

Hawley's
Condensed Chemical
Dictionary

THIRTEENTH EDITION

Revised by
Richard J. Lewis, Sr.



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Abbreviations

ACS	American Chemical Society	mg	milligram
atm	atmosphere	mg/m³	milligrams per cubic meter
ASTM	American Society for Testing and Materials	μCi/mL	microcuries per milliliter
autoign temp	autoignition temperature	μg/m³	micrograms per cubic meter
aw	atomic weight	min	minimum, minute
bp	boiling point	m-	meta
Btu	British thermal unit	mm	millimeter
C	degrees centigrade (Celsius)	mp	melting point
CAS	Chemical Abstract Service Registry Number	mw, Mw	molecular weight
cc	cubic centimeter	NE, N.F.	National Formulary grade of chemical
CC	closed cup	NIOSH	National Institute for Occupational Safety and Health
Ci	Curie	nm	nanometers
CI, C.I.	"Color Index" (A standard British publication giving official numerical designations to colorants.)	o-	ortho
CL	ceiling level	OC	open cup
CP	chemically pure: A grade designation signifying a minimum of impurities, but not 100% purity.	OSHA	U.S. Occupational Safety and Health Administration
cP	centipoise	p-	para
COC	Cleveland open cup	ppb	parts per billion
cu	cubic	ppm	parts per million
d, D	density	psi(a)	pounds per square inch (absolute)
DOT	U.S. Department of Transportation	%	percent
e.g.	for example	refr	refractive
F	degrees Fahrenheit	sec	second
FCC	"Food Chemical Codex"	sp vol	specific volume
FDA	U.S. Food and Drug Administration	TCC	Tagliabue closed cup
flash p	flash point	TLV	Threshold Limit Value
fp	freezing point	TM	trademark
ft	feet	TOC	Tagliabue open cup
FTC	U.S. Federal Trade Commission	USAN	United States Adopted Name
g	gram	USDA	U.S. Department of Agriculture
gal	gallon	USP	United States Pharmacopeia
g/L	grams per liter	UV	ultraviolet
g/mL	grams per milliliter	vap d	vapor density
H₂O	water	vap press	vapor pressure
Hg	mercury	wt/gal	weight per gallon
hr	hour		
i.e.	that is		
L, l	liter	α	alpha
lb	pound	β	beta
		γ	gamma
		Δ	delta
		μ	mu
		Σ	sigma
		Ω	omega

$\text{NH}_2\text{COCH}_2\text{CH}(\text{NH}_2)\text{COOH}$. The β amide of aspartic acid, a nonessential amino acid, existing in the D(+)- and L(-)-isomeric forms as well as the DL-racemic mixture. L(-)-asparagine is the most common form.

Properties: L(-)-Asparagine monohydrate: White crystals. Mp 234–235C. Acid to litmus. Nearly insoluble in ethanol, methanol, ether, and benzene; soluble in acids and alkalis.

Derivation: Widely distributed in plants and animals both free and combined with proteins.

Use: Biochemical research, preparation of culture media, medicine.

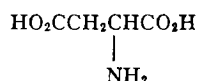
asparaginic acid. See aspartic acid.

“Aspartame.” [*Nutrasweet*]. $\text{C}_{14}\text{H}_{18}\text{N}_2\text{O}_5$. TM for a synthetic nonnutritive sweetener approved by FDA for tabletop use and as a packaged food additive. The U.S., Canada, and South Africa permit its use in carbonated beverages. A combination of aspartic acid and L-phenylalanine, it is said to be 200 times sweeter than sugar. See sweetener, nonnutritive.

aspartamic acid. See asparagine.

aspartamide. See asparagine.

aspartic acid. (asparaginic acid; asparagic acid; aminosuccinic acid). $\text{COOHCH}_2\text{CH}(\text{NH}_2)\text{COOH}$. A naturally occurring nonessential amino acid. The common form is L(+)-aspartic acid.



Properties: Colorless crystals. Soluble in water; insoluble in alcohol and ether. Optically active. DL-aspartic acid. Mp 278–280C (decomposes), d 1.663 (12/12C). L(+)-aspartic acid. Mp 251C. D(-)-aspartic acid. Mp 269–271C (decomposes), d 1.6613.

Source: Young sugar cane, sugar beet molasses.

Derivation: Hydrolysis of asparagine, reaction of ammonia with diethyl fumarate.

Use: Biological and clinical studies, preparation of culture media, organic intermediate, ingredient of aspartame, detergents, fungicides, germicides, metal complexation. Available commercially as D/(-), L(+)-, and DL-aspartic acid.

aspartocin. USAN for antibiotic produced by *Streptomyces griseus*.

aspergillilic acid. (2-hydroxy-3-isobutyl-6-(1-methylpropyl)pyrazine-1-oxide). $\text{C}_{12}\text{H}_{20}\text{N}_2\text{O}_2$.

An antibiotic from strains of *Aspergillus flavus*.

Properties: Yellow crystals. Mp 97C. Insoluble in cold water; soluble in common organic solvents and dilute acids. Hydrochloride melts at 178C and is soluble in water.

Use: Antibiotic.

Aspergillus. A genus of small molds and fungi used in industry to ferment carbohydrates for producing citric and other organic acids.

ASPET. See American Society of Pharmacology and Experimental Therapeutics.

asphalt. (petroleum asphalt; Trinidad pitch; mineral pitch).

CAS: 8052-42-4. A dark-brown to black cementitious material, solid or semisolid in consistency, in which the predominating constituents are bitumens that occur in nature as such or are obtained as residua in petroleum refining (ASTM). It is a mixture of paraffinic and aromatic hydrocarbons and heterocyclic compounds containing sulfur, nitrogen, and oxygen.

Properties: Black solid or viscous liquid. D approximately 1.0. Soluble in carbon disulfide. Flash p 450F (132C), autoign temp 900F (482C), solid softens to viscous liquid at approximately 93C, penetration value (paving) 40–300, (roofing) 10–40. Good electrical resistivity. Combustible.

Occurrence: California, Trinidad, Venezuela, Cuba, Canada (Athabasca tar sands).

Hazard: Toxic by inhalation of fume. TLV: (fume) 5 mg/m³.

Use: Paving and road-coating, roofing, sealing and joint filling, special paints, adhesive in electrical laminates and hot-melt compositions, diluent in low-grade rubber products, fluid loss control in hydraulic fracturing of oil wells, medium for radioactive waste disposal, pipeline and underground cable coating, rust-preventive hot-dip coatings, base for synthetic turf, water-retaining barrier for sandy soils, supporter of rapid bacterial growth in converting petroleum components to protein.

See bacteria; protein; oil sands.

asphalt (blown). (mineral rubber; oxidized asphalt; hard hydrocarbon).

Properties: Black, friable solid obtained by blowing air at high temperature through petroleum-derived asphalt with subsequent cooling. Penetration value 10–40, softening point 85 to 121C. Combustible.

Use: Primarily roofing, as diluent in low-grade rubber products and as thickener in oil-based drilling fluids.

asphalt (cut-back). A liquid petroleum product produced by fluxing an asphaltic base with suitable distillates. (ASTM).

Properties: Flash p 50F(10C) (OC).

Grade: Solution of residue from distillation in carbon tetrachloride, 99.5%.

Hazard: Flammable, dangerous fire hazard.

Use: Road surfaces.

asphaltene. A component of the bitumen in petroleum, petroleum products, malthas, asphalt ce-