

# Los Angeles City Fire Department

# TRAINING BULLETIN

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TRAINING BULLETIN NO. 30

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## FIRE INCIDENTS INVOLVING ORGANIC PEROXIDES

A wide variety and large quantities of organic peroxide compounds are used in industrial processes. The organic peroxides are highly flammable and are classed as "Unstable Materials" in the Fire Code. At higher temperatures they become more unstable and in some cases can explode spontaneously.

The plastic industry uses organic peroxides as catalysts. Catalysts speed up chemical reaction. These materials are not typical oxidizers because they contain both fuel and oxidizer within their molecular structure; therefore, they burn rapidly, and they decompose at relatively low temperatures.

Organic peroxides are available as solids (usually as powders, granules or crystals), liquids or pastes. Various concentrations in various diluents, "usually a flammable liquid", are available to meet specific requirements of consumers.

### THE MOST COMMON ORGANIC PEROXIDES

Benzoyl peroxides	
M.E.K. peroxide	
Lauroyl peroxide	(These chemicals names
Decanoyl peroxide	may be omitted from the
T-Butyl peroxide	container or the bill
of	lading.

### TRADE NAMES

Organic peroxides are sold under many trade names and terms. Peroxygen and peroxy are used interchangeably with

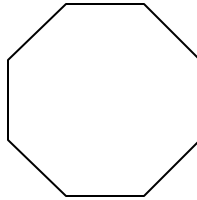
the term peroxide. Some additional common trade names to watch for are:

Aposot  
 t-butyl Hydroperoxide  
 Cardox  
 Luperco  
 Luperox  
 Lupersol  
 Norox

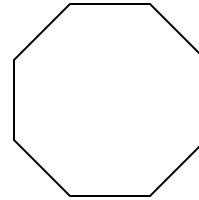
Due to the similarity of packaging with other materials in transit or storage, recognition of organic peroxides is dependent upon the Department of Transportation labels.

Examples:

YELLOW LABELS



ORGANIC PEROXIDE



OXIDIZER

The usual shipping containers encountered consist of boxed (wood/fiber) or drum (fiber/metal). Most of these will also have inner containers of glass carboys, earthenware jugs, polyethylene bags or jugs, or paper bags with polyethylene liners.

#### SEVERE FIRE FIGHTING HAZARD

It is the consensus of recognized authorities on the subject that the following procedures are the best answer for the "fire fighting phase" of an incident involving organic peroxides:

If very small quantities are involved, apply water spray streams from as far a distance as possible, or from an explosion-protected location. When fire occurs in the vicinity of these materials, maintain a cooling water spray over the containers to prevent overheating or contact with fire.

If larger amounts of organic peroxides are seriously exposed and cannot be protected from involvement, consider the use of fixed heavy streams and withdraw all personnel from the potential blast area.

IF FIRE REACHES THE ORGANIC PEROXIDE, EXPLOSION IS IMMINENT, AND THE AREA MUST BE VERY RAPIDLY EVACUATED BEFORE EXPLOSION OCCURS.

Disposal of peroxides involved in a fire should not be attempted without technical assistance. Clean-up and salvage operations should not be attempted until all of the peroxide has cooled completely. Due caution should be exercised because of the possibility of adverse contamination and chemical change after heat exposure. Prohibit smoking, open flame and spark-producing tools and equipment in all areas containing organic peroxides.

### LIFE HAZARD

Care should be exercised by personnel handling these products. The materials should not be allowed to remain in contact with the skin. Ingestion or inhalation of peroxides should be avoided. Wear protective clothing and breathing apparatus when exposed to this material.

### FIRE PREVENTION

1. A Division 4 Permit is required to store, process or use any amount of organic peroxide. The conditions of issuance of the Division 4 Permit include the amounts on hand, use, storage methods and approved location.

Note: If a valid Division 4 Permit is not in effect, promptly notify the Fire Prevention Bureau, Engineering Unit, by telephone, followed by an F-44 Memorandum. On nights, weekends and holidays notify Fire Prevention Officer on call through OCD.

2. Organic peroxides must be stored separately.
3. Organic peroxides must be kept away from all sources of heat or ignition such as radiators, sparks, fire, open flames, static electricity and direct or reflected sunlight.
4. Organic peroxides should be stored in the same containers used by the manufacturers for shipping the material. Avoid contamination with any other product.
5. It is the duty of company and station commanders to be aware of all occupancies in their district where organic peroxides are stored.

### REFERENCES

LOS ANGELES CITY FIRE CODE, Section 57.04.03 (I) Div. 71  
N.F.P.A. FIRE PROTECTION HANDBOOK, 13<sup>TH</sup> Ed., pp 5-41.  
N.F.P.A. GUIDE ON HAZARDOUS MATERIALS, 4<sup>TH</sup> Ed., pp. 49-51, 49-139, 49-155.  
N.F.P.A. GUIDE TO DANGEROUS CHEMICALS, Bahme, pp. 105, 1112  
N.B.F.U. BULLETIN 203, January, 1957, (Company Library ref. Book 01)