

## FIRE SAFETY REQUIREMENTS FOR AMUSEMENT RIDES

### **Application**

1. The fire safety requirements as stipulated in this Schedule shall apply to all indoor and outdoor amusement rides.

### **Application of Fire Code to indoor amusement rides**

2. The fire safety requirements as stipulated in the Fire Code shall also apply to an indoor amusement ride in addition to the fire safety requirements stipulated in this Schedule.

### **Permitted materials**

3. Subject to the following paragraphs, only non-combustible materials (tested to BS 476: Part 4) shall be used for constructing an amusement ride.

### **Material Testing & Listing**

4.—(1) All materials that are non-load bearing or used as wall finishing materials of an amusement ride shall be subjected to the following tests:

- (a) all materials used for the construction of themeing walls & ceiling and fixed or loose theming props must comply with the relevant test criteria for surface spread of flame as specified in the standard BS 476: Part 7, Class 1;
- (b) all materials used for the construction of those parts of an amusement ride that are located within a sheltered or enclosed space (such as under a canopy or inside a building or ride compartment) shall be tested for toxicity in accordance with BS EN 45545-2 standard, with an acceptance criterion of CIT <0.75;
- (c) if fire resistance rating is required to any load bearing structure, such rating shall be tested to the standard BS 476: Part 20-23;
- (d) any loose component of an amusement ride such as curtains, fabric banners or acoustic or black-out materials, these shall be tested to the standard NFPA 701;
- (e) if any vehicle is a component of an amusement ride, such vehicle shall be tested to the standard ASTM E84, Class A.

(2) All materials used in the construction of amusement rides must be tested and approved by recognised bodies, with certification by the relevant authority required and approval remaining valid for the duration stipulated in the test certificate.

(3) Any material that is not tested in Singapore may be used for the construction of an amusement ride if the supplier of the material has submitted to the relevant authority a test report from a recognised foreign testing body and has obtained a Certificate of Conformance from the relevant authority in respect of the material.

### **Location of props**

5. Where the components of an amusement ride includes any prop with plastic content, such prop shall be kept at least 2 metres away from any escape route from the amusement ride.

### **Neon signs**

6.—(1) Every neon sign shall be installed with a fireman switch to enable the power supply to the neon sign to be switched off during any occurrence of fire on the amusement ride or any part thereof.

(2) Every neon sign shall be installed at least 3 metres above the ground regardless of whether such sign is an indoor or outdoor sign.

(3) If any neon sign is to be installed less than 3 metres above the ground, the neon sign shall be enclosed in a glass casing to keep the neon sign out of the reach of members of the public.

(4) Every neon sign shall be mounted directly onto a non-combustible backing.

### **Items with plastic content**

7. Where any component of an amusement ride is an item which has plastic content, such component shall be separated at least 1 metre away from any ignition source (such as a high temperature halogen lamp, a steam-making machine, a high temperature exhaust duct or an electrical panel). Any use of plastic materials should be subjected to approval on a case-by-case basis.

### **Use of flame effects**

8.—(1) Any installation for the supply of town gas used in connection with the operation of an amusement ride shall comply with the Singapore Standard Code of Practice: 51.

(2) The storage of any liquefied petroleum gas or inflammable gas or liquid used in connection with the operation of an amusement ride shall comply with the Fire Code.

(3) The design and use of any flame effects system shall comply with the standard NFPA 160 and shall be certified by a qualified person who has been trained in any mechanical engineering discipline.

(4) Every flame effects system shall be situated such that it will not cause ignition of any material near its vicinity.

(5) No flame effects system shall be used as a component of an amusement ride unless it has been certified by a conformity assessor as having been designed, constructed and tested in accordance with the standard NFPA 160.

### **Special precautions for tented, air-supported and pneumatic structures**

9.—(1) The materials used for the construction of any tented, air-supported or pneumatic structure shall comply with the standard BS 476 Part 7 Class 1.

(2) Every such tented, air-supported or pneumatic structure shall be provided with clear exit routes for use by patrons during the occurrence of any adverse incident, and the headroom of such exit routes shall be at least 2.5 metres.

(3) The travel distance along any such exit route from any part of the tented, air-supported or pneumatic structure to its exit shall not be more than 12 metres.

## **Means of Egress**

10.—(1) Every amusement ride (whether indoor or outdoor) shall be provided with a means of egress in accordance with the Fire Code.

(2) The queue areas of an amusement ride shall comply with the following requirements:

- (a) the occupant load factor shall be based on 0.46sqm/person;
- (b) the width of each queue line must be at least 800 millimetres;
- (c) any queue area that is less than 100 sqm shall comply with the provisions for egress in the Fire Code;
- (d) the evacuation time for a sprinkler protected queue area that is greater than 100 sqm shall not exceed 200 seconds;
- (e) the evacuation time for a non-sprinkler protected queue area that is greater than 100 sqm shall not exceed 90 seconds.

(3) For the purposes of subparagraph (2)(d) and (e), the evacuation time shall be calculated on the basis that one of the discharge gates is unusable and the specific pedestrian flow rates for all other discharge gates are not more than 1.2 persons per second per effective metre width.

## **Miscellaneous fire safety requirements**

11.—(1) Fire extinguishers and fire-fighting equipment shall be provided in accordance with the Fire Code at the site of an amusement ride.

(2) Emergency lighting shall be provided in accordance with the Fire Code at all escape routes from an amusement ride.

(3) All flammable materials in the vicinity of an amusement ride shall be placed in covered metal containers and such containers shall not be kept at or near the egress routes from the amusement ride.

(4) All flammable liquids (such as gasoline) and flammable gases in the vicinity of an amusement ride shall be stored in containers in accordance with the standards NFPA 54 and NFPA 55, and there shall be no open flame in any area where such liquids or gases are stored or are transferred from one container to another.

(5) An emergency voice communication system and a fire command center shall be provided for an amusement ride if so required by the Commissioner of Civil Defence.

(6) All exit and directional signs for an amusement ride shall comply with the Fire Code.