

INDIRECT  
FOOD  
ADDITIVES  
*and* POLYMERS

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Migration and Toxicology

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Abbreviation. THME.

**Synonyms and Trade Names.** 2-(Hydroxymethyl)-2-methyl-1,3-propanediol; Methyltrimethylol-methane; Pentaglycerine; Pentaglycerol; Trimethylolethane.

**Properties.** Colorless crystals. Readily soluble in water and alcohol.

**Applications.** Used in the manufacture of alkyd surface coatings and polyester resins (polyurethane foams). Heat stabilizer for polyvinyl chloride resins.

**Regulations.** *U.S. FDA* (1998) approved the use of THME in the manufacture of cross-linked polyester resins which may be used as articles or components of articles intended for repeated use in contact with food in accordance with the conditions prescribed in 21 CFR part 177.2420.

### ZINC compounds

#### Zinc acetate hydrate

*Molecular Formula.*  $C_4H_6O_4 \cdot Zn \cdot 2H_2O$

M = 219.51

CAS No 5970-45-6 RTECS No ZG8750000

#### Zinc caprylate

*Molecular Formula.*  $C_{16}H_{30}O_4 \cdot Zn$

M = 351.84

557-09-5 RH0790000

**Synonym.** Octanoic acid, zinc salt.

#### Zinc chloride

*Molecular Formula.*  $C_{12} \cdot Zn$

M = 136.27

7646-85-7 ZH1400000

**Trade Name.** Butter of zinc.

#### Zinc oxide

*Molecular Formula.*  $ZnO$

M = 81.38

1314-13-2 ZH4810000

**Trade Name.** Flowers of zinc; Philosopher's wool; Zinc white.

#### Zinc sulfate

*Molecular Formula.*  $O_4S \cdot Zn$

M = 161.43

7733-02-0 ZH5260000

**Synonyms and Trade Names.** White vitriol; Zinc vitriol; White cooperas; CI Pigment White 7; Zinc blende; Zinc monosulfide.

#### Properties.

*Zinc acetate dihydrate.* Crystals with faint acetous odor and astringent taste. Readily soluble in water and alcohol.

*Zinc caprylate.* Crystalline substance. Sparingly soluble in boiling water.

*Zinc nitrate.* Colorless crystalline solid.

*Zinc oxide.* White or cream, fine and soft powder with faint odor. Hexagonal crystals. Poorly soluble in water and ethanol.

*Zinc sulfate monohydrate.* Powder or granules. Soluble in water, poorly soluble in alcohol.

*Zinc sulfide.* Colorless hexagonal or cubic crystals. Solubility in water is 7.0 mg/l at 18°C.

Zinc salts, such as zinc chloride, zinc nitrate, zinc sulfate are soluble in water. Levels in drinking water above 3.0 mg/l give an undesirable astringent taste and may result in discoloration. The threshold perception concentration for the effect on the organoleptic properties of water is 5.0 mg/l. Cohen et al. showed that 5.0% of the population distinguish water not containing zinc from water containing it (as zinc sulfate) at a concentration of 4.3 mg/l.<sup>1</sup> At a concentration more than 5.0 mg/l, water becomes opalescent, and an oily film may form on boiling.

*Zinc hydrosulfite.* White amorphous solid with the slight odor of sulphur dioxide. Readily soluble in