
 GOVERNMENT OF DUBAI	<b>Organization Unit</b> <b>Public Health &amp; Safety Department</b>	الوحدة التنظيمية:	 بلدية دبي DUBAI MUNICIPALITY
	<b>Form sheet title:</b> <b>Technical Guidelines for Paint Spray Booths</b>	اسم النموذج:	
	<b>Doc Ref.</b> <b>DM-PH&amp;SD-P4-TG07</b>	رقم النموذج:	

## Paint Spray Booths



**Background:** Spray painting or coating operations poses a health hazard, a fire hazard and the potential for solvent emission to adversely impact on neighbors resulting in unsafe conditions.

Dubai Local Order No. 61 of 1991 requires occupiers to take adequate precautions to ensure safe working conditions.

### Guidelines:

#### A. General

- i. Where operations involving paints/ solvents producing flammable vapors are carried out:
  - a. Great care shall be taken when mixing, decanting and transferring paint/solvents.
  - b. Naked flames and lighted cigarettes shall not be permitted.
- ii. All paint/solvent spillage should be mopped up without delay.
- iii. Any rags or other combustible material contaminated with paint/solvent should be disposed of in a metal container with metal lid. The container should be emptied regularly.
- iv. Spraying should be carried out in a properly designed booth with suitable ventilation. Air flow into the booth must be adequate to maintain capture velocity and overcome opposing air currents.
- v. Fire fighting equipment should be readily to hand.
- vi. When working with paint which may contain lead, special precautions to prevent absorption through skin, swallowing or inhalation of the fumes shall be followed. Consult Public Health and Safety Department, for further details.

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- vii. When working in confined spaces, where ventilation is restricted, respiratory protection and the provision of breathing apparatus shall be provided.
- viii. Adequate washing facilities including hand cleansers shall be made available. Workers shall be instructed to use these facilities before any lunch break and after work.

## B. Spray Booth

### 1. Construction



- i. Spray booth shall be:
- Substantially constructed of steel or other non combustible material, securely and rigidly supported.
  - Designed to sweep air currents toward the exhaust outlet.
- ii. The interior surfaces of spray booths shall be smooth and continuous without edges to prevent pocketing of residues and facilitate cleaning and washing without injury.
- iii. Spray booths should be fitted with filters, baffles or water curtains to arrest over spray.

Application rate	Recommended overspray control
Less than 2 litres/hour	Water curtain, fibres, baffles
2 to 4 litres/hour	Water curtain, fibre
More than 4 litres/hour	Water Curtain

Baffle plates are acceptable only for small paint rates or where paint is applied electrostatically.

### 2. Floor

The floor surface of a spray booth and operator's working area shall be of non-combustible material of such character as to facilitate the safe cleaning and removal of residues.

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### 3. Distribution or baffle plates

Baffle plates must be properly arranged to promote even flow and fully cover the booth face area, to collect the over spray before it enters the exhaust duct. It shall be of non-combustible material and readily removable or accessible on both sides for cleaning.



### 4. Filter type overspray collectors:

Dry type spray booths, over-spray dry filters or filter rolls shall conform to the following:

- i. The air velocity of not less than 30 to 75 linear m/min over the open face of the booth shall be maintained to collect the over spray in spraying operations.
- ii. Maintenance procedures should be established or follow manufacturer's recommendation on operation to assure replacing filter pads before excessive restriction to air flow occurs.
- iii. Filter pads/rolls should be inspected after each period of use and clogged filter pads/rolls shall be discarded and replaced.
- iv. All discarded filter pads/rolls shall be placed in a closed metal containers and immediately set aside to a safe well-detached location.
- v. A dial gauge or manometer should be fitted to indicate static pressure drop across the filters.

### 5. Water curtain or water wash spray booth fitted with water curtain shall conform with the following:

- i. The average in draft velocity over the open face of the booth shall be not less than 30 m/min.
- ii. Water circulation rate shall be not less than 150 litres/1000 m<sup>3</sup> of exhaust air.

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- iii. Sprays must function properly and water must fully cover the down comer plate.
- iv. Mist eliminator shall be installed before the exhaust stack.
- v. Manometer should be fitted to indicate negative pressure between the entertainment and distribution plates.

## 6. Exhaust Stack



- i. The gaseous laden air shall be exhausted through a vertical stack having a minimum height of 1.5 meters or higher in sensitive locations above the maximum roof level of the process building, as per standard.
- ii. The exhaust gas velocity should not be less than 8m/sec.

## 7. Separation of Spray Booths

- i. Each spray booth shall be separated from other operations by not less than 3 metres or by a greater distance and partition or wall as to reduce the danger from hazardous operations.
- ii. There shall be no open flame or spark producing equipment or operation in any spraying area within 6 metres unless separated by a non-combustible partition.

## 8. Illumination

- i. Illumination of spraying areas shall be through glass panels or other transparent materials.
- ii. Adequate precautions shall be taken against accumulated residue on the exposed panels from getting heated up from the source of illumination.
- iii. No portable electrical lamps shall be used in any spraying area during spraying operations. If used during cleaning or repairing operations, they shall be of the type approved for hazardous locations.

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9. All metal parts of spray booths, exhaust ducts and piping system conveying flammable or combustible liquid shall be properly electrically grounded.

## 10. Ventilation



- i. All spraying areas shall be provided with mechanical ventilation adequate to remove flammable vapour, mists, or powders.
- ii. Mechanical ventilation shall be kept in operation at all times while spraying operations are being conducted and for a sufficient time thereafter.
- iii. Each spray booth shall have independent exhaust duct system discharging to the exterior of the building except that multiple spray booths in which identical spray material in used, may have a common exhaust.
- iv. Air exhausted from spray operations shall not be recirculated.
- v. When necessary to facilitate cleaning, exhaust ducts shall be provided with a number of access doors.

## 11. Fire Protection

An adequate number of suitable portable fire extinguishers shall be installed near the spraying area.

## 12. Operations and Maintenance

- i. Spraying shall not be conducted outside of predetermined spraying areas.
- ii. All spraying areas shall be kept as free from the accumulation of deposits of combustible residues as practicable, by cleaning.
- iii. Scrapers, spuds or other such tools used for cleaning purposes shall be of non-sparking material.
- iv. Residue scrapings and debris contaminated with residue shall be immediately removed from the premises and properly disposed of.

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Metal waste cans shall be provided wherever rags and waste are impregnated with finishing materials.

- v. The use of solvents for cleaning operations shall be restricted to clean spray nozzles and auxiliary equipment. Employees should not clean their hands or other parts of body with solvents.
- vi. “**No Smoking**” signs shall be posted at all spraying areas and paint storage rooms.

### C. Powder Coating

- i. The exhaust ventilation shall be sufficient to maintain the atmosphere below the lower explosive limit for the materials being applied.
- ii. All non-deposited air-suspended powders shall be safely removed via exhaust ducts to the powder recovery cyclone in series with fabric filters.

### D. Personal Protective Equipment

In addition to the engineering controls to ensure that the atmosphere is free from suspended paint spray or powder, chemical cartridge respirator or masks shall be provided and used.

Reference should be made to Public Health and Safety Department Technical Guideline with regard to Respiratory Protection.

**Further Information is available from  
Public Health and Safety Department  
Tel: 2064244                      Fax: 2270160**