

## Chapter 32 Storage of Tires

### 32.1\* Outside Storage of Tires.

**32.1.1\* General.** Outside tire storage in facilities storing more than 500 tires shall be in accordance with Section 32.1.

**32.1.1.1 Permits.** Permits, where required, shall comply with 1.12.19.

**32.1.1.2** Fire department access roads to separate piles and to provide access for effective fire-fighting operations shall be in accordance with Table 32.1.1.2 and 32.4.

<b>Table 32.1.1.2</b>							
<b>Minimum Exposure Separation Distances</b>							
<b>Exposed face dimension ft (m)</b>	<b>Tire Storage Pile Height ft (m)</b>						
	<b>8 (2.4)</b>	<b>10 (3)</b>	<b>12 (3.7)</b>	<b>14 (4.3)</b>	<b>16 (4.9)</b>	<b>18 (5.5)</b>	<b>20 (6.1)</b>
25 (7.6)	56 (17.1)	62 (18.9)	67 (20.4)	73 (22.3)	77 (23.5)	82 (25)	85 (25.9)
50 (15.2)	75 (22.9)	84 (25.6)	93 (28.3)	100 (30.5)	107 (32.6)	113 (34.4)	118 (36)
100 (30.5)	100 (30.5)	116 (35.4)	128 (39)	137 (41.8)	146 (44.5)	155 (47.2)	164 (50)
150 (45.7)	100 (30.5)	116 (35.4)	128 (39)	137 (41.8)	146 (44.5)	155 (47.2)	164 (50)
200 (61)	100 (30.5)	116 (35.4)	128 (39)	137 (41.8)	146 (44.5)	155 (47.2)	164 (50)
250 (76.5)	100 (30.5)	116 (35.4)	128 (39)	137 (41.8)	146 (44.5)	155 (47.2)	164 (50)

Source: Separation distances are based on the "Fire Safety Assessment of the Scrap Tire Storage Methods", by Robert Brady Williamson, Ph.D. and Robert Allen Schroeder, M.S.

**32.1.1.3** Separation of yard storage from buildings, vehicles, flammable materials, and other exposures shall be in accordance with Table 32.1.1.2.

**32.1.1.4** Trees, plants and vegetation within the separation areas shall be in accordance with 10.15.10.

### 32.1.1.6 Ignition Sources.

**32.1.1.6.1** Smoking shall be prohibited within the tire storage area.

**32.1.1.6.2** Other sources of ignition such as cutting and welding, heating devices, and open fires shall be prohibited.

**32.1.1.6.3** Safeguards shall be provided to minimize the hazard of sparks from such equipment as refuse burners, boiler stacks, and vehicle exhaust.

**32.1.1.7** Piles of tires or altered tire material shall not be located beneath power lines or structures.

**32.1.1.8** Provisions for surface water drainage and measures to provide protection of pyrolitic oil run-off shall be directed around and away from the outdoor tire storage site to an approved location.

**32.1.1.9** Piles of tires and altered tire materials shall be at least 50 ft (15m) from the perimeter fence.

**32.1.1.10** Tires shall be removed from rims immediately upon arrival at the storage site.

### **32.1.2 Individual Piles.**

#### **32.1.2.1 New Outdoor Tire Storage Sites and piles.**

**32.1.2.1.1** New outside storage of individual tire piles containing more than 500 tires shall be limited to 125,000 cu ft in volume (3540 m<sup>3</sup>).

**32.1.2.1.2** New pile dimensions shall not exceed 10 ft (3 m) in height, 50 ft (15 m) in width, and 250 ft (75 m) in length.

**32.1.2.1.3** Individual piles shall be separated in accordance with Table 32.1.1.2.

#### **32.1.2.2 Existing Individual Piles.**

**32.1.2.2.1** Existing outdoor tire storage piles, within 5 years of the adoption of this Code, shall be in accordance with the provisions of 32.1.2.1.

**32.1.2.2.2** Existing outside storage of individual tire piles containing more than 500 tires shall be limited to 250,000 cu ft in volume (7079 m<sup>3</sup>).

**32.1.2.2.3** Existing pile dimensions shall not exceed 20 ft (3 m) in height, 50 ft (15 m) in width, and 250 ft (75 m) in length.

**32.1.2.2.4** Individual piles shall be separated in accordance with Table 32.1.1.2.

### **32.2 Emergency Response Plan.**

**32.2.1** The AHJ shall approve and retain a copy of the site emergency response plan developed by the site operator.

**32.2.2** The operator of the scrap tire facility shall retain at the facility, a copy of the approved emergency response plan.

**32.2.3** The AHJ shall be immediately notified and approve any proposed changes to the emergency response plan.

**32.3 Fire Control Measures.** Measures to aid in the control of fire shall be in accordance with 32.3.

**32.3.1 Manual Fire Fighting Equipment.**

**32.3.1.1** At a minimum the following items shall be maintained on site and in working order; one 2A:10BC fire extinguisher, one 2.5-gal (9.5 L) water extinguisher, one 10 ft (3 m) long pike pole, one rigid rake, one round point shovel, and one square point shovel.

**32.3.1.2** One dry chemical fire extinguisher with a minimum rating of 4A:40BC shall be carried on each piece of fuel-powered equipment used to handle scrap tires.

**32.3.1.3** On-site personnel shall be trained in the use and function of this equipment to mitigate tire pile ignition.

**32.3.2** An approved water supply capable of supplying the required fire flow to protect exposures and perform fire suppression overhaul operations shall be provided.

**32.3.3\*** The AHJ shall be permitted to require additional tools and equipment for fire control and the protection of life and property.

**A.32.3.3** This can include but is not limited to the availability of earth moving equipment or other approved means of controlling a fire.

**32.4 Access.**

**32.4.1** Access to the site, each tire storage yard, and each pile shall be in accordance with 18.2 and this section.

**32.4.2** Access shall be maintained clear of combustible waste or vegetation and shall remain accessible to the fire department at all times.

**32.4.3** Access to the facility shall be in accordance with 10.12.

**32.4.4** An attendant shall be on site at all times when the site is open.

**32.4.5 Signs and Security.** Access from unauthorized persons and security of the site shall be in accordance with Section 32.4.5.

**32.4.5.1** Signs containing the following information shall be posted at site entrances.

**32.4.5.1.1** Signs shall bear the name of the operator, the operating hours, emergency telephone numbers, and site rules.

**32.4.6** The facility shall have noncombustible fencing at least 10 ft (3 m) high with intruder controls on top (in accordance with local laws).

### **32.5 Outdoor Storage of Altered Tire Material.**

**32.5.1** Outdoor storage of altered tire material in the form of chunks, chips, or crumbs shall be protected in accordance with the 32.5.

**32.5.1.1** A 10 ft (3 m) fence shall be maintained around the altered tire material storage area.

**32.5.1.2** Potential ignition sources such as welding, smoking, or other open flame uses shall not be allowed within 20 ft (6 m) of the altered tire pile.

**32.5.1.3** Individual altered tire material piles shall not be located on site in excess of 90 days.

**32.5.1.4\*** Individual altered tire material piles shall be kept sheltered from precipitation.

**A.32.5.1.4** Altered tire material piles have been known to spontaneously combust after a heavy precipitation. Investigators have considered anaerobic action and potential heat from oxidation of steel belts as the source of exothermic reaction.

**32.5.1.5** Tires shall not be stored on wetlands, flood plains, ravines, canyons, or steeply graded surfaces.

**2.** Add an annex note to 32.1 to read:

#### **A.32.1 Outdoor Tire Pile Fire-Fighting Tactics and Strategy.**

The guidelines contained in this annex are based on the collective experience of fire service professionals who have managed major scrap tire fires. They are presented as an adjunct to the strategic and tactical practices of an incident command system. Conventional fire suppression tactics are ineffective for scrap tire fires. Fire-fighting tactics and strategies for the suppression of fires in whole tires differ from those for processed tires. The unique shape of whole tires allows the storage of enough air to support combustion throughout the pile, and it is difficult to reach all burning surfaces. Because of such complications, tire fires can continue for weeks, and even months, despite aggressive fire suppression tactics.

The foundation of fire suppression should be based on the data collected before a fire occurs. By establishing a pre-incident plan that uses a model incident command system, decisions regarding size-up, tactics, strategies, and overhaul can be resolved

quickly. Familiarity with plans that have been successful in fighting tire fires throughout the country also aids in the decision-making process. Such decisions should be based on an understanding of the dynamics and behavior of a tire fire. The environmental consequences of all suppression techniques should be evaluated carefully. Communication between the incident commander and the on-scene environmental specialist is critical. The following provide tactics and strategies for fighting whole-tire and processed-tire fires.

(1) **Tactics/Strategies for Whole-Tire Fires.** Important tactical considerations include protecting exposures, separating burning tires from the rest of the inventory, and forecasting. Forecasting for an effective location for separation should include arrival time of equipment and time necessary to develop the needed firebreak. Heavy equipment can be used to accomplish these tasks.

Protection of exposures is an important tactical decision. The initial approach to a tire fire should be to isolate the tire inventory from the fire. Creating firebreaks in a large pile of scrap tire is a time-consuming process. However, it can be accomplished with heavy machinery and front-end loaders. Bulldozers, front-end loaders, and similar equipment can be used to move tires that are not yet involved in the fire to create breaks in the tire pile or to cover burning tires with soil. Equipment breakdowns — scrap tires caught between the wheels, tracks, and undercarriage of heavy equipment — have been reported. Firelines should be deployed to provide protection to operators and equipment alike.

Recognized strategy options are as follows:

(a) **Let-It-Burn (Burn-It).** Allowing a tire pile to burn has its merits. Factors that influence this decision include, but are not limited to, level of fire involvement, resources available, location of the fire, and environmental and economic impacts. Soil and water pollution, as well as clean-up costs, can be drastically reduced when many of the products of combustion are consumed. A precedent for the let-it-burn strategy appears in fire responses to chemical fires. The fire service is responsible for managing and controlling the burn process. Protecting exposures and separating tires from the burn area is a tactical priority.

(b) **Bury-It.** The decision to bury a tire pile also has merits. Materials as diverse as the soil that is on site, cement kiln dust, sand, gravel, and even crushed coral have been employed to cover the burning material. The bury-it strategy can be employed in areas that have a minimal water supply or in areas that are densely populated. The decision to bury a tire fire should take into consideration reduction of the toxic smoke for the sake of public health. Geological considerations play an important role in the bury-it strategy. While the tire fire is entombed, tires can pyrolyze, and oil can be generated and released into the soil or underground water sources.

(c) **Drown-It.** The drown-it strategy is best employed with forethought and careful preplanning. Familiarity with the topography, available water supply, and exposure hazards to aboveground water sources will be critical. Planning for the control and containment will facilitate this tactic. The drown-it strategy also has some drawbacks. Cooling the fire will increase the air emissions as the combustion

process is slowed down. An inordinate amount of water runoff combined with pyrolytic oil can result from the drown-it tactic.

(2) Tactics/Strategies for Processed-Tire Fires. Important tactical considerations include protecting exposures, separating burning tires from the rest of the inventory, and forecasting. Heavy equipment can be used to accomplish these tasks. To effectively combat a processed tire fire, a fogging of water or other fire retardant should be applied. Cooling the plane of fire should put the fire out. Using a mist also reduces the amount of water used and the subsequent runoff that can be generated. Under no circumstances should a processed tire pile be broken open or doused with streams of high-pressure water that are directed into the piles. Water actually increases the severity and duration of the fire by introducing oxygen into the pile and by breaking up the pile, causing a burst of flames that emits incompletely burned hydrocarbons and other contaminants to the atmosphere.

Once the surface fire is put out, the cooled chips should be removed, allowing water or fire retardant to reach under layers that are hot and still burning. This process should be repeated until the chips are no longer smoldering or hot.

(3) Ancillary Issues. Ancillary issues include fire dynamics, stages of combustion, size-up, and environmental concerns. Refer to Guidelines for the Prevention and Management of Scrap Tire Fires.

**3.** Revise Table 1.12.19a to read: Tire Storage 500 tires.