

Ashford's Dictionary of Industrial Chemicals

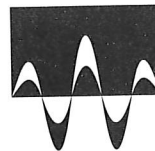
Properties

Production

Uses

Compiled by Robert D. Ashford

Wavelength Publications Ltd



Merck 2011
Argentum v. Merck
IPR2018-00423

Engn
TP
200
A84
1994

Copyright © 1994 by Wavelength Publications Ltd

All rights reserved. No part of this book may be reproduced, transmitted or translated by any means or in any form, including photocopying and recording, without prior written permission from the publisher.

The use of patent information in this book, as well as registered names and trademarks, does not imply freedom for general use or from protection by law, even though individual items are not specifically marked as such in the text. While considerable care has been taken in the production of this book, neither the author nor the publisher warrant it free from errors.

British Library Cataloguing in Publication Data

Ashford's Dictionary of Industrial Chemicals:
Properties, Production, Uses
I. Ashford, Robert D.
661.003

ISBN 0-9522674-0-3



Publisher Wavelength Publications Ltd
63 Kendal Steps
St. George's Fields
London W2 2YE, England
Tel: (071) 706-1315
Fax: (071) 402-0894

Cover Design Madeleine Bennett
Cover Photograph E. Schrempp/Science Photo Library
Printer The Bath Press, Avon

This material may be protected by Copyright law (Title 17 U.S. Code)

FLUOBORIC ACID

428

Production:

- 2-amino-5-chloro-2'-fluorobenzophenone + dimethyl sulphate + chloroacetyl chloride + ammonia (methylation/dechlorination/amide formation/condensation/nitration)

Uses: hypnotic drug

fluoboric acid

fluoroboric acid; tetrafluoroboric acid; [16872-11-0]



$\text{H}_1\text{B}_1\text{F}_4$. M: 87.81. Colourless liquid. BP: 130°C with decomposition. Miscible with water forming strongly acidic solutions. Miscible with alcohol.

Production:

- boric acid + hydrofluoric acid (salt formation)

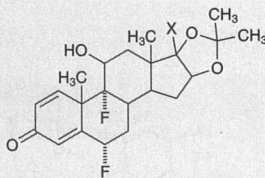
Derivatives:

ammonium fluoborate; copper fluoborate; ferrous fluoborate; nickel fluoborate; potassium fluoborate; sodium fluoborate; stannous fluoborate; zinc fluoborate

Uses: esterification/acetal formation catalyst; electroplating bath additive; etchant (semiconductor manufacture); hot-rolled steel pickling agent; azoic dye diazo component salts; aluminium surface treatment reagent

fluocinonide

[356-12-7]



X = $-\text{COCH}_2\text{COOCH}_3$, $\text{C}_{26}\text{H}_{32}\text{F}_2\text{O}_7$. M: 494.54.

Production:

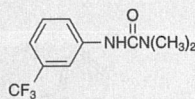
- cortisone (multistep synthesis)

Uses:

antiinflammatory drug

fluometuron

N-(3-trifluoromethylphenyl)-*N,N'*-dimethylurea; Cotoran (FMC); [2164-17-2]



$\text{C}_{10}\text{H}_{11}\text{F}_3\text{N}_2\text{O}_1$. M: 232.20.

Production:

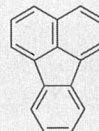
- *m*-aminobenzotrifluoride + dimethylcarbamoyl chloride (dehydrochlorination)

Uses:

herbicide

fluoranthene

1,2-benzacenaphthene; [206-44-0]



$\text{C}_{16}\text{H}_{10}$. M: 202.26. Pale yellow crystals. MP: 111°C. BP: 375–385°C. d: 1.20 kg/l (0°C). Insoluble in water.

Production:

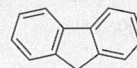
- anthracene oil (fractionation; byproduct of anthracene production)

Uses:

fluorescent dyestuffs intermediate

fluorene

[86-73-7]



$\text{C}_{13}\text{H}_{10}$. M: 166.22. White flakes. MP: 112–115°C. BP: 295°C. Insoluble in water. Soluble in oxygenated and aromatic solvents.

Production:

- fluorene oil (fractionation; coproduced with acenaphthene/diphenylene oxide)

Derivatives: fluorenone

fluorene oil

Narrow-cut, coal-tar fraction with a boiling range: 290–305°C.

Production:

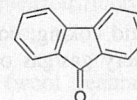
- coal tar, crude (alkali extraction/fractionation; coproduced with tar acid liquor/naphthalene fraction/anthracene oil/coal tar pitch/light oil/carbolic oil/creosote oil)

Derivatives:

acenaphthene; diphenylene oxide; fluorene

fluorenone

9-fluorenone; [486-25-9]



$\text{C}_{13}\text{H}_8\text{O}_1$. M: 180.20. Solid. MP: 83°C. BP: 342°C. d: 1.13 kg/l (100°C). Insoluble in water. Soluble in oxygenated and aromatic solvents.

Production:

- fluorene (oxidation)

Derivatives: 2-methyl-3-phenylbenzyl alcohol; 2,4,7-trinitrofluorenone

Uses:

reagent (Oppenauer oxidation)

429

fluorescein

uranine (disodium salt); Acid Yellow 73 (CI, sodium salt); Acid Yellow 73 (CI, free acid); 45350 (CI, free acid); D&C Yellow No. 8 (FDC, sodium salt) (sodium salt)



$\text{C}_{20}\text{H}_{12}\text{O}_5$. M: 332.31. Poses when heated above 100°C in ethanol. Soluble in dilute solutions.

Production:

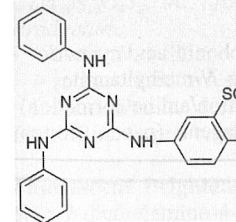
- resorcinol + phthalic anhydride (condensation/ether formation)

Derivatives: Acid Orange 7; Solvent Violet 10

Uses: acid dye (fluorescent); (cosmetics, medicine)

Fluorescent Brightener

4,4'-bis(4,6-dianilino)phthalic sulphonic acid; Blankophor (Hickson and Welch);



$\text{C}_{44}\text{H}_{36}\text{N}_{12}\text{O}_6\text{S}_2$. M: 892.48

Production:

- 4,4'-diaminostilbene + cyanuric chloride + sodium hydroxide (condensation/ether formation)

Uses: fluorescent brightener

Fluorescent Brightener

Tinopal 2B (Ciba-Geigy); [17118-40-0] (*cis*-isomer)

