

FILM STUDY GROUP

REPORT

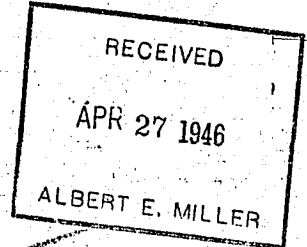
T.O.M. REEL NO. 22

Prepared by

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Review of Microfilm Reel #22  
U. S. Government Technical Oil Mission

I. G. Farbenindustrie - Leuna

Compiled by J. J. Somers  
(Socony-Vacuum Oil Co.)  
2-18-46

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## Introduction

Because of the widely varied nature of the subject matter in Microfilm Reel #22, this review is presented entirely in the form of abstracts of the individual items, listed in the same order as their occurrence in the reel. Some simplification could have been effected, by grouping together related items, but since the bulk of the material would still have to be classified as "miscellaneous," no breakdown or summary has been attempted. It will therefore be necessary for the reader to scan a rather extensive Table of Contents in searching for material of interest.

The descriptive titles assigned to the individual items are in many cases different from the German titles; these have been changed where a better hint of the contents could be briefly made.

The abstracts have been made of fairly uniform length, since in few cases was the abstracter qualified to pass judgment on the novelty or relative importance of the information disclosed. An attempt has been made, however, to indicate the scope and significance of the work described in each item, and wherever possible to provide a brief summary of the contents. The frequent lack of German summaries made this difficult at times. The items abstracted include a variety of forms: papers on organic chemistry, development reports, patent applications, correspondence, etc. The organic chemistry papers were usually difficult to abstract, and in addition often involved nomenclature with which the reviewer is unfamiliar; some errors of nomenclature undoubtedly occur in some of these abstracts.

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(BAG 3045)  
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Descriptive Title

65	812	Production of Hexachlorobenzene and other perchloro-aromatics by vapor-phase, non-catalytic chlorination.
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79	915	Extraction of phenolates such as vanillinates from alkali-treated sulfite liquor, using water-miscible alcohols as solvents.
80	920	Specifications for special steels N8V, N9, and N10W, resistant to high-pressure hydrogen.
81	931	Correspondence concerning special steel N10 (for hydrogenation).
82	1028	Ketones from coal-hydrogenation products.
82*	1057	Booklet advertising the Friedrich Uhde Engineering Company.

(BAG 3424)

1	5	Trial method of cost accounting for the Blechhammer Hydrogenation Plant (1944).
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3	146	Yearly operating summary (by months) for coal-hydrogenation at Leuna (1940).

\*-Mistake in stamping; should have been item 83, instead of 82.

ABSTRACTS OF INDIVIDUAL ITEMS

284540 Merseburg 21p 8-40

The Production of Aliphatic Sulfonyl Chlorides by  
the Joint Action of Chlorine and Sulfur Dioxide on  
Gaseous Paraffins

The production of sulfonyl chlorides of propane has been developed to a point where a commercial plant is projected. The approximate conditions for obtaining good yields of propane monosulfochloride are as follows: 15°C., illumination by mercury-vapor lamp, complete absence of iron salts (glass reactor), carbon tetrachloride solvent, and a propane:chlorine:sulfur dioxide ratio of 2.5:1.0:1.1 (mols). Good results were obtained also with ethane and butane, but not with methane. The chemistry of the reaction and the patent situation are discussed. Diagrammatic sketches of the laboratory and semi-technical units, and a flow-sheet for the proposed plant are included.

294561 Leuna 13p 10/31/39

Application of Mepasin Sulfonate and  
Mepasin Sulfochloride to Soap Manufacturing

Mepasin sulfonate (textile-aid Lu 387) can be applied to curd soaps in amounts up to 30%, without detracting from their washing-power and storage-stability.

Mepasinsulfochloride may be processed with fats or fatty acids, for the manufacture of soaps.

Extensive data from laboratory and from soap-factory indicate importance attached to this work.

30-574 Merseburg 16p 3-39

Drying of Mepasin Sulfonate Solution

A one- or two-step process can be used to dry the 20% mepasin sulfonate solution. Two tables of experimental data and two drawings of roll-dryers are included in this report.

31-591 Ludwigshafen 2p 3/6/45

Hydrogen Peroxide from Organic Peroxides  
(Patent Application)

In the acid hydrolysis of acetone peroxides, the yields of acetone are claimed to be greatly improved by the use of water-soluble organic solvents (e.g., methanol, ethanol, and acetone) as solution agents. One claim.

32-593

Ludwigshafen

2p

12/11/44

Production of Keto-Acids (Pat. Application)

Ortho-substituted hydroaromatic ketones are oxidized with oxygen or gases containing oxygen, in the presence of oxygen-transfer catalysts (e.g., manganese nitrate) or of organic acids. In a second claim, it is specified that ortho-substituted hydroaromatic alcohols may be used as the starting material, ketones or aldehydes being added to initiate the oxidation. In the examples cited, the temperature lies between 65° and 85°C.

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33-595

Ludwigshafen

2p

9/29/43

Production of Carboxy Acids (Pat. Application)

A process is claimed for the synthesis of carboxy acids from lower molecular-weight alcohols. The alcohol is first dimerized by means of alcoholate in a water-binding medium; the reaction mixture is then heated above 250°C., in the presence of alkali or alkaline earth hydroxides.

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34-597

Ludwigshafen

4p

9/2/43

Process for Non-Aromatic Sulfamides  
(Patent Application)

These are produced by reacting the corresponding sulfochlorides with ammonia or with primary or secondary amines, followed by extraction of the reaction mixture with a low molecular weight alcohol in order to remove hydrocarbons. In a second claim, the extraction solvent is aqueous alcohol.

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35-601

Ludwigshafen

5p

8/9/43

Separating Carboxy Acids (Patent Application)

The mixture of carboxy acids is continuously esterified in accordance with a previously disclosed process, the esters are separated by fractional distillation, and then hydrolyzed



36-606                    Ludwigshafen                    3p                    8/3/43

Production of Ketones (Pat. Application)

Non-aromatic secondary nitro compounds are treated with ozone-containing gases in an alkaline medium. An example describes the oxidation of nitrododecane to dodecanone; a yield of 97% was obtained at 0°-5°C.

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37-610                    Leuna                    8p                    2/2/44

Theoretical Aspects of the Catalytic Oxidation of Methane to Formaldehyde with Ozone plus Oxygen

The author subjects a newly proposed process to thermodynamic analysis, and concludes that the use of ozone is very probably wasteful, from an energy-standpoint.

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38-618                    Merseburg                    20p                    5/19/42

This is a laboratory report describing extensive efforts to develop a cheap method for preparing 3-chloro-2-chloromethyl-propene-1. In particular, the synthesis of 1,2,3-trichloro-2-methylpropane and the splitting of this by various techniques, are reported in detail. Thermal decomposition was the only method which led to 3-chloro-2-chloromethyl-propene-1, a 20% yield of this being obtained at 450°C. and at low charge rates. Comments are made on related work by Rogers & Nelson, J. Am. Chem. Soc. 58, 1028 (1936).

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39-638                    Merseburg                    7p                    11/23/43

Adipic Acid - "Synol" Alcohol Esters as Plasticizers

The esters of adipic acid with "synol" alcohols of ~~various fractions (140°-180°, 160°-200°, and 180°-250°)~~ are useful plasticizers. Numerous test data are presented, and the esters are compared with the corresponding esters with Leuna alcohols.

40-645

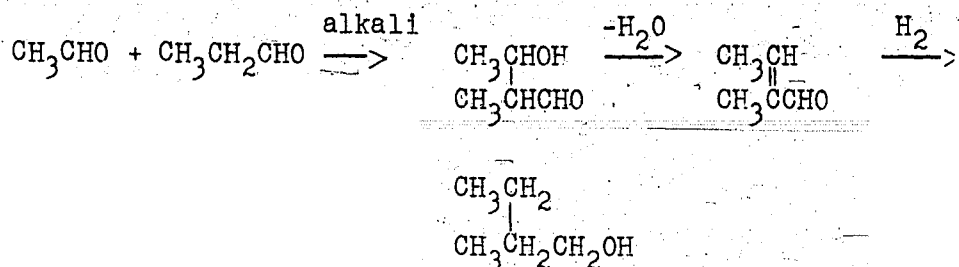
Merseburg

7p

2/16/39

Isoamyl Alcohol Synthesis from Acetaldehyde  
and Propionaldehyde

Since the amyl alcohol produced in Leuna (as a by-product from isobutanol) is unsatisfactory for some uses, there is interest in a synthetic product which will meet all specifications. After a series of preliminary experiments, the synthesis outlined below was selected as being promising:



No data are included, but the necessary process technique is discussed at length.

41-652

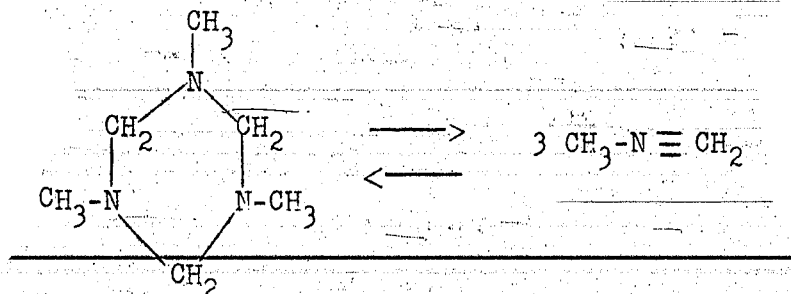
Merseburg

10p

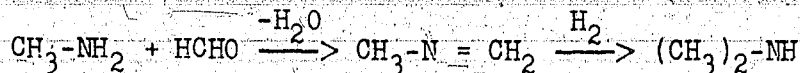
12/21/40

Thermal Decomposition of Trimethyl-trimethylene-triamine

1,3,5-trimethyl-trimethylene-triamine decomposes reversibly into methylmethylenimine:



The decomposition, which is completely reversible, was studied in the temperature range, 140-300°C. The reaction is of interest in connection with the proposed synthesis of dimethylamine from monomethylamine:



42-662

Leuna

12p

High-Pressure Conversion of n-Propyl Alcohol  
to n-Propylamine

Good yields of monopropylamine are obtained by passing n-propanol over dehydrating catalysts at 200 atm. and 410°C., along with a 10-fold excess of ammonia. A catalyst activated with zinc oxide and chromia is especially effective.

The work reported here was patterned after previous experiences with methanol. The effects of variables and catalysts, the processing of the reactor effluent, and the preparation of di- and tripropylamine, are among the subjects discussed. The reaction was studied in a small continuous unit (catalyst volume 80cc.).

Di- and tripropylamine cannot be obtained in the pure state by distillation, because of the formation of azeotropes. The dipropylamine is best prepared by disproportionation of monopropylamine.

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43-674

1p

11/18/42

Flow Diagram of a Pilot Plant for Adiponitrile

There is no descriptive text accompanying this diagram.

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44-675

Leuna

16p

9/8/42

Ammonolysis of 1,5-dichloro-2,2,4-trimethylpentane

The approximately optimum conditions for the ammonolysis of 1,5-dichloro-2,2,4-trimethylpentane are: 160°, 200 atm., 50 hours reaction time. A great excess of concentrated aqueous ammonia is employed. The 1,5-diamine, obtained in a maximum yield of 80%, is of potential importance in the field of polyamide synthetics. The starting material is obtained relatively easily by dimerising methallyl chloride.

Extensive data mostly from autoclave experiments, are included. The ammonolysis of a number of other chloro compounds was also studied. The chemistry and kinetics of the reaction are discussed.

45-691

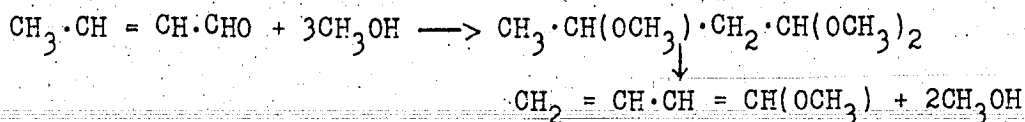
Leuna

20p

5/14/42

Production of Methoxybutadiene from Crotonaldehyde

The acetalisation of crotonaldehyde with methanol yields 1,1,3-trimethoxybutane. This decomposes over dehydration catalysts to give good yields of methoxybutadiene, instead of the expected crotonaldehyde acetal. Extensive laboratory data on both steps of the process are included, and development of the work is promised.



46-711

Merseburg

3p

4-41

Improvements Zinc Alloy Catalysts for the Dehydrogenation of Cyclohexanol

Temperature-stable zinc alloy catalysts are prepared by a new technique involving surface alloying "in the solid state" at 200-400°C. The content of the foreign metal (copper, nickel, iron, etc.) must be at least 15%. The catalysts are active for the dehydrogenation of cyclohexanol and methylcyclohexanol at about 400°C., and retain their activity for months. They are also active for the dehydrogenation of secondary aliphatic alcohols (e.g., isopropanol), and at somewhat higher temperatures, for primary alcohols. Olefin formation is scarcely detectable.

47-714

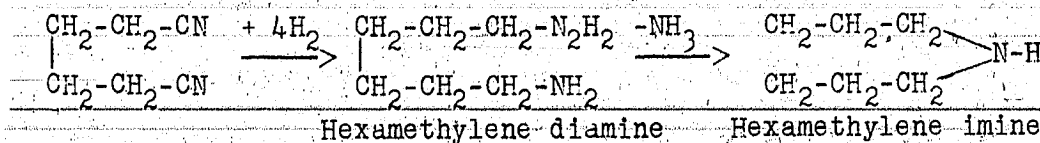
Merseburg

4p

4-41

Conversion of Adiponitrile to Hexamethylene-imine

The hydrogenation of adipo-dinitrile over metallic sulfide catalysts (300-350°C., 100-200 atm., 0.6 VLV-hr), and in the presence of ammonia, provides a smooth and easy way of preparing hexamethylene-imine in one step:



The diamine, which is the normal product of hydrogenation over Nickel and cobalt catalysts (150°-300°C.) is obtained only in traces over the metallic sulfide catalysts. Data are presented for Ni-W, W, Ni-Mo, & Ni-V sulfide catalysts.

48-718

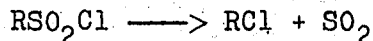
Merseburg

4p

4-41

Splitting SO<sub>2</sub> from Aliphatic Sulfonyl Chlorides to  
Make Alkyl Chlorides

Alkyl chlorides difficult to prepare by direct chlorination may be prepared by decomposing aliphatic sulfonyl chlorides under the proper conditions:



This report describes the technique required to obtain good yields of alkyl chlorides, and to avoid the competing decomposition into olefins (+ SO<sub>2</sub> + HCl). The reaction is performed at 140-150°C., in a xylene solvent. The presence of inorganic impurities is harmful, catalyzing olefin formation.

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49-722

Mainkur

3p

5/9/41

Aminophenylureas and Aminophenylthioureas

This paper discusses the preparation and chemistry of derivatives interesting in three fields: (1) formaldehyde condensation products, (2) dyes, (3) pharmaceuticals. Aminophenylureas are obtained smoothly by reacting o-m-, and p-phenyldiamines with potassium cyanate, in presence of HCl.

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50-725

Mainkur

3p

5/2/41

A New Method of Producing Aryl Mercaptans  
and Arylthioglycollic Acids

A technically promising method is reported, for preparing aryl mercaptans. In the presence of traces of iron or iron salts, sulfur chloride reacts with 1,2,3-trichlorobenzene to give, in part, 2,3,4-2',3',4'-hexachloro-diphenyl-disulfide, which is reducible to the corresponding mercaptan. Since this allows a new way of synthesizing 1,2,3-trichlorobenzene-4-thioglycollic acid, the process was studied in detail, and applied to a number of aromatics and chloro-aromatics.

51-728

Mainkur

4p

5/2/41

### Preparation of Guanamines

Triazines such as benzoguanamine (diaminophenyltriazine) are of interest in the field of formaldehyde condensation products, so their synthesis has been studied. Typical syntheses: benzonitrile + dicyandiamide  $\longrightarrow$  benzoguanamine; acetonitrile dicyandiamide  $\longrightarrow$  acetoguanamide. The reaction occurs at 170-200°C., in the presence of basic substances as catalysts, of which piperidine is the best. Yields up to 80-85% are possible

52-732

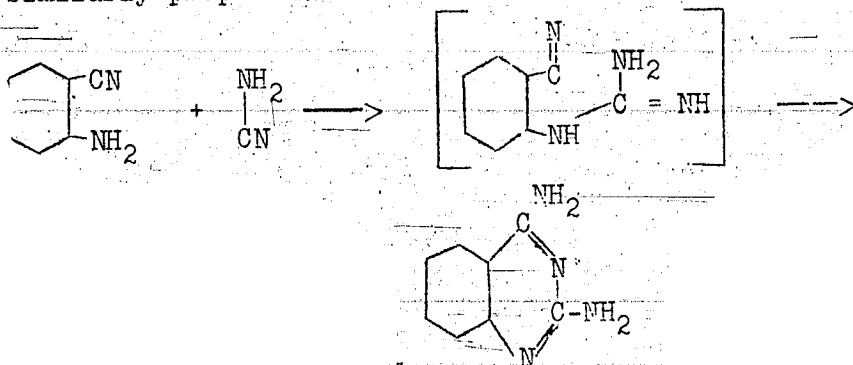
Mainkur

3p

5/2/41

### A New Method of Preparing 2,4-diaminoquinazoline

This material is a very suitable component for formaldehyde condensation products. This paper describes an improvement over the literature preparation. The starting material is anthranilonitrile (easily technically prepared); the HCl salt of this nitrile is reacted with aqueous, concentrated cyanamide at 95°C., to give the HCl salt of 2,4-diaminoquinazoline in one step, an expected intermediate not being obtained. Homologues can be similarly prepared.



53-735

Mainkur

3p

5/2/41

### Some New Thiazol Derivatives

The author discusses the synthesis and organic chemistry of some new derivatives interesting in the fields of plastics, pharmaceuticals, and insecticides.

54-738

Mainkur

3p

5/2/41

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Oxysulfones

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By a new synthesis recently disclosed a number of oxysulfones and oxydisulfones have been prepared, including in part:

p-oxy-phenyl-p-toluysulfone  
p-oxy-m-chlorophenylsulfone  
1-oxy-3-toluy1-4-methylsulfone  
1-oxy-2-toluy1-4,6-di(methylsulfone)

The chemistry of these compounds is discussed.

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55-741

Mainkur

4p

5/2/41

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Work in the Furfural Field

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Hydrogenation of the condensation product of two mols of furfural with one mol of acetone may yield any of a number of products, depending on the catalyst and conditions used. Several transformations of these products are also described, including the synthesis of ditetrahydrofurylpentane and of various C<sub>13</sub> chloroparaffins

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56-746

Mainkur

3p

5/2/41

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Substituted Aminodiphenyl Ethers (III)

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The synthesis of a number of new aminodiphenyl ethers is described, particularly those in which at least 3 nuclear hydrogen atoms are replaced with chlorine, alkyl, or haloalkyl radicals. Higher substituted o-aminodiphenyl ethers are very suitable for the preparation of wool-dyes.

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57-749

Mainkur

4p

5/2/41

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Derivatives of Di- and Tetrahydropyran (II)

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A previous report had described the easy synthesis of 2,3-dichloro-tetrahydropyran. This report discusses the synthesis and chemical properties of a number of halogenated and hydroxylated derivatives of di- and tetrahydropyran.

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58-753

Offenbach

7p

4/30/41

Ring-Splitting of Tetrahydrofuran and Derivatives

Esters of chlorobutanol, interesting as plasticizers, are obtained by heating tetrahydrofuran with free carboxy acids, in the presence of HCl. To increase yields and reaction rates, it is in many cases advantageous to use catalysts (ZnCl<sub>2</sub>, PCl<sub>5</sub>, bentonite). This splitting method has been applied to 3-chlorotetrahydrofuran, 3-hydroxytetrahydrofuran, and methyl and ethyl ethers of tetrahydrofuryl alcohol; good results were obtained.

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59-760

Uerdingen

4p

4/25/41

Improvement of Chloromethylation

Saturation of formalin with HCl at atmospheric pressure and 60°C. gives a reagent which can be used directly and with good yields for the chloromethylation of aromatic and aliphatic-aromatic hydrocarbons.

The alkyl-substituted benzyl- and menaptylchlorides have recently acquired great significance as intermediates for resins, preservatives, textile-aids, and alkylated benzylcelluloses,

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60-764

Uerdingen

9p

4/26/41

Diaryl Carbonates

Diaryl carbonates have gained importance as plasticizers for nitrocellulose, cellite, etc. The carbonates are prepared by treating phenols with phosgene in aqueous caustic, some solvent naphtha being added to dissolve the phosgene. In the present paper, details are given for the synthesis of 14 different carbonates, including:

di-(xylenyl)-carbonate

di-isooctylphenyl-carbonate

di-ethylbenzylphenyl-carbonate

di-(2,5-dichlorobenzylphenyl)-carbonate



61-773

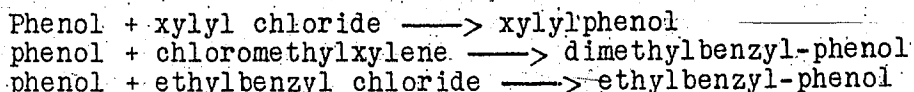
Uerdingen

19p.

4/28/41.

Condensation of Benzyl Chloride (and Alkyl-  
and Chloro-Derivatives Thereof) with Phenol

A whole series of new compounds, of interest as preservatives or as intermediates for lacquers and textile-aids, have been synthesized. Details are given for the preparation (zinc chloride condensation) of a number of higher phenols. E.g.,



62-792

Uerdingen

6p.

4/24/41

Oximes as Preservatives

A number of aldoximes and ketoximes have been prepared and tested for their effectiveness against molds and bacteria. Test data show that of these (the oximes of p-methylbenzaldehyde, cinnamic aldehyde, chlorobenzaldehyde, and 5-chlorosalicylic acid) compare favorably in effect with several familiar preservatives. They are colorless, odorless substances, and unlike the phenolic preservatives, they do not cause a gradual discoloration of the food-stuff.

63-798

Uerdingen

9p

4-41

Nitro- and Aminophenyl Ureas

Various nitrophenyl ureas were prepared by reacting primary and secondary amines with the three isomeric nitrophenylisocyanates. The latter were conveniently prepared by a simplification of a literature procedure (phosgene + nitroanilines)

The nitrophenyl ureas can be reduced with nascent hydrogen, to give aminophenyl ureas which are very interesting as intermediates for dyes and resins.

64-807

Uerdingen

5p

4/24/41

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Production of Pentachlorophenol

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Pentachlorophenol, which is produced on a technical scale by Monsanto Chem. Co., holds considerable promise as a wood-preservative. This report compares three possible processes for producing it in Germany, viz., (1) the chlorination of phenol, (2) the chlorination of aniline, and (3) the caustic hydrolysis of hexachlorobenzene (a process patented by Dow Chemical Company).

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A process has been developed for the production of pentachlorophenol by the chlorination of aniline hydrochloride in glacial acetic acid; if sulfuric acid can be substituted for the glacial acetic acid, the process will be more promising. Otherwise, the reaction of  $\text{NaOH}$  with hexachlorobenzene in methanol solution remains the cheapest method. Data show a modification of the Dow process. A semi-technical study of the reaction is planned.

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65-812

Uerdingen

6p

4/24/41

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Production of Hexachlorobenzene and Other  
Perchloroaromatics

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The vapor-phase, non-catalytic chlorination of benzene has been decided on as the cheapest way of producing hexachlorobenzene. Data show that this is produced in high yields by passing chlorine and benzene (diluted with nitrogen) through a quartz-tube held at 580-600°C. A pilot-plant is soon to be put into operation.

The results of chlorinating various other aromatics and alkylaromatics are also given.

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66-818

Uerdingen

10p

4-41

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Chlorination Productions of o-, m-, and p-Toluic Acids

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By chlorination of the isomeric toluic acids there were prepared a series of new benzyl- and benzal chloride derivatives having a carboxyl group on the phenyl nucleus. The effect of various reagents on these compounds is described. The new compounds include, in part: methylolbenzoic acid, carboxybenzyl-aniline, carboxybenzylphenol.

67-828

Uerdingen

7p

4/29/41

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Catalytic, Liquid-Phase Oxidation With Air

V. Oxd'n. of Polyethylbenzene, Chloroethylbenzenes,  
and Isopropyl Toluene

At temperatures slightly above 100°C. and with small amounts of cobalt or manganese naphthenates as catalysts, isomeric diethylbenzenes are oxidized by air to a mixture of ethylacetophenone and diacetylbenzene, the proportions of the products depending on the conditions and extent of conversion. After-oxidation with permanganate converts the ethylacetophenone to diacetylbenzene. In a similar way the oxidation of triethylbenzenes can be controlled to give partial-oxidation products.

Chloroethylbenzene gives chlorobenzoic acid and chloroacetophenone.

Isopropyltoluene goes to methylacetophenone, of some interest as a perfume; however, a considerable amount of undesirable resinous products is simultaneously formed.

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68-835

Uerdingen

11p

4/29/41

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Catalytic, Liquid-Phase Oxidation With Air

IV. Oxid'n. of Cyclohexane

This is a review of the problem of producing adipic acid from cyclohexane, with references and comparisons to DuPont's process. It is claimed that a two-step process - oxidation with air to cyclohexanol and cyclohexanone, followed by HNO<sub>3</sub> oxidation of these products to adipic acid - is the most feasible method.

The oxidation of cyclohexane with air begins at 120°C. in the presence of cobalt or manganese naphthenates. At 150°C., the reaction goes satisfactorily without catalysts. The conversion is limited to 15-20% to obtain maximum yields of the alcohol and ketone.

A study of the mechanism of the reaction was made; peroxide content is plotted versus reaction time for different conditions and catalysts. Experimental data on a 250 kg. scale are included.

69-846

Uerdingen

6p

4/28/41

Catalytic, Liquid-Phase Oxidation With Air

III. Oxidation of Polymethylbenzenes

The oxidation of polymethylbenzenes goes more easily than that of toluene, and provides a means of producing several monocarboxy acids heretofore obtainable only by round-about methods involving nitriles or aldehydes as intermediates. In this paper, the oxidation of xylenes, chloroxylenes, and higher polymethylbenzenes is reported. The same technique is employed as in the toluene and ethylbenzene oxidations (see items 70 and 71).

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70-852

Uerdingen

7p

4/30/41

Catalytic, Liquid-Phase Oxidation With Air

II. Oxidation of Toluene and Chlorotoluenes

Because of the effect of war-shortages on other processes for producing benzoic acid, the liquid-phase oxidation of toluene with air merits consideration. This gives good yields at 135° and 4 atmospheres, in the presence of such catalysts as cobalt naphthenates. Traces of sulfur in the toluene must be removed. Under similar conditions, o-, m-, and p-chlorobenzoic acids are obtained from the corresponding chlorotoluenes.

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71-859

Uerdingen

23p

4/30/41

Catalytic, Liquid-Phase Oxidation with Air

I. Oxid'n. of Ethylbenzene to Acetophenone

This is a lengthy review, largely descriptive, of prior work in the field of catalytic oxidation, and of recent progress which has made the oxidation of ethylbenzene commercially feasible. The use of cobalt organic salts (naphthenate, palmitate, benzoate) ~~as catalysts permits high conversions to a crude ketone containing only about 2% of phenyl-methyl-carbinol as contaminant.~~ A study of various ways of purifying the crude ketone shows that either distillation or after-oxidation with dichromate may be considered. A list of German patent applications on liquid-phase oxidation, and sketches of experimental apparatus, are included.

72-882

Wolfen

4p

4/19/41

Synthesis of Keto-aniles and Alkylanilines

The accumulation of various ketones as by-products in large scale processes has raised the question of their utilization. As shown here, ketones condense easily with aniline to form ketone-aniles of the general formula  $\begin{matrix} R \\ \diagdown \\ C \\ \diagup \\ R \end{matrix} = N-C_6H_5$ ;

sometimes, a second mol of ketone reacts, yielding more complex ketone-aniles. Some of these ketone-aniles are useful aging-inhibitors for rubber.

Saturation of the (C = N) bond by hydrogenation, methylation, etc., leads to alkylanilines; these are interesting as dye intermediates.

73-886

Wolfen

3p

4/19/41

Method of Separating Isomeric Aldehydes

Aromatic aldehydes form addition compounds with phenylhydrazine-p-sulfonic acid; the solubility in water of the addition compounds is greatly different for isomeric aldehydes, depending specifically on the location of positive substituents like (OH) or (OCH<sub>3</sub>). An example describes the separation of p-anisaldehyde from contaminating amounts of o-isomer.

74-889

Wolfen

4p

4/19/41

Protective Colloid from Beechwood Sulfite Liquor

A process previously patented for the production of a protective colloid from sprucewood sulfite liquor had proven unsatisfactory for beechwood liquor, because of the formation of undesirable resinous products and the retention of hygroscopic properties in the powdered colloid. For beechwood liquor, a ~~new process has been developed which features the use of NaNO<sub>2</sub>~~ to oxidize troublesome components (pentosans). The product is a powdery protective colloid suitable for all purposes.

75-892                      Wolfen                      2p                      4/19/41

Production of Sebacic Acid

Sebacic acid is produced on a semi-technical scale by the alkaline splitting of ricinoleic acid or castor oil at about 300°C. It has been found that the reaction is surprisingly improved by conducting it in a stream of steam. Special methods are required to purify the sebacic acid since repeated recrystallization fails to attain the specified purity.

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76-894                      Wolfen                      9p                      4/19/41

$\alpha$ -Ketodicarboxy Acids and Spirodilactones

This paper discusses the synthesis and chemistry of various complex compounds interesting as polycondensation components. Difficult to abstract.

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77-903                      Wolfen                      4p                      4/19/41

Oxidation Reactions of Hydroxyhydroquinone  
and Hydroxynaphthohydroquinone

Both of these compounds have recently acquired some significance in wool-dyeing; they are easily oxidized to dark-colored products. The present paper reports a study of their oxidation by air in ammoniacal solution. The formation of "oxazines" was observed.

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78-907                      Wolfen                      8p                      4/19/41

The Induced Photo-Oxidation of Chloro-Ethylenes  
to Produce Chlorinated Acetyl Chlorides

Contrary to statements in the literature, asymmetric dichloroethylene can be smoothly oxidized to chloroacetyl chloride, under conditions applicable to commercial production. Similarly, trichloroethylene can be oxidized to dichloroacetylchloride, and tetrachloroethylene to trichloroacetylchloride.

79-915

Wolfen

4p

4/19/41

Extraction of Phenolates Such as Vanillinate  
From Alkali-treated Sulfite Liqueur, Using  
Water-miscible Alcohols as Solvents

An American patent (#2,104,701) had disclosed the use of water-insoluble alcohols, particularly butanol, to extract phenolates from the alkaline solution. This paper describes conditions whereby water-soluble alcohols, specifically propanol, may be economically employed. Among other details, the alkali employed in the process is made as concentrated as possible, to effect a good separation into propanol and alkali layers.

80-920

Ludwigshafen

11p

3/28/41

Specifications for Special Steels Resistant to  
High-Pressure Hydrogen

This is a report of a conference at which it was decided to issue a new guide for the application of special steels N8, N8V, and N10W. For each of these steels specifications are listed, including: (1) working temperatures at various pressures (up to 700 atm.), (2) range of application, (3) technique of heat treating, (4) dimensions of tubes. The composition of the steels, or their manufacture, are not mentioned here.

81-931

Ludwigshafen &

96p

2-43

1027

Merseburg

12-44

Correspondence Concerning N-10 Steel  
(Resistant to Hydrogen at High Temperatures and Pressures)

The impression is gained from hastily scanning this collection of letters, memos, conference reports, etc., that numerous complaints were made about the quality of this special steel, and that its composition and specifications were not well standardized. According to a memo dated Oct. 25, 1943, the steel should not be designated as N-10 unless it contains the following elements in the indicated minimum amounts:

chromium	2.45%
vanadium	0.69%
molybdenum	0.28%
tungsten	0.25%

Earlier communications indicate somewhat different compositions, and mention titanium and nickel as components.

82-1028  
1057

Merseburg

29p

8/18/42

Ketones from Coal-Hydrogenation Products

In the sump-phase hydrogenation of brown coal and other materials containing combined oxygen, appreciable amounts of ketones are found in the lower-boiling fractions. By the process described in this report, the gasoline fraction boiling below 105° is extracted with water; by proper treatment of the extract, pure acetone is obtained, plus a mixture of higher-boiling ketones, alcohols, and nitriles. A commercial process is proposed, for which a flow-sheet is included. Extensive data are presented, including material-balances, a cost estimate, and equilibrium data for several extraction systems.

82-1057  
1209

152p

(Undated)

Booklet Advertising the Engineering Firm of  
Friedrich Uhde (Dortmund)

This is an industrial brochure reviewing the accomplishments of Uhde in constructing plants for ammonia synthesis, coal hydrogenation, nitric acid, fertilizer, etc. The text is in both German and English. It is profusely illustrated with photographs of plants, high-pressure apparatus, etc. Uhde has built plants throughout Europe and several in America.

1-5

Leuna

65p

5/20/44

Trial Method of Cost Accounting for the  
Hydrogenation Plant at Blechhammer

A complete outline of engineering calculation methods is given, and a sample calculation is carried through to completion. The appendix includes 38 tables, charts, flow-sheets, etc.

2-70  
146

Leuna

75p

1939

Yearly Operating Summary (by Months) for  
Coal Hydrogenation at Leuna

Except for a short forward, this report consists of a series of tables wherein material balance data and economic factors are broken down for analysis. Among the items analyzed are: (1) consumption of hydrogen, coal, sulfur, and other raw materials, (2) yields of quality of the various products, (3) energy requirements, (4) wages, (5) preparation of the coal-paste, etc. The annual figures are compared with the corresponding figures for 1938.