



Book review

Hazardous Chemicals Desk Reference, 5th Edition

Richard J. Lewis Sr. (Ed.); Wiley, West Sussex, UK, 2002, 1715 pages, 130.00 (British Pounds), ISBN 0-471-44165-1

The preface to this book begins: “The fifth edition of Hazardous Chemicals Desk Reference again fills the need for a reference work of moderate size that serves the information needs of those who work with hazardous chemicals.” Indeed it does. Previous editions of this text in my possession have been well used. Of all the books I have on chemicals (and I have many), it is Lewis’ book I most often turn to for information.

This edition, it is said, has over 5000 entries, 350 that are new. Two-thirds of the earlier entries, we are told, were revised. Added to this volume are:

- numerous synonyms,
- additional physical and chemical properties.

The body of the text, however, is focused on individual chemicals. For purposes of illustration, I reproduce below the data for AAT250 acetic acid:

CAS: 64-19-7
HR: 3
DOT: UN 2789/UN 2790
mf: C₂H₄O₂
Mw: 60.06

Properties: Clear, colorless liquid; pungent odor. Melting point: 16.7 °F, boiling point: 118.1 °F, flash point: 109 °F (CC), lel: 5.4%, uel: 16.0% at 212 °F, *d*: 1.049 at 20°/4 °F, autoignition temperature: 869 °F, vapor pressure: 11.4 mm at 20 °F, vap *d*: 2.07, miscible in water, alcohol, and ethanol.

Syns: Acetic acid (aqueous solution) (DOT); acetic acid, glacial or acetic acid solution, >80% acid, by weight (UN 2790) (DOT); acetic acid, glacial; acetic acid solution >10% but not >80% acid, by weight (UN 2790) (DOT); acide acetique (French); acido acetico (Italian); azijnzuur (Dutch); essigsaeure (German); ethanoic acid; ethylic acid; FEMA No. 2006; glacial acetic acid; methanecarboxylic acid; octowy kwas (Polish); vinegar acid.

Consensus reports: reported in EPA TSCA inventory.

OSHA PEL: TWA 10 ppm
ACGIH TLV: TWA 10 ppm; STEL 15 ppm

DFG MAK: 10 ppm (25 mg/m³)
DOT Classification: 8
Label: Corrosive

Safety profile: A human poison by an unspecified route. Moderately toxic by various routes. A severe eye and skin irritant can cause burns, lachrymation, and conjunctivitis. Human systemic effects by ingestion: changes in the esophagus, ulceration, or bleeding from the small and large intestines. Human systemic irritant effects and mucous membrane irritant. Experimental reproductive effects. Mutation data reported. A common air contaminant. A flammable liquid. A fire and explosion hazard when exposed to heat or flame; can react vigorously with oxidizing materials. To fight fires, use CO₂, dry chemical, alcohol foam, foam and mist. When heated to decomposition it emits irritating fumes.

Potentially explosive reaction with 5-azidotetrazole, bromine pentafluoride, chromium trioxide, hydrogen peroxide, potassium permanganate, sodium peroxide, and phosphorus trichloride. Potentially violent reactions with acetaldehyde and acetic anhydride. Ignites on contact with potassium *tert*-butoxide. Incompatible with chromic acid, nitric acid, 2-amino-ethanol, NH₄NO₃, ClF₃, chlorosulfonic acid, (O₃ + diallyl methyl carbinol), ethylenediamine, ethylene imine, (HNO₃ + acetone), oleum, HClO₄, permanganates, P(OCN)₃, KOH, NaOH, xylene.

I found the safety profiles of interest. Indeed, the safety profiles contain “a textual summary of the hazards presented by the entry. The discussion of human exposures includes target organs and specific effects reported. Carcinogenic and reproductive assessments have been completely revised for this edition.”

There are three appendices to aid in cross-indexing data:

- CAS (Chemical Abstract Service) Number Cross-Index.
- Synonym Cross-Index.
- US DOT (Department of Transportation) Guide Number Cross-Index.

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