

Hawley's

CONDENSED
CHEMICAL
DICTIONARY

Fourteenth Edition



RICHARD J. LEWIS SR.

Hawley's
**Condensed Chemical
Dictionary**
Fourteenth Edition

Revised by
Richard J. Lewis, Sr.



JOHN WILEY & SONS, INC.

This book is printed on acid-free paper. 

Copyright © 2001 by John Wiley & Sons, Inc., New York. All rights reserved.

Published simultaneously in Canada.

No part of this publication may be reproduced, stored in a retrieval system, or transmitted in any form or by any means, electronic, mechanical, photocopying, recording, scanning or otherwise, except as permitted under Sections 107 or 108 of the 1976 United States Copyright Act, without either the prior written permission of the Publisher, or authorization through payment of the appropriate per-copy fee to the Copyright Clearance Center, 222 Rosewood Drive, Danvers, MA 01923. (978) 750-8400, fax (978) 750-4744. Requests to the Publisher for permission should be addressed to the Permissions Department, John Wiley & Sons, Inc., 605 Third Avenue, New York, NY 10158-0012, (212) 850-6011, fax (212) 850-6008, E-mail: PERMREQ@WILEY.COM.

For ordering and customer service, call 1-800-CALL-WILEY.

Library of Congress Cataloging-in-Publication Data:

Condensed chemical dictionary.

Hawley's condensed chemical dictionary.—14th ed./ rev. by Richard J. Lewis, Sr. p. cm.

Includes index.

ISBN 0-471-38735-5 (cloth: acid-free paper)

I. Chemistry—Dictionaries. I. Title: Condensed chemical dictionary. II Hawley, Gessner Goodrich, 1905– III. Lewis, Richard J., Sr. IV. Title.

QD5 C5 2002

540'.3--dc21

2001045614

Printed in the United States of America.

10 9 8 7 6 5

indulines. Blue azine dyestuffs obtained by the interaction of amino-azo benzene and aniline hydrochloride.

indurite. Explosive containing 40% guncotton and 60% nitrobenzene.

"Industrene" [Crompton & Knowles]. TM for fatty acids.

Use: Rubber compounding, foam dispersants, lubricants, water repellents, polishes, metallic soaps, crayons, alkyd resins, mineral flotation adjuvants, and emulsifiers.

industrial alcohol. See alcohol, industrial.

industrial carbon. See carbon, industrial.

industrial chemistry. See chemical technology; chemical process industry.

industrial diamonds. See diamonds, industrial.

industrial dust. See dust, industrial.

industrial waste. See waste control; chemical waste.

inert. A term used to indicate chemical inactivity in an element or compound. Helium, neon, and argon are practically inert gaseous elements; carbon dioxide is a gaseous compound of low activity. Ingredients added to mixtures chiefly for bulk and weight purposes are said to be inert. See noble; extender.

inert gas. Gaseous element of group 18 of the periodic table, such as helium or argon, which is nonreactive under ordinary conditions. These gases are not completely unreactive and inert gas compounds have been synthesized.

infinite dilution. Point of maximum dissociation of an electrolyte at which point the greatest amount of conductivity has been reached.

infrared. The region of the electromagnetic spectrum including wavelengths from 0.78 micron to approximately 300 microns (i.e., longer than visible light and shorter than microwave).

Use: Spectroscopic analysis, medicine, baking of enamels, drying, photography. See radiation.

infrared spectroscopy. An analytical technique that may measure either (1) the range of wavelengths in the infrared that are absorbed by a specimen, which characterize its molecular constitution (absorption spectroscopy), or (2) the infrared waves emitted by excited atoms or molecules (emission

spectroscopy). Extremely hot bodies (stars) emit spectra in which the atomic composition can be determined by characteristic lines such as the sodium D line in the sun's spectrum. Infrared absorption bands identify molecular components and structures, some of which are:

Absorption Band (μ)	Structure Indicated
2.3-3.2	OH and NH groups; H ₂
3.2-3.3	aromatics, olefins
3.33-3.55	aliphatics
5.7-6.1	aldehydes, ketones, acids, amides

See microwave spectroscopy; absorption (2).

"Infrac" [Carborundum]. TM for a refractory insulation used as primary linings of fuel-fired and electric furnaces only when protected by a cement facing. Available in brick form.

infusion. An aqueous solution obtained by treating drugs with hot or cold water, without boiling. Generally prepared by pouring boiling water upon the vegetable substance and macerating the mixture in a tightly closed vessel until the liquid cools. When not otherwise specified, they are of 5% strength by weight.

infusorial earth. See diatomaceous earth.

ingot iron. Highly refined steel with a maximum of 0.15% impurity. Due to high purity it has excellent ductility and resistance to rusting.

ingrain dye. An insoluble dye developed by impregnating a fabric with one or more intermediates and then producing the dye by reaction with a different intermediate.

"Inhibisil" [PPG]. TM for a non-toxic corrosion inhibiting silica pigment for metal finishes. **Use:** Paints and coatings.

inhibitor. (1) A compound (usually organic) that retards or stops an undesired chemical reaction, such as corrosion, oxidation or polymerization. Examples are acetanilide which retards decomposition of hydrogen peroxide and salicylic acid, used to prevent prevulcanization of rubber. Such substances are sometimes called negative catalysts. (2) A biological antagonist used to retard growth of pests and insects and in medicine. See antagonist, structural; antioxidant.

"Inhibitor NPH" [Mallinckrodt]. TM for a synthetic organic chemical that provides an effective means of controlling hard polymer formation in synthetic rubber production.

Properties: Fine white to yellow-white platelets; ammoniacal odor. Bulk d 5 lb/gal, mp 160-164C (with decomposition).

T

- T.** Symbol for tritium, also for tera-.
- 2,4,5-T.** Abbreviation for 2,4,5-trichlorophenoxyacetic acid.
- 2,4,6-T.** Abbreviation for 2,4,6-trichlorophenol.
- Ta.** Symbol for tantalum.
- tabun.** (dimethylphosphoramidocyanidic acid, ethyl ester).
CAS: 77-81-6. $(\text{CH}_3)_2\text{NP}(\text{O})(\text{C}_2\text{H}_5\text{O})(\text{CN})$. A nerve gas.
Properties: Liquid. Fp -50C , bp 240C , flash p 172F (77.7C), d 1.4250 ($20/4\text{C}$). Readily soluble in organic solvents; miscible with water but readily hydrolyzed; destroyed by bleaching powder, generating cyanogen chloride. Combustible.
Hazard: Very toxic by inhalation, cholinesterase inhibitor, a military nerve gas, fatal dose (man) 0.01 mg/kg.
- "TAC" [Mallinckrodt].** TM for tested additive chemical items, satisfactory for food additives and medical uses.
- tachysterol.** $\text{C}_{28}\text{H}_{44}\text{O}$.
Properties: Oil; levorotatory. Insoluble in water; soluble in most organic solvents. Protect from air.
Use: Medicine, as the dihydrotachysterol.
- tackifiers.** Refers to compounds used for making an adhesive stickier.
- tackiness.** (tack). Property of being sticky or adhesive.
- taconite.** A low-grade iron ore consisting essentially of a mixture of hematite and silica. It contains 25% iron. Found in the Lake Superior district and western states.
- tacticity.** The regularity or symmetry in the molecular arrangement or structure of a polymer molecule. Contrasts with random positioning of substituent groups along the polymer backbone, or random position with respect to one another of successive atoms in the backbone chain of a polymer molecule. See polymer, stereospecific; isotactic.
- Tafel rearrangement.** Rearrangement of the carbon skeleton of substituted acetoacetic esters to hydrocarbons with the same number of carbon atoms by electrolytic reduction at a lead cathode in alcoholic sulfuric acid.
- Tag Closed Cup.** See TCC.
- tagetes.** A permissible food additive used to increase the yellow color of the skin and eggs of poultry. It is made from the petals of the Aztec marigold (*Tagetes erecta* L.), either ground to a meal or extracted with hexane, with addition of up to 0.3% ethoxyquin.
- tagged atom.** A radioactive isotope used in tracing the behavior of a substance in both biochemical and engineering research, e.g., C-14 or I-131. See tracer; label (2).
- Tagliabue Closed Cup.** A standard method of determining flash points.
- Tagliabue Open Cup.** A standard method of determining flash points.
- Tag Open Cup.** See Tagliabue Open Cup.
- tailings.** (1) In flour milling, the product left after grinding and bolting middlings. (2) Impurities remaining after the extraction of useful minerals from an ore. (3) In general, any residue from a mechanical refining or separation process.
- tailored molecule.** A molecule that has been modified chemically to give it certain properties.
- tails.** Refers to high-boiling impurities that are less volatile than the solvent being distilled.
- talc.** (talcum; soapstone; steatite).
CAS: 14807-96-6. $\text{Mg}_3\text{Si}_4\text{O}_{10}(\text{OH})_2$ or $3\text{MgO} \cdot 4\text{SiO}_2 \cdot \text{H}_2\text{O}$. A natural hydrous magnesium silicate. Compact, massive varieties may be called steatite in distinction from the foliated varieties, which are called talc. Soapstone is an impure variety of steatite.
Properties: White, apple-green, gray powder; pearly or greasy luster, greasy feel. Mohs hardness 1-1.5 (may be harder when impure), high resistance to acids, alkalis and heat; d 2.7-2.8.
Grade: Crude, washed, air-floated, USP, fibrous (99.5%, 99.95%).
Hazard: Toxic by inhalation. TLV: 2 mg/m³, respirable dust; not classifiable as a human carcinogen.
Use: Ceramics; cosmetics and pharmaceuticals; filler in rubber, paints, soap, putty, plaster, oilcloth; adherent; dusting agent; lubricant; paper; slate pencils and crayons; electrical insulation. See magnesium silicate.