).	1, 127, X, X	9,402	8,359	223,505	26.74
p-Aminobenzoyldimethylaminomethyl butanol hydrochloride (tutocain).	X				
Aminopyrine. (See 4-Dimethylamino antipyrine (ampydin).)					
Antipyrine	53				
Arsphenamine	1, 52, 108, X, X, X, X		301	37,922	125.99
Aspirin. (See Acetyl salicylic acid.)					
Benzaldehyde, USP	65, 79				
Benzocaine. (See Ethyl-p-aminobenzoate (anesthesine).)					
Benzoic acid, USP	54, 83, X, X				
Benzoyl-tetramethyldiamino-ethylisopropanol hydrochloride.	X				
Benzyl succinate	156, X				
Bismuth betanaphthol	123, X				
Bismuth tribromophenol	X				
Borocaine. (See Ethocaine borate.)					
Brilliant green	119				
Butyn hydrochloride	1				
Caffeine sodium benzoate	123				
Calcium iodoxybenzoate	X				
Chloramine T. (See Sodium-p-toluene sulfochloramide.)					
Cinchophen. (See 2-Phenyl quinioline-4-carboxylic acid phenyl-cinchoninic acid.)					
Creosote carbonate	79				
m-Cresyl acetate	X				
3:6-Diamino acridine sulfate (proflavine).	1, 119				
3:6-Diamino-10-methyl acridine chloride (acriflavine).	1, 119				
Dibenzyl succinate	156				
Dibromooxymercurifluorescein, sodium salt (mercurochrome).	85				
Di-n-butyl-p-aminobenzoate-trinitrophenol (butesin picrate).	1				
n-Diethylaminoisopentyl-8-amino-6-methoxy quinoline.	X				
4-Dimethylamino antipyrine (aminopyrine) (ampydin).	119, X				
Disodiumhydroxymercurisalicyloxy acetate (mercurosal).	131				
Ethocaine borate (borocaine)	X				
Ethyl-p-amino benzoate (benzocaine) (anethesine).	1, 21, 65, 127, X, X, X.	7,633	5,481	24,383	4.45
Formidine. (See Methylene disalicylic acid derivatives).					
Gamma-diethylaminopropylcinnamate hydrochloride (apothesine).	131				
Gentian violet	119				
Guaiacol liquid	79, X				
Hexylresorcinol	X				

TABLE 7.—*Dyes and other finished coal-tar products: Production and sales, 1933*—Continued

Name of product	Manufacturers' identification number (according to list on p. 45)	Production	Sales		
			Quantity	Value	Unit value
MEDICINALS—Continued		*Pounds*	*Pounds*		
Hydroxyquinoline	58				
o-Iodobenzoic acid	58				
Lithium benzoate	113				
Magnesium salicylate	53, 79, 108				
Mercurochrome. (See Dibromo-oxymercurifluorescein sodium salt.)					
Mercurosol. (See Disodium hydroxymercurisalicyloxy acetate.)					
Methyl blue	X				
Methyl violet	119				
p-Methylphenyl cinchoninic ethyl ester (neocinchophen)	1, 21, X	3,911	5,566	$82,251	$14.78
Methylene-citrylsalicylic acid.	X				
Methylene disalicylic acid derivative (formidine).	131				
Monoglycol ester of salicylic acid (spirosal).	X				
Neoarsphenamine	1, 52, 108, X, X, X, X.	4,539	4,761	717,698	150.75
Neocinchophen. (See p-Methylphenyl cinchoninic ethyl ester.)					
Parafuchsine	119				
p-Phenetylurea	58				
Phenobarbital	1, 21, 108, X, X, X, X.	54,714	60,197	420,842	6.99
Phenolphthalein	93, 137, X	452,062	451,418	197,493	.437
Phenolsulfonates (calcium, sodium, zinc, etc.).	108, X				
b-Phenyl isopropyl amine	X				
2-Phenylquinoline-4-carboxylic acid (cinchophen) (phenyl cinchoninic acid).	1, 21, 137, X				
Procaine. (See p-Aminobenzoyldiethylaminoethanol.)					
Proflavine. (See 3:6 Diamino acridine sulfate.)					
Pyramidon and trichloroethyl alcohol urethane compounds.	X				
Pyridium	145				
Resorcinol, USP	54, 134				
Resorcinol monoacetate	58, 156				
Salicylic acid, USP	53, 79, X	2,119,727	1,851,752	511,801	.276
Salicyl aldehyde	54				
Salol	53				
Salophen. (See Acetyl-p-aminophenyl salicylate.)					
Scarlet red	119				
Silver arsphenamine	X				
Sodium salicylate	53, 79, X	361,275	374,212	134,860	.360
Sodium p-toluene sulfochloramide (chloramine T).	X				
Strontium salicylate	79				
Sulfoarsphenamine	1, 108, X, X, X, X	305	328	65,532	199.79
Theobromine and sodium salicylate.	123				
Tetraiodophenolphthalein sodium salt (iodeikon) (antinosin).	58, 119				
p-Toluene sulfodichloramide (dichloramine T).	X				
Trypan blue	119				
Trypan red	119				
Yatren acid	X				
Total medicinals		8,715,027	8,070,411	6,827,682	.846

TABLE 7.—*Dyes and other finished coal-tar products: Production and sales, 1933*—Continued

Name of product	Manufacturers' identification number (according to list on p. 45)	Production	Sales		
			Quantity	Value	Unit value
FLAVORS		*Pounds*	*Pounds*		
Coumarin (synthetic)	53, 54, 62, 113, X	140,512	124,054	$300,819	$2.42
Ethyl benzoate	62, X				
Ethyl cinnamate	62, 65, 66				
Ethyl salicylate	53, 62, X	401	320	290	.906
Ethyl vanillin	65				
Methyl cinnamate	62, 66, 182				
Methyl salicylate	53, 79, X	1,115,154	1,146,064	354,191	.309
Saccharin	X				
Vanillin	65, 113, X, X, X	195,811	191,039	775,239	4.060
Total flavors		1,738,815	1,739,509	1,796,663	1.03
PERFUME MATERIALS					
Acetophenone	62, 66, X, X		3,738	3,717	.994
Amyl cinnamic aldehyde	62, 65, X, X, X, X	32,159	30,370	62,985	2.07
Amyl salicylate	62, 161, X, X				
Benzal glycerin	X				
Benzophenone	54, 62, 65, 66				
Benzyl acetate	62, 161				
Benzyl alcohol	62, 83, 161				
Benzyl benzoate	62, 65, 161				
Benzyl butyrate	X				
Benzyl cinnamate	62				
Benzyl formate	X				
Benzyl isoeugenol	186				
Benzyl propionate	62, X, X, X	130	185	386	2.09
Benzyl salicylate	186, X				
Benzyl valerate	X				
Cinnamic acid	65, 66				
Cinnamic alcohol	66				
Cinnamic aldehyde	62, 65, X, X	6,374	4,288	6,729	1.57
Cinnamyl propionate	X				
Cinnamyl valerianate	X				
p-Cresyl acetate	66				
p-Cresylphenyl acetate	62				
Diamyl phthalate	97, X				
Diethyl phthalate	X, X, X				
Dimethyl anthranilate	X				
Dimethylbenzyl carbinol	62				
Dimethyl hydroquinone	54				
Dimethyl phthalate	97, X, X, X		61,852	13,822	.223
Diphenylmethane	X				
Diphenyl oxide	53, X				
Ethyl anthranilate	X				
p-Hydroxy benzoic acid esters (aseptoform).	65				
Isobutyl anthranilate	62				
Isobutyl indol	62				
Isobutylphenyl acetate	62, X, X				
Isobutyl salicylate	X				
Linalyl anthranilate	186				
Linalyl benzoate	186				
Linalyl cinnamate	186				
Methyl acetophenone	62, 66, X				
Methyl anthranilate	53				
Methyl benzoate	65, 66				
Methyl p-cresol	X				
Methylphenyl acetate	1, 62, 66, X, X				
Methylphenyl carbinyl acetate.	66				
Musk ambrette	65				
Musk ketone	65				
Musk xylol	65				
b-Naphthyl ethyl ether	66				
b-Naphthyl methyl ether	66				
Phenylacetic acid	66				
Phenylacetic ketone	62				
Phenylethyl acetate	62, X				
Phenylethyl alcohol	53, 62, 182, X				
Phenylethyl anthranilate	186				
Phenylethyl butyrate	X				
Phenylethylphenyl acetate	X				

TABLE 7.—*Dyes and other finished coal-tar products: Production and sales, 1933*—Continued

Name of product	Manufacturers' identification number (according to list on p. 45)	Production	Sales		
			Quantity	Value	Unit value
PERFUME MATERIALS—Con.		*Pounds*	*Pounds*		
Phenylethyl valerate	X				
Phenylethyl valerianate	X				
Prophenyl gnaethol	65				
Total perfume materials.		1,420,501	1,225,929	$687,141	$0.561
COAL-TAR SYNTHETIC RESINS					
Derived from coumarone and indene.	18, 122, X				
Derived from maleic acid	78, 120				
Derived from phenol	20, 33, 39, 42, 46, 91, 109, 120, 170, 190, X, X, X, X, X, X, X, X, X, X.	25,162,699	21,850,541	5,382,721	.246
Derived from phenol and/or cresol.	46, 107, 148, 151, 170, 175, 185, X, X, X.	6,535,081	6,152,258	1,181,949	.192
Derived from phthalic anhydride.	8, 20, 54, X, X, X	9,930,705	3,654,854	673,890	.184
Total [1]		41,628,485	31,657,653	7,238,560	.229
MISCELLANEOUS COAL-TAR PRODUCTS					
Aliphatic thiocyanates (insecticides).	152				
Benzoate of ammonia	X				
Benzoate of soda	53, 54, 79, 83, X, X	1,113,449	1,165,621	306,305	.263
Benzoyl peroxide	X				
Biological stains and chemical indicators.	40, 85, 100, 119, 144				
Cresophan	65				
Diazo salts:					
Fast black salt B	119				
Fast blue salt B	69				
Fast blue salt BB	119				
Fast blue salt BN	119				
Fast blue salt 3BV	119				
Fast Bordeaux salt GP	69, 119				
Fast orange salt GC	119				
Fast red salt AL	119				
Fast red salt B	69, 119				
Fast red salt G	119				
Fast red salt 3G	119				
Fast red salt GL	69				
Fast red salt 3GL	69				
Fast red salt TR	119				
Fast scarlet salt GG	69, 119				
Fast scarlet salt R	69, 119				
Gases (poisonous, tear, etc.):					
Chloroacetophenone	174, X				
Chloropierin	14				
Diphenylamine chlorarsine.	134				
Hexalin	54				
Methyl hexalin	54				
Naphthanil red for printing	54				
Naphthanil scarlet for printing.	54				
Naphthol AS series		459,314	459,498	758,270	1.65
b-Hydroxy naphthoic anilide.	54, 69, 119	307,686	318,141	414,698	1.30
Naphthol AS	6				
Naphthol AS, BO	69				
Naphthol AS, BS	69, 119				
Naphthol AS, BR	69				
Naphthol AS, D	69, 119				
Naphthol AS, OL	69				
Naphthol AS, PH	69				
Naphthol AS, RL	69				
Naphthol AS, SW	6, 69, 119				

[1] Does not include coumarone and indene resins or resins derived from maleic acid.

TABLE 7.—*Dyes and other finished coal-tar products: Production and sales, 1933*—Continued

Name of product	Manufacturers' identification number (according to list on p. 45)	Production	Sales		
			Quantity	Value	Unit value
MISCELLANEOUS COAL-TAR PRODUCTS—Continued		*Pounds*	*Pounds*		
Quinhydrone	X				
Rapid fast colors:					
Rapid fast orange G, RH	45, 69, 119				
Rapid fast red G, GL	45, 69, 119				
Rapid fast red GZH	45, 69				
Rapid fast red RH	45, 69				
Rapid fast scarlet GG, ILH	69, 119				
Rapidogene colors:					
Rapidogene blue BN	69				
Rapidogene blue R	69				
Rapidogene G dbl	45, 69				
Rapidogene orange G	69				
Rapidogene red G	69				
Rapidogene red GS	69				
Rapidogene scarlet R	69				
Rapidogene scarlet RS	69				
Rapidogene yellow G	69				
Rapidogene yellow GS	69				
Research chemicals	58, 67, 174				
Synthetic tanning materials	18, 37, 124, 152, 155				
Tetralin	54				
Textile assistants		642,375	622,164	$232,750	$0.374
Alkanols	54				
Hydralin	54				
Hydropthol	54				
Isomerpin	54				
Isopan	54				
Isopropyl naphthalene sulfonic acid	119				
Merpentine	54				
Nekal A	69				
Nekal BX	69				
Neomerpins	54				
Potts emulsifier	54				
Tensol paste	X				
Tetrausse	54				
Total miscellaneous coal-tar products		13,340,514	12,896,810	3,437,421	.266

PRODUCTION OF DYES BY CLASSES OF APPLICATION

The dyes produced in the United States in 1933, classified according to method of application, were: (1) Acid dyes, (2) basic dyes, (3) direct dyes, (4) lake and spirit-soluble dyes, (5) mordant and chrome dyes, (6) sulfur dyes, and (7) vat dyes, subdivided into indigo and other vats. The classification of a dye in any one of these groups must necessarily be arbitrary in certain instances, because a dye may have properties which permit of its application by more than one method.

TABLE 8.—*Comparison of production and sales of dyes by classes of application, 1925–30, 1932, and 1933*

Class of application	Production					
	Quantity			Percent of total		
	1925–30 average	1932	1933	1925–30	1932	1933
	Pounds	*Pounds*	*Pounds*			
Acid	11,813,941	8,343,000	11,999,772	12.57	11.71	11.89
Basic	4,833,382	3,509,000	4,645,550	5.14	4.92	4.60
Direct	17,983,751	16,600,000	21,704,072	19.13	23.29	21.50
Lake and spirit-soluble	1,947,124	3,274,000	3,209,242	2.07	4.59	3.18
Mordant and chrome	3,611,608	2,920,000	5,318,385	3.84	4.10	5.27
Sulfur	20,004,635	15,195,000	20,188,008	21.28	21.32	20.00
Vats (including indigo)	33,221,072	20,763,000	33,093,422	35.34	29.13	32.78
(*a*) Indigo	27,128,311	13,752,000	23,412,400	28.86	19.29	23.19
(*b*) Other vats	6,092,761	7,010,000	9,681,022	6.48	9.84	9.59
Unclassified	587,657	666,000	794,327	.63	.94	.78
Total	94,003,170	71,269,000	100,952,778	100.00	100.00	100.00

Class of application	Sales					
	Quantity			Percent of total		
	1925–30 average	1932	1933	1925–30	1932	1933
	Pounds	*Pounds*	*Pounds*			
Acid	11,699,667	8,538,000	11,923,201	12.69	11.60	12.14
Basic	4,709,926	3,397,000	4,415,487	5.11	4.62	4.49
Direct	17,580,927	16,350,000	21,674,210	19.07	22.22	22.06
Lake and spirit-soluble	1,896,821	2,980,000	2,951,979	2.06	4.05	3.00
Mordant and chrome	3,558,732	3,167,000	5,468,641	3.86	4.30	5.57
Sulfur	19,810,565	14,747,000	18,989,801	21.48	20.04	19.33
Vats (including indigo)	32,429,018	23,796,000	32,042,801	35.17	32.34	32.62
(*a*) Indigo	27,111,575	16,322,000	22,500,721	29.40	22.18	22.91
(*b*) Other vats	5,317,443	7,475,000	9,542,080	5.77	10.16	9.71
Unclassified	521,625	615,000	772,278	.56	.83	.79
Total	92,207,281	73,591,000	98,238,398	100.00	100.00	100.00

Class of application	Sales					
	Value			Percent of total		
	1925–30 average	1932	1933	1925–30	1932	1933
Acid	$8,651,526	$5,573,000	$8,298,064	21.94	16.92	19.25
Basic	3,977,258	2,956,000	4,043,067	10.09	8.97	9.38
Direct	9,076,783	7,860,000	10,770,563	23.02	23.86	24.99
Lake and spirit-soluble	1,681,736	2,186,000	2,362,932	4.27	6.63	5.48
Mordant and chrome	2,212,390	1,904,000	2,384,753	5.61	5.78	5.53
Sulfur	3,928,982	2,636,000	3,516,559	9.96	8.00	8.16
Vats (including indigo)	9,114,973	8,539,000	10,980,385	23.12	25.92	25.48
(*a*) Indigo	3,741,314	2,487,000	3,506,985	9.49	7.55	8.14
(*b*) Other vats	5,373,659	6,052,000	7,473,400	13.63	18.37	17.34
Unclassified	784,604	1,290,000	746,146	1.99	3.92	1.73
Total	39,428,252	32,944,000	43,102,469	100.00	100.00	100.00

PART III

SYNTHETIC ORGANIC CHEMICALS OF NON-COAL-TAR ORIGIN

The 98 domestic firms manufacturing synthetic organic chemicals not derived from coal tar report a production of 771,574,595 pounds or 27 percent increase over 1930. Sales of 542,679,454 pounds, valued at $55,604,615, represent an increase of 24 percent in quantity and a decrease of 15 percent in value as compared with 1930. Although 305 chemicals are included in this group, 31 of them account for seven-eighths of the total production. The 8 tonnage items for which separate data are published account for nearly half of the total and the remaining 23 account for 40 percent. In value of sales, the 31 leading products account for 77 percent of total sales, and 7 of the 8 for which data are shown account for 27 percent.

The difference between production and sales percentages represented by these products is due to consumption by the producers in the manufacture of other products.

Outstanding increases in 1933 as compared with 1930 are shown for acetaldehyde, acetone, monochloroacetic acid, crotonaldehyde, citral, diethyl sulfate, ethyl alcohol, ethyl chloride, formaldehyde, formic acid, isobutyl alcohol, isopropyl acetate, isopropyl alcohol, methanol and tetraethyl lead.

Synthetic medicinals of non-coal-tar origin are listed separately for the first time. The barbituric acid derivatives, an important class of products in this group, account for more than 50 percent of the total sales value. Sales of these derivatives totaled 69,018 pounds, valued at $555,757, in 1933 as compared with 18,932 pounds, valued at $248,893, in 1930. During the same period the unit value of sales declined from $13.17 to $8.05 per pound.

Sales of synthetic resins not of coal-tar origin increased 82 percent in quantity and 119 percent in value over the preceding year. Separate data for resins from urea and thiourea are shown for the first time.

TABLE 9.—*Synthetic organic chemicals of non-coal-tar origin: Production and sales, 1933*

[The numbers in the second column refer to the numbered alphabetical list of manufacturers printed on p. 45. An X signifies that the manufacturer did not consent to the publication of his identification number with the designated product. A blank in the third column indicates that the production figure cannot be published without revealing information in regard to the output of individual firms. A blank in the fourth and fifth columns indicates that the sales of the corresponding product cannot be published without revealing information in regard to the individual firms. The figures thus concealed are, however, included in the total]

Name of chemical	Manufacturers' identification number (according to list on p. 45)	Production	Sales		
			Quantity	Value	Unit value
Grand total		*Pounds* 771,574,595	*Pounds* 542,679,454	$55,604,615	$0.102
Acetaldehyde	89, 124, 169, X, X	40,795,528			
Acetaldol (aldol)	124				
Acetamide	7, 58, X				
Acetic acid (100 percent)	89, 124, X, X				
Acetic anhydride	53, 58, 69, X, X, X	57,885,123	8,466,135	1,204,377	.142
Acetin	97				
Acetone	43, 143, X, X		42,205,443	3,047,923	.072
Acetonitrile	58				
Aldehyde ammonia	54				
Allyl alcohol	X				
Allyl caproate	X				
Amyl acetate and sec amyl acetate	54, 64, 97, 143, 158, 159, 184, X, X.	4,516,564	8,075,080	815,882	.101
Amyl alcohol (n, sec, and tertiary)	97, 143, 158, 159, 184, X, X, X, X.				
Amylamine (mono, di, and tri)	158				
Amyl butyrate	26				
Amyl caproate	X				
Amyl laurate	X				
Amyl mercaptan	158				
Amyl myristate	X				
Anethol	62, 65, 78, 105, 129, X	11,776	7,067	5,406	.765
Aubepine (anisic aldehyde)	62, 65, X				
Bromocamphor	53, 108				
Butyl acetate (n and sec)	43, 54, 64, 116, 143, 159, 184, 194, X, X, X, X.	32,608,424	27,717,540	2,483,022	.090
Butyl alcohol (n, sec, and tertiary) (butanol)	43, 143, 159, X, X, X	39,734,513	27,492,432	2,235,761	.081
Butyl aldehyde	43, X				
Butyl aldehyde amines	54				
n-Butyl bromide	58				
Butyl lactate	43				
Butyl propionate	184, 194, X				
Butyl stearate	43, 97				
n-Butyric acid	194, X, X				
Butyric anhydride	X				
Caffeine, synthetic	113, X				
Calcium citrate (fermentation)	137				
Calcium gluconate	137				
Calcium lactate	10				
Calcium malate	119				
Camphor, synthetic	54				
d-Camphoric acid	108				
n-Caproic acid	108, 134, X				
Capryl butyric acid	62				
Capryl butyric ether	62				
Carbon bisulfide on methylene dipiperidine	153				
Carbon tetrachloride	53, 125, 176, 192, X	35,707,211	31,139,594	1,352,694	.043
Chloroacetic acid (mono)	53				
Chloroacetone	58				
Chlorobutanol	X				
Chloroform (tech. and USP)	25, 53, 54, 192	2,128,767	1,476,020	236,299	.160
Citral	26, 54, 105, 182, X, X, X.	22,177	20,937	34,204	1.63
Citric acid (fermentation)	38, 137				
Citronellal	X				
Citronellol	62, 66, 182, X				
Citronellyl acetate	62				
Crotonaldehyde	124, X				
Decyl alcohol	62				
Decyl aldehyde	62				
Diacetone alcohol	43				
Diacetyl	X				
n-Dibutylamine	54				

TABLE 9.—*Synthetic organic chemicals of non-coal-tar origin: Production and sales, 1933*—Continued

Name of chemical	Manufacturers' identification number (according to list on p. 45)	Production	Sales		
			Quantity	Value	Unit value
		Pounds	*Pounds*		
Dibutyl carbinol	X				
Dibutyldithiocarbamate sodium	X				
Dibutyl ketone	X				
Dichlorodifluoromethane	94				
Dichloroethyl ether	X				
Dichloromethyl sulfide	X				
Dichlorotetrafluoroethane	94				
Diethanolamine	X				
Diethyl succinate	X				
Diethyl sulfate	184, X				
Diethylene glycol	X				
Diethylene glycol monobutyl ether	X				
Diethylene glycol monoethyl ether	X				
Diethylene glycol monoethyl ether acetate.	X				
Diethylene glycol monomethyl ether.	X				
Diethylene oxide (dioxan)	X				
Dihydrovanillone	62				
Dihydroxy citronellic ketone	62				
Diisobutylene	159				
Dimethyl ether	54				
Dimethylglyoxime	7, 58				
Dimethyl sulfate	54				
Dipropyl ketone	X, X				
Epichlorohydrin	54				
Ethoxy acetic acid	X				
Ethyl acetate (85 percent)	43, 54, 62, 64, 116, 143, 184, 191, X, X.	41,121,394	25,234,242	$1,739,918	$0.069
Ethyl acetoacetate	X, X				
Ethyl acrylate	X				
Ethyl alcohol (synthetic)	X				
Ethyl bromide	53, X				
Ethyl butyl alcohol	X				
Ethyl butyrate	26, 62, X, X, X, X, X	46,023			
Ethyl carbonate	X				
Ethyl chloride	53, 54, X				
Ethyl chlorocarbonate	X				
Ethyl ether (tech., USP and absolute).	108, X, X, X, X	7,494,705	5,286,846	1,146,432	.217
Ethyl formate	62, 66, 108, X, X, X, X	4,465	3,146	1,906	.606
a-Ethyl hexanal	X				
a-Ethyl hexanol	X				
a-Ethylhexyl acetate	X				
Ethyl iodide	58, 108, X				
Ethyl isobutyrate	X				
Ethyl isovalerate	62, X, X		494	813	1.65
Ethyl ketone	54				
Ethyl lactate	8				
Ethyl laurate	62				
Ethyl malonate (mono)	1				
Ethyl myristate	X				
Ethyl nitrite	108, X, X	19,271	19,103	11,680	.611
Ethyl oenanthate	62, X, X				
Ethyl oxalate	X, X				
Ethyl oxyhydrate	62				
Ethyl pelargonate	26, 62				
Ethyl propionate	62, 184, X				
Ethyl valerate	62, X, X, X				
Ethylamine	23				
Ethylene chlorohydrin	X				
Ethylenediamine	23, X				
Ethylene dibromide	29, 53				
Ethylene dichloride	53, X				
Ethylene glycol	X				
Ethylene glycol monobutyl ether	X				
Ethylene glycol monoethyl ether	X				
Ethylene glycol monoethyl ether acetate (cellosolve acetate).	X, X				
Ethylene glycol monomethyl ether	X				
Ethylene glycol monomethyl ether acetate (methyl cellosolve acetate).	X, X				
Ethylene oxide	X				
Ethylidin diacetate	X				
Formaldehyde (40 percent)	51, 54, 79, X, X	52,236,203	46,423,621	2,122,925	.046
Formic acid (90 percent)	54, 188, X				

TABLE 9.—*Synthetic organic chemicals of non-coal-tar origin: Production and sales, 1933*—Continued

Name of chemical	Manufacturers' identification number (according to list on p. 45)	Production	Sales		
			Quantity	Value	Unit value
		Pounds	*Pounds*		
Furfural	146				
Furfural derivatives:					
(*a*) Calcium furoate					
(*b*) Fuoric acid					
(*c*) Tetrahydrofurfuryl alcohol					
Furoyl chloride	83				
Gallic acid, tech	58, 108, X	265,402			
Geraniol	54, 62, 66, 105, 182, 186, X, X, X.	196,415	157,407	$257,686	$1.64
Geranyl acetate	62, 186				
Geranyl butyrate	62				
Geranyl formate	62				
Geranyl propionate	62				
Gluconic acid	137				
Heliotropin	65, X, X	15,894	13,182	22,980	1.74
Heptaldehyde	X				
Heptyl alcohol	X				
Hexachloroethane	53, 54				
Hexamethylenetetramine	54, 79, 153				
Hexyl acetate (sec)	X				
Hexyl alcohol (n and sec)	X, X				
Higher alcohols (containing more than 5 carbon atoms).	54				
Higher ketones	54				
Hydroxyamines (mono, di, and tri)	X				
Hydroxylamine hydrochloride	7				
Hydroxy citronnellal	54				
Iodoform	123				
Ionone	54, 113, 182, X, X	29,322	28,009	86,610	3.09
Isoamyl acetate	X, X, X	17,291	17,830	5,437	.305
Isoamyl butyrate	62, X, X, X, X	11,698	8,955	7,082	.791
Isoamyl formate	X, X, X		202	201	.995
Isoamyl isovalerate	X, X				
Isoamyl propionate	X				
Isobornyl acetate	54				
Isobutyl acetate	62, X, X		94	167	1.78
Isobutyl alcohol	54, X				
Isobutyl butyrate	62, X				
Isobutyl formate	62				
Isobutyl propionate	62				
Isoeugenol	62, X				
Isopropyl acetate	184, X, X, X				
Isopropyl alcohol (isopropanol)	X, X				
Isopropyl ether	X				
Lactic acid (100 percent)	10, X, X				
Linalyl acetate	62, 65				
Linalyl formate	62				
dl-Malic acid	119				
Menthol, synthetic	65, 123				
Methanol, synthetic	43, 54, 169, X	66,099,718	74,814,686	3,297,060	.044
Methyl acetate	124, 191, X				
Methyl acetoacetate	X				
Methyl butyl ketone	X				
Methyl chloride	54				
Methyl ethyl ketone	159, X				
Methyl iodide	58				
Methyl isobutyl carbinol	X				
Methyl isobutyl carbinol acetate	X				
Methyl isobutyl ketone	X				
Methyl propyl ketone	159				
Methyl succinate	X				
Methylamine	5				
Methylene citric acid	X				
Methylene dipiperidine	153				
Methylene iodide	X				
Methylnonyl acetaldehyde	62				
Monoethanolamine	X				
Nitroamino sulfide	119				
Nonyl alcohol	62				
Nonyl aldehyde	62				
sec-Octyl acetate	62, 186				
n-Octyl alcohol	62, X, X				
sec-Octyl alcohol (capryl alcohol)	7, 62				
Octyl aldehyde	62				
Oxalic acid	128, 188, X	8,843,057	8,977,003	897,653	.100
Paracetaldehyde	124				

TABLE 9.—*Synthetic organic chemicals of non-coal-tar origin: Production and sales, 1933*—Continued

Name of chemical	Manufacturers' identification number (according to list on p. 45)	Production	Sales		
			Quantity	Value	Unit value
		Pounds	*Pounds*		
Paraformaldehyde	54, 79				
Pelviren acid	X				
Pentachloroethane	54				
Perchloroethylene	54				
a-Pipecoline	153				
Piperidine	54, 153				
Piperitone	65				
Propionic acid	194, X				
Propionic anhydride	X				
n-Propyl acetate	62				
n-Propyl alcohol (propanol)	54				
n-Propyl bromide	58				
Propylene chlorohydrin	X				
Propylene diamine	23				
Propylene dichloride	53, X				
Propylene glycol	X				
Propylene oxide	X				
Pyrogallol (pyrogallic acid)	58, 108, X	74,044	71,251	$93,167	$1.31
Pyruvic acid	1				
Rhodinol	62, 105, 182, 186, X, X, X	3,486	3,279	42,610	12.99
Rhodinyl acetate	62				
Rubber, synthetic	54				
Sebacic acid	7				
Sodium formate	54				
Succinic acid	119, 155				
Succinic peroxide	X				
Sulphated fatty alcohols and acids (gardinols) (igepon A, T)	54, 69				
Terpineol	54, X				
Terpin hydrate	78				
Terpinyl acetate	X				
s-Tetrachloroethane	53, 54, 192				
Tetraethyl lead	54				
Tetramethylthiouramsulfide	X				
Tetramethylthiouramdisulfide	X, X				
Triacetin	97, X				
Tribromoacetyl aldehyde (bromal)	X				
Tributylamine	58				
Trichloroethylene	54, 192, X				
Trichloromonofluoromethane	94				
Triethanolamine	X				
Triethyl citrate	137				
Triethylene glycol	X				
Triethyltrimethylenetriamine	X				
Trithioformaldehyde	X				
Urea—ammonia solution	54				
Vinyl acetate	X				
Vinyl chloride	X				
Waxes, synthetic	54, 65, X				
Xanthates	76, 153, X, X, X				
Zinc diethyldithiocarbamate	X				
Zinc dimethyldithiocarbamate	X, X				
All other	54, 184, X				
Total		767,581,144	538,995,482	52,775,973	.098
SYNTHETIC MEDICINALS OF NON-COAL-TAR ORIGIN, 1933					
Acetannin (tannigen) (tannyl acetate)	X				
Adenine sulfate	58				
Alkyl-amino-alkyl-amino acridine	X				
Allyl isopropyl acetyl carbamide	81				
Amyl nitrite	131				
Barbituric acid derivatives		78,645	69,018	$555,757	$8.05
Allyl-isopropyl-barbituric acid and salts	81				
Butyl ethyl barbituric acid and salts	1				
Calcium isopropyl ethyl barbituric acid and salts	X				
Cyclohexenyl etbyl barbituric acid and salts	X				
Diallylbarbituric acid and salts	X				

TABLE 9.—*Synthetic organic chemicals of non-coal-tar origin: Production and sales, 1933*—Continued

SYNTHETIC MEDICINALS OF NON-COAL-TAR ORIGIN, 1933—Continued

Name of chemical	Manufacturers' identification number (according to list on p. 45).	Production	Sales		
			Quantity	Value	Unit value
Barbituric acid derivatives—Con.		*Pounds*	*Pounds*		
Dibromobarbituric acid and salts (dibromin).	131				
Diethylbarbituric acid and salts.	1, 81, X, X				
Diethyl ester of monoethyl-ethyl malonic acid.	X				
Isoamyl ethyl barbituric acid and salts.	104				
Sodium ethyl-l-methyl butyl barbituric acid and salts.	X				
Sodium hexylethylbarbiturate	131				
Bromodiethylacetylcarbamide	X				
Calcium dibromobehenate	X				
Calcium iodobehenate	X				
Chaulmoogric ester	X				
Chloral hydrate	X, X				
Chloroform, USP[1]	53, 54				
Chlorothymol	X				
1:3-Dimethylxanthin sodium acetate.	X				
Ether, absolute [2]	X				
Ethyl chloride	X				
Ethyl ether, USP [2]	108, X, X, X				
Ethyl glycollic acid ester of menthol	X				
Ethylhydrocupreine hydrochloride (optochin).	X				
Gallic acid, USP	58, 108				
Glycocol (aminoacetic acid) (glycine).	53, 58, 135, 174, X	3, 224	3, 386	$16, 561	$4. 89
Glycerophosphoric acid and salts	79, X				
Hexamethylenetetramineanhydromethylene citrate.	X				
Iodoform	108, X				
Iodomethane sulfate	X				
Lithium lactate	X				
Methylene citric acid	X				
Sodium-bismuth-thioglycollate (thiobismol).	131				
Sulfonethylmethane	108				
Sulfonmethane	108				
Tetraethylammonium hydroxide	58				
Tribromomethane (bromoform)	53, 108				
Trihromoethanol	X				
Trihromotertiarybutyl alcohol (brometone).	131				
Trichloroacetic acid	53				
Trichloro-butyl alcohol (metaform).	X				
Trichlorotertiarybutyl alcohol (chloretone).	131, X				
Total		421, 734	427, 561	1, 083, 540	2. 58

SYNTHETIC RESINS OF NON-COAL-TAR ORIGIN

Derived from urea or thiourea	173, 181, X, X, X, X	3, 234, 356	2, 977, 791	$1, 422, 671	$0. 478
All other		337, 361	278, 620	322, 431	1. 15
Derived from vinyl	X				
Derived from wood rosin-methyl alcohol (abalyn).	78				
Plioform and pliolite	X				
Derived from abalyn-hydrogen-nitrogen (hercolyn).	78				
Derived from petroleum	X				
Derived from terpenes	X				
Total		3, 571, 717	3, 256, 411	1, 745, 102	. 536

[1] See chloroform, tech.

[2] See ethyl ether, tech.

PART IV

RESEARCH WORK

Introduction

In 1933 there were 237 firms manufacturing synthetic organic chemicals. Of these, 193 produced coal-tar chemicals, and 98 produced non-coal-tar chemicals. There were 114 separately organized research laboratories of which 70 were engaged in research on coal-tar products and 44 on synthetic organic chemicals of non-coal-tar origin.

The synthetic organic chemical industry employed 1,060 technically trained research workers in 1933 whose salaries totaled $3,305,587 or an average of $3,118 per worker. The gross cost of research was $6,496,814 and the net cost was $6,163,688. Compared with total sales of $124,597,492 the net research expenditure amounted to slightly more than 5 percent.

Dyes and Other Coal-Tar Chemicals

In 1933 there were 193 firms manufacturing dyes and other coal-tar chemicals, of which 70 reported separately organized research laboratories. Of the 166 firms reporting in 1930 only 46 had separate research laboratories.

The gross cost of research, including that done in laboratories not separately organized for research, in 1933 was $3,357,897 and the net cost $3,135,949, as compared with a gross cost of $3,786,294 and a net cost of $3,432,116 in 1930. These costs of research, as reported, are no doubt an underestimate of the full cost of research in this field, because the figures in all cases do not include the cost of research in conjunction with manufacturing operations.

The industry gave employment to 498 technically trained research workers in 1933. Salaries paid to these workers totaled $1,766,818, or an average annual salary of $3,548 per worker.

Sales of dyes and other finished coal-tar chemicals in 1933 totaled $68,992,877. Net research expenditures of $3,135,949 are equivalent to 4.5 percent of the total sales as compared with 5.2 percent in 1930 and 3.8 percent in 1929.

Synthetic Organic Chemicals not of Coal-Tar Origin

Of the 98 firms producing synthetic non-coal-tar chemicals in 1933, 44 had separately organized research laboratories.

There were 524 technically trained research workers employed at a total salary of $1,407,179 or $2,685 annually, per worker. The gross cost of research was $2,915,261 and the net cost $2,808,083. These costs are undoubtedly an underestimate because they do not include, in all cases, the cost of research in conjunction with manufacturing operations.

Total sales of synthetic organic chemicals of non-coal-tar origin in 1933 were $55,604,615. Thus net research expenditures of $2,808,083 were equivalent to 5.5 percent of the total sales.

Coal-Tar and Non-Coal-Tar Chemicals

A number of firms producing synthetic products both of coal-tar and non-coal-tar origin were unable to separate their research costs. In this group 38 technically trained research workers were employed receiving $131,591 in salaries or an average of $3,463 per worker. The gross cost of research was $223,656 and the net cost $219,656.

APPENDIX

Directory of manufacturers of dyes and other synthetic organic chemicals, 1933

No.	Name of company	Office address (location of plant given in parentheses if not in same city as office)
1	Abbott Laboratories	14th St. and Sheridan Road, North Chicago, Ill.
2	Alcatraz Co., Inc., The	3200 Williamsburg Ave., Richmond, Va.
3	Alston Lucas Paint Co	Wade and Currier Sts., Chicago, Ill.
4	Althouse Chemical Co	540 Pear St., Reading, Pa.
5	Amalgamated Dyestuff & Chemical Works, Inc.	75 Hudson St., New York, N.Y. (Newark, N.J.).
6	American Aniline Products, Inc	50 Union Square, New York, N.Y. (Lock Haven, Pa.).
7	American Chemical Products Co	7 Litchfield St., Rochester, N.Y.
8	American Cyanamid Co	535 Fifth Ave., New York, N.Y. (Warners, N.J.).
9	American Dyewood Co	100 E. 42d St., New York, N.Y. (Belleville, N.J.).
10	American Maize-Products Co	100 E. 42d St., New York, N.Y. (Roby, Ind.).
11	American Tar & Chemical Co	424 Canada Cement Co. Building, Montreal, Canada. (Duluth, Minn.).
12	American Tar Products Co., Inc	Koppers Building, Pittsburgh, Pa.
13	Ansbacher-Siegle Corporation	82 Chestnut Ave., Rosebank, S.I., N.Y.
14	Ansul Chemical Co	Foot of Stanton St., Marinette, Wis.
15	Apex Chemical Co., Inc	225 W. 34th St., New York, N.Y. (Elizabethport, N.J.).
16	Arnold, Hoffman & Co. Inc	55 Canal St., Providence, R.I. (Dighton, Mass.).
17	Bakelite Corporation	247 Park Ave., New York, N.Y. (Bound Brook, N.J.).
18	Barrett Co., The	40 Rector St., New York, N.Y. (plants throughout United States).
19	Bates Chemical Co., Inc	Lansdowne, Pa.
20	Beck, Koller & Co., Inc	601 Woodward Heights Boulevard, Ferndale, Mich.
21	Benzol Products Co	237 South St., Newark, N.J. (Piscataway, N.J.).
22	Berkheimer Manufacturing Co., J. E	2928 South M St., Tacoma, Wash.
23	Bersworth Laboratories, F.C	609 Waverly St., Framingham, Mass.
24	Brooklyn Color Works, Inc	129-143 Cherry St., Brooklyn, N.Y.
25	Brown Co	404 Commercial St., Portland, Me. (Berlin, N.H.).
26	Bush & Co., Inc., W. J	11 E. 38th St., New York, N.Y. (Linden, N.J.).
27	Cabot, Inc., Samuel	141 Milk St., Boston, Mass. (Chelsea, Mass.).
28	Calco Chemical Co., Inc., The	Bound Brook, N.J.
29	California Chemical Corporation	220 Bush St., San Francisco, Calif. (Newark and Chula Vista, Calif.; Charleston, W.Va.).
30	California Ink Co. Inc., The	545 Sansome St., San Francisco, Calif. (Berkeley, Calif.).
31	Carbide & Carbon Chemicals Corporation.	30 E. 42d St., New York, N.Y.
32	Carus Chemical Co., Inc	1377 Eighth St., La Salle, Ill.
33	Catalazuli Manufacturing Co., Inc	119-01 Twenty-second Ave., College Point, L.I., N.Y.
34	Catalin Corporation of America	230 Park Ave., New York, N.Y. (Fords, N.J.).
35	Celluloid Corporation	290 Ferry St., Newark, N.J.
36	Chemical Manufacturing Co., Inc	Ashland, Mass.
37	Cincinnati Chemical Works, Inc	Evanston Station, Box 20, Cincinnati, Ohio (Norwood and St. Bernard, Ohio).
38	Citro Chemical Co. of America	199 Maywood Ave., Maywood, N.J.
39	Colasta Co. Inc., The	Mechanic St., Hoosick Falls, N.Y.
40	Coleman & Bell Co., The	Main and Waverly Aves., Norwood, Ohio.
41	Collway Colors, Inc	15 Market St., Paterson, N.J.
42	Colt's Patent Fire Arms Manufacturing Co.	Hartford, Conn.
43	Commercial Solvents Corporation	230 Park Ave., New York, N.Y. (Peoria, Ill.; Terre Haute, Ind.).
44	Commonwealth Color & Chemical Co	Nevins, Butler and Baltic Sts., Brooklyn, N.Y.
45	Consolidated Color & Chemical Co	230 Fifth Ave., New York, N.Y. (Rensselaer, N.Y.).
46	Continental-Diamond Fibre Co	Newark, Del.
47	Cooks Falls Dye Works, Inc	140 Maiden Lane, New York, N.Y. (Cooks Falls, N.Y.).
48	Coopers Creek Chemical Co	River Road, West Conshohocken, Pa.
49	Crown Tar Works (Public Service Co. of Colorado).	900 15th St., Denver, Colo.
50	Darvin & Nord, Inc	Foot of Blanchard St., Newark, N.J.
51	Delta Chemical & Iron Co	Wells, Mich.
52	Diarsenol Co., Inc	771-3 Ellicott Square, Buffalo, N.Y.
53	The Dow Chemical Co	Midland, Mich.
54	Du Pont de Nemours & Co., E. I	Du Pont Building, Wilmington, Del. (Belle, W.Va.; Carneys Point and New Brunswick, N.J.; Carrollville, Wis.).
55	Dye Specialties Corporation, Inc	7 Bennett St., Jersey City, N.J.
56	Dyestuffs & Chemicals, Inc	11th and Monroe Sts., St. Louis, Mo.
57	Eakins, Inc., J. S. & W. R	55 Berry St., Brooklyn, N.Y.
58	Eastman Kodak Co	343 State St., Rochester, N.Y.
59	Federal Color Laboratories, Inc	4633 Forest Ave., Norwood, Ohio.
60	Felton Chemical Co., Inc	599 Johnson Ave., Brooklyn, N.Y.
61	Fine Colors Co	21-29 McBride Ave., Paterson, N.J.
62	Florasynth Laboratories, Inc	1513 Olmstead Ave., New York, N.Y.
63	Foster-Heaton Co	833-39 Magnolia Ave., Elizabeth, N.J.

Directory of manufacturers of dyes and other synthetic organic chemicals, 1933—Con.

No.	Name of company	Office address (location of plant given in parentheses if not in same city as office)
64	Franco-American Chemical Works	Foot of Berry Ave., Carlstadt, N.J.
65	Fries Bros	92 Reade St., New York, N.Y. (Bloomfield, N.J.).
66	Fries & Co., Inc., George G	68 Beekman St., New York, N.Y. (11-25 44th Rd., Long Island City, N.Y.).
67	Friesland Chemical Co	Friesland, Wis.
68	Gebauer Chemical Co., The	826 Hanna Building, Cleveland, Ohio.
69	General Aniline Works, Inc	1150 Broadway, New York, N.Y. (Grasselli, N.J.; Albany, N.Y.).
70	General Electric Co	1 River Rd., Schenectady, N.Y.
71	General Plastics, Inc	Walek Rd., North Tonawanda, N.Y.
72	Glyco Products Co., Inc	33 Thirty-fifth St., Brooklyn, N.Y.
73	Goodrich Co., The B. F	500 S. Main St., Akron, Ohio.
74	Goodyear Tire & Rubber Co	1144 E. Market St., Akron, Ohio.
75	Grasselli Chemical Co., The	1400 Guardian Building, Cleveland, Ohio.
76	Great Western Electro-Chemical Co	9 Main St., San Francisco, Calif. (Pittsburg, Calif.)
77	Hall Co., The C. P	2510 First Central Trust Building, Akron, Ohio.
78	Hercules Powder Co	Delaware Trust Building, Wilmington, Del.
79	Heyden Chemical Corporation	59 Union Square, New York, N.Y. (Garfield and Perth Amboy, N.J.).
80	Hilton Davis Co., The	P.O. Box 8, Pleasant Ridge Station, Cincinnati, Ohio.
81	Hoffmann-La Roche, Inc	Nutley, N.J.
82	Holland Aniline Dye Co	R.F.D. No. 4, Holland, Mich.
83	Hooker Electrochemical Co	60 N St., New York, N.Y. (Niagara Falls, N.Y.).
84	Huggins & Son, James	239 Medford St., Malden, Mass.
85	Hynson, Westcott & Dunning, Inc	1030 N. Charles St., Baltimore, Md.
86	Imperial Color Works, Inc	Box 231, Glens Falls, N.Y.
87	Industrial Dyestuff Co	Massasoit Ave., East Providence, R.I.
88	Inland Tar Co	38 S. Dearborn St., Chicago, Ill. (Indiana Harbor, Ind.).
89	Jasco, Inc	Baton Rouge, La. (North Baton Rouge, La.).
90	Jennison-Wright Co., The	2463 Broadway, Toledo, Ohio.
91	Joanite Corporation	68 Nott Ave., Long Island City, N.Y.
92	Johnson & Co., Charles Eneu	106h St. at Lombard St , Philadelphia, Pa.
93	Kavalco Products, Inc	Nitro, W.Va.
94	Kenetic Chemicals, Inc	Du Pont Building, Wilmington, Del. (Deep Water Point, N.J.).
95	Kent Color Corporation	2 S. 9th St., Brooklyn, N.Y.
96	Kentucky Color & Chemical Co	34th St., south of Bank St., Lonisville, Ky.
97	Kessler Chemical Corporation	Chrysler Building, New York, N.Y. (Philadelphia, Pa.).
98	Kohnstamm & Co., H	87 Park Place, New York, N.Y. (Brooklyn, N.Y.).
99	Krebs Pigment & Color Corporation	256 Vanderpool St., Newark, N.J.
100	LaMotte Chemical Products	McCormick Building, Baltimore, Md.
101	Lavanburg Co., Fred L	90 John St., New York, N.Y. (Brooklyn, N.Y.).
102	Lehigh Briquetting Co	Universal Building, Fargo, N.Dak. (Lehigh (post office Dickinson), N.Dak.).
103	Lewis & Bros. Co., John T	910 Widener Building, Philadelphia, Pa.
104	Lilly & Co., Eli	Indianapolis, Ind.
105	Lueders & Co., George	127 Washington St., New York, N.Y. (1105 Metropolitan Ave., Brooklyn, N.Y.).
106	Macher & Son, William	1533 W. Clearfield St., Philadelphia, Pa.
107	Makalot Corporation	262 Washington St., Boston, Mass. (Waltham, Mass.).
108	Mallinckrodt Chemical Works	3600 N. 2d St., St. Louis, Mo.
109	Marblette Corporation, The	37-21 Thirtieth St., Long Island City, N.Y.
110	Marietta Dyestuffs Co., The	410 Peoples Bank Building, Marietta, Ohio.
111	Marx Color & Chemical Co., Max	192 Coit St., Irvington, N.J.
112	May, Inc., Otto B	198 Niagara St., Newark, N.J.
113	Maywood Chemical Works	100 W. Hunter Ave., Maywood, N.J.
114	Mepham Corporation, Geo. S	2001 Lynch Ave., East St. Louis, Ill.
115	Merck & Co., Inc	Rahway, N.J.
116	Merrimac Chemical Co	Everett, Mass.
117	Moser Co., The Charles	215-227 E. 9th St., Cincinnati, Ohio.
118	Mutual Chemical Co	270 Madison Ave., New York, N.Y. (Jersey City, N.J.).
119	National Aniline & Chemical Co., Inc	10 Rector St., New York, N.Y. (Buffalo, N.Y.).
120	National City Turpentine Co	3135 E. 26th St., Los Angeles, Calif.
121	Nangatuck Chemical Co., The	Naugatuck, Conn.
122	Neville Co., The	Neville Post Office, Pittsburgh, Pa.
123	New York Quinine & Chemical Works, Inc.	99 N. 11th St., Brooklyn, N.Y.
124	Niacet Chemicals Corporation	Pine Ave. and 47th St., Niagara Falls, N.Y.
125	Niagara Smelting Corporation	2601 Graybar Building, New York, N.Y. (Niagara Falls, N.Y.).
126	Northwestern Chemical Co	137 6th St., Wauwatosa, Wis.
127	Novocol Chemical Mfg. Co., Inc	2923 Atlantic Ave., Brooklyn, N.Y.
128	Oldbury Electro Chemical Co	Niagara Falls, N.Y.
129	Orbis Products Trading Co	215 Pearl St., New York, N.Y.
130	Paramet Chemical Corporation	44th Ave. and 10th St., Long Island City, N.Y.
131	Parke, Davis & Co	Foot of McDougall Ave., Detroit, Mich.
132	Patent Chemicals, Inc	57 Wilkinson Ave., Jersey City, N.J.
133	Peerless Color Co	521-535 North Ave., Plainfield, N.J.
134	Pennsylvania Coal Products Co	Box 157, Petrolia, Pa.
135	Pfanstiehl Chemical Co	Manufacturers Terminal, Market St., Wankegan, Ill.
136	Pfister Chemical Co	Morsemore Railroad Station, Ridgefield, N.J.
137	Pfizer & Co., Inc., Charles	81 Maiden Lane, New York, N.Y. (Brooklyn, N.Y.).
138	Pharma Chemical Corporation	949 Broadway, New York, N.Y. (Bayonne, N.J.).

Directory of manufacturers of dyes and other synthetic organic chemicals, 1933—Con.

No.	Name of company	Office address (location of plant given in parentheses if not in same city as office)
139	Philadelphia Gas Works Co., The	1401 Arch St., Philadelphia, Pa.
140	Pittsburgh Plate Glass Co	235 E. Pittsburgh Ave., Milwaukee, Wis.
141	Portland Gas & Coke Co	Public Service Building, Portland, Oreg.
142	Poughkeepsie Dyestuff Corporation	77 N. Water St., Poughkeepsie, N.Y.
143	Publicker, Inc	260 S. Broad St., Philadelphia, Pa.
144	Pylam Products Co., Inc	799 Greenwich St., New York, N.Y.
145	Pyridium Corporation, The	21 Gray Oaks Ave., Nepera Park, N.Y.
146	Quaker Oats Co., The	141 W. Jackson Blvd., Chicago, Ill. (Cedar Rapids, Iowa).
147	Rauh, Inc., Robert	480 Frelinghuysen Ave., Newark, N.J.
148	Reilly Tar & Chemical Corporation	1615 Merchants Bank Building, Indianapolis, Ind. (Chicago and Granite City, Ill., Chattanooga, Tenn., Fairmont, W.Va., Dover, Ohio, and Newark, N.J.).
149	Republic Creosoting Co	1615 Merchants Bank Building, Indianapolis, Ind. (Minneapolis, Minn., Mobile, Ala., Norfolk, Va., Provo, Utah, and Kennydale, Wash.).
150	Resinous Products & Chemical Co., Inc.	222 W. Washington Square, Philadelphia, Pa. (Bridesburg, Philadelphia, Pa.).
151	Resinox Corporation	230 Park Ave., New York, N.Y. (P.O. Box 436, Edgewater, N.J.).
152	Rohm & Haas Co., Inc	222 W. Washington Square, Philadelphia, Pa. (Bristol, Pa.).
153	Rubber Service Laboratories Co	Nitro, W.Va.
154	Ruberoid Co., The	95 Madison Ave., New York, N.Y. (Erie, Pa.).
155	Selden Co., The	30 Rockefeller Plaza, New York, N.Y.
156	Seydel Chemical Co	86 Forest St., Jersey City, N.J.
157	Sharp & Dohme, Inc	Broad and Wallace Sts., Philadelphia, Pa.
158	Sharples Solvents Corporation, The	23d and Westmoreland Sts., Philadelphia, Pa. (Wyandotte, Mich.).
159	Shell Chemical Co	100 Bush St., San Francisco, Calif. (Shell Point, Martinez and Emeryville, Calif.).
160	Sherwin-Williams Co., The	101 Prospect Ave. N.W., Cleveland, Ohio.
161	Simons, Inc., Harold L	11–25 44th Road, Long Island City, N.Y.
162	Sinclair & Valentine Co	11–21 St. Clair Place, New York, N.Y.
163	Smith, Kline & French Laboratories	105 N. 5th St., Philadelphia, Pa. (Delaware Ave. and Poplar St., Philadelphia, Pa.).
164	Solvay Process Co., The	Syracuse, N.Y. (Geddes, N.Y.).
165	Squibb & Sons, Inc., E. R	745 5th Ave., New York, N.Y. (Brooklyn, N.Y.; New Brunswick, N.J.).
166	Standard Alcohol Co	2 Park Ave., New York, N.Y. (Linden, N.J.).
167	Standard Ultramarine Co., Inc., The	Huntington, W.Va.
168	Stange Co., William J	2549–51 W. Madison St., Chicago, Ill.
169	Star Oil Processing Co	Bartlesville, Okla. (Tallant, Okla.).
170	Stokes & Smith Co. (Durite Plastics Division).	Summerdale Ave. near Roosevelt Blvd., Philadelphia, Pa.
171	Sun Chemical & Color Co	100 6th Ave., New York, N.Y. (Harrison, N.J.).
172	Synthetic Chemicals, Inc	57 Wilkinson Ave., Jersey City, N.J.
173	Synthetic Plastics Co., Inc	535 5th Ave., New York, N.Y. (Bound Brook, N.J.).
174	Synthetical Laboratories	5558 Ardmore Ave., Chicago, Ill.
175	Taylor & Co., Inc	Norristown, Pa. (Betzwood, Pa.).
176	Taylor Chemical Corporation	Phillipsburg, N.J. (Wyandotte, Mich.; Cascade Mills, N.Y.).
177	Todd Co., A. M	1717 Douglas Ave., Kalamazoo, Mich.
178	Trubek Laboratories, Inc., The	State Highway No. 2, East Rutherford, N.J.
179	Uhlich & Co., Inc., Paul	157 Chambers St., New York, N.Y. (35 Herkimer Pl., Brooklyn, N.Y.).
180	United Color & Pigment Co	McClellan St., Newark, N.J.
181	Unyte Corporation	521 Fifth Ave., New York, N.Y. (Grasselli, N.J.).
182	Van Ameringen Haebler, Inc	315 4th Ave., New York, N.Y. (Elizabeth, N.J.).
183	Van Dyk & Co., Inc	57 Wilkinson Ave., Jersey City, N.J.
184	Van Schaack Bros. Chemical Works, Inc.	3358 Avondale Ave., Chicago, Ill.
185	Varcum Chemical Corporation	Box 62, LaSalle Station, Niagara Falls, N.Y.
186	Verley, Inc., Albert	11 E. Austin Ave., Chicago, Ill.
187	Verona Chemical Co	26 Verona Ave., Newark, N.J.
188	Victor Chemical Works	141 W. Jackson Blvd., Chicago, Ill. (Chicago Heights, Ill.).
189	Warner-Jenkinson Manufacturing Co	2526 Baldwin St., St. Louis, Mo.
190	Watertown Manufacturing Co., The	Echo Lake Road, Watertown, Conn.
191	Western Industries Co	110 Sutter St., San Francisco, Calif. (Stege, Calif.).
192	Westvaco Chlorine Products, Inc	405 Lexington Ave., New York, N.Y. (South Charleston, W.Va.).
193	White Tar Co. of New Jersey, Inc., The.	1201 Koppers Building, Pittsburgh, Pa. (Kearny, N.J., Cincinnati, Ohio.).
194	White Chemical Co., The Wilbur	McMaster St., Owego, N.Y.
195	Wilhelm Co., The A	3d and Bern Sts., Reading, Pa.
196	Wolff Alport Chemical Corporation	1127 Irving Ave., Brooklyn, N.Y.
197	Young Aniline Works, Inc	2701 Boston St., Baltimore, Md.
198	Zinsser & Co., Inc	Hastings on Hudson, N.Y.