

GOOD PRACTICES FOR SPRAY DRYING IN CERAMICS AND CONCRETE

This activity relates to spray drying of materials containing crystalline silica as a process step to prepare raw materials for shaping.

The preparation of the masses to be spray dried is covered by sheets **2.2.21** and **2.2.24**. The handling of the spray dried powders is covered by sheets **2.2.30 a or b** (depends on particle size).

ACCESS

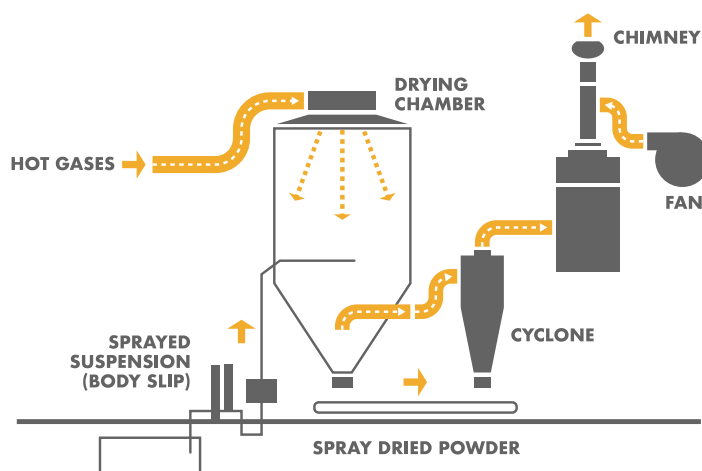
- Restrict access to the work area to authorised personnel only.
- The work area and equipment should be clearly labelled.

DESIGN AND EQUIPMENT

- Design the feed and discharge to and from the drying chamber through pipes rather than a loading door.
- Use discharge containers with lids for spray dried materials.
- Apply good thermal insulation.
- Lights/signs should clearly indicate when the dryer is in use
- Use a heat reclamation and air filtration system in conjunction with the dryer.
- Air throughput should be via a negative pressure fan.
- Consider the need for explosion relief if using direct heating (burners with gas or oil).
- Design closed system to allow easy access for cleaning and maintenance.
- Keep the process equipment under negative pressure to prevent leaks.
- Discharge extracted air to a safe place away from doors, windows and air inlets.

MAINTENANCE

- Ensure equipment used in the task is maintained as advised by the supplier/installer in efficient working order and in good repair.
- Adopt a "permit to work" system for maintenance work.
- Replace consumables (filters etc.) in accordance with the manufacturer's recommendations.



EXAMINATION AND TESTING

- Obtain information on the design performance of the ventilation equipment from the supplier. Keep this information to compare with future test results.
- Visually check all equipment at least once per week for signs of damage or, if it is in constant use, check it more frequently. If used infrequently, then check it before each use.
- Have the ventilation equipment examined and tested against its performance standard, at least once each year.
- Keep records of inspections for a suitable period of time which complies with national laws (minimum five years).

CLEANING AND HOUSEKEEPING

- Clean your workplace and equipment on a regular basis.
- Deal with spills immediately.
- Use vacuum or wet cleaning methods.
- **DO NOT clean up with a dry brush or using compressed air.**

TRAINING

- Give your employees information on the health effects associated with respirable crystalline silica dust.
- Provide employees with training on: dust exposure prevention; checking controls are working and using them; when and how to use any respiratory protective equipment provided and what to do if something goes wrong. Refer to task guidance sheet **2.3.4** and part 1 of the Good Practice Guide.

SUPERVISION

- Have a system to check that control measures are in place and that they are being followed. Refer to task guidance sheet **2.3.3**.
- Employers should make sure that employees have all the means to perform the checklist given below.

PERSONAL PROTECTIVE EQUIPMENT

- Refer to task guidance sheet **2.1.15** dedicated to Personal Protective Equipment.
- Risk assessment must be carried out to determine whether existing controls are adequate. If necessary, respiratory protective equipment (with the appropriate protection factor) should be provided and worn.
- Provide storage facilities to keep personal protective equipment clean when not in use.
- Replace personal protective equipment at intervals recommended by the manufacturer/supplier.

EMPLOYEE CHECKLIST

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| <input type="checkbox"/> Before use, check that the seals are intact. | <input type="checkbox"/> If you think there is a problem with your dust control equipment, ensure additional control measures are taken to reduce exposure to respirable crystalline silica dust while the problem persists. | <input type="checkbox"/> Clear up spills immediately. Use vacuum cleaning or wet cleaning methods for solids. For liquids, contain or absorb with granules or mats. Dispose of spills safely. | <input type="checkbox"/> Follow any special procedures that are needed before the system is opened or entered, e.g. purging and washing. |
| <input type="checkbox"/> Make sure the ventilation system is switched on and is working. | <input type="checkbox"/> Put lids on containers immediately after use. | <input type="checkbox"/> Do not clean up with a dry brush or using compressed air. | <input type="checkbox"/> Put in place measures to control the risk of bacterial growth within water sources used across site, focusing most on systems where water droplets will be generated. |
| <input type="checkbox"/> Look for signs of leaks, wear or damage of any equipment used. If you find any problems, tell your supervisor. | | <input type="checkbox"/> Use, maintain and store any respiratory protective equipment provided in accordance with instructions. | |

This guidance sheet is aimed at employers to help them comply with the requirements of workplace health and safety legislation, by controlling exposure to respirable crystalline silica. Specifically, this sheet provides good practice advice on dust control during spray drying medium and large quantities of materials containing crystalline silica.

Following the key points of this task guidance sheet will help reduce exposure.

Depending on the specific circumstances of each case, it may not be necessary to

apply all of the control measures identified in this sheet in order to minimise exposure to respirable crystalline silica. i.e. to apply appropriate protection and prevention measures. This document should also be made available to persons who may be exposed to respirable crystalline silica in the workplace, in order that they may make the best use of the control measures which are implemented.

This sheet forms part of the Good Practices Document on silica dust prevention, which is aimed specifically at the control of personal exposure to respirable crystalline silica dust in the workplace.