Tall oil fatty acids–tetraethylenepentamine curing agents

**Chemical identity**

CAS number: 68953-36-6

Other names:
- Tall oil fatty acids reaction products with tetraethylenepentamine

**Tall oil fatty acids–tetraethylenepentamine (TOFA-TEPA) curing agents provide good adhesion to concrete. They are used in concrete primers and coatings, grouts, concrete repair, flooring, river stone mortars, electrical encapsulation, tooling and general-purpose adhesives.**

**Uses and benefits**

TOFA-TEPA curing agents are used with liquid epoxy resins with ambient temperature or heat cure. They can be used as the sole curing agent or in a mixture with other amine-based curing agents, such as modified aliphatic amines, to adjust the cure rate or other properties.

**Physical and chemical properties**

TOFA-TEPA curing agents are aliphatic amine reaction products. Several product structures are generated by different manufacturing processes yielding one, two or three moles of fatty acid reacted with one mole of amine (the final products will also be mixtures of these reaction products). All amines are alkaline. Amines have an ammonia or fish-like odor. These products are typically amber liquids. They have very limited water solubility and generally have low volatility.

**Health effects**

TOFA-TEPA curing agents must be handled with caution. Exposure to aerosols or vapors in high concentration may cause nose, throat and lung irritation. The product is corrosive to skin and eyes and can cause burns, and may cause sensitization by skin contact.

**Environmental effects**

TOFA-TEPA curing agents can be manufactured, used and disposed of safely. Emissions to air can be minimized during manufacture and use. These products are not readily biodegradable in wastewater and are toxic or highly toxic to aquatic organisms. TOFA-TEPA curing agents should not be released to waterways.
Exposure potential and risk management measures

Industrial use
Where there is a possibility of exposure to liquid amines, workers should use eye and skin protection. The recommended protection includes chemical-resistant goggles and face shield, gloves, long-sleeved coveralls, and safety shoes or rubber boots. It is important to have good ventilation when working with curing agents. Local exhaust ventilation should be designed to draw vapors away from the worker's breathing zone and designed to reduce vapor concentrations to acceptable concentrations at all workstations.

Once epoxy products have cured, the components, including the TOFA-TEPA reaction products, are bound in a solid polymeric matrix and present a low probability for health or environmental exposure.

Consumer use
TOFA-TEPA curing agents are used to produce consumer products in a cured form but are not sold directly for consumer use.

Regulatory information
Several regulations govern the manufacture, sale, transportation, use and disposal of epoxy curing agents. These laws vary by country and geographic region. You can find general regulatory information in the Material Safety Data Sheet.

Information resources
We developed this Product Stewardship Summary to give you a general overview of the chemical. This summary is not meant to provide emergency response or medical treatment information. You can find in-depth safety and health information on the Material Safety Data Sheet and additional safe handling guidance in Air Products’ Safetygrams.

Conclusion
TOFA-TEPA reaction products are widely used in epoxy-based products, and workers can handle it safely with minimal safety, health and environmental effects when they follow the referenced industry and company guidelines.

For more information, please contact us at:

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