# GOOD PRACTICES FOR AUTOMATED SMALL BAG FILLING

This activity covers bagging operations for small bags (2.5kg-50kg) with dry products containing crystalline silica.

This sheet is only relevant to the automated bagging of flours, fines and powder. For automated bagging, "form fill seal" technology allows for effective control of airborne dust generation when bagging powders.

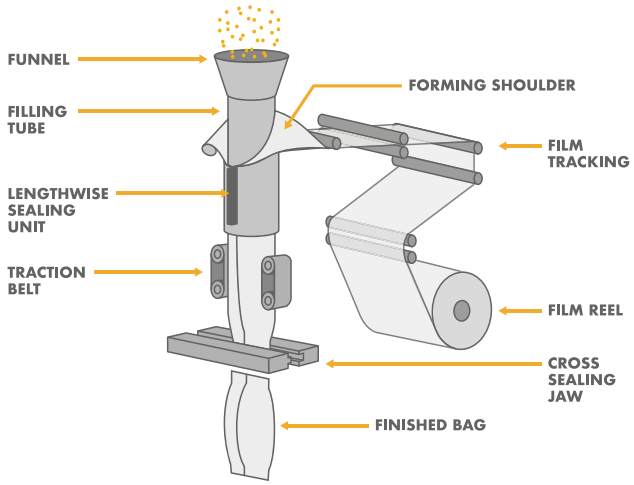
The bagging of coarse products is covered by sheet **2.2.30a**, and the non-automated bagging of flours, fines and powder is covered by **2.2.30b**.

## ACCESS

Restrict access to the work area to authorised personnel only.

## DESIGN AND EQUIPMENT

- Ensure that bags and bag filling equipment are fit for purpose. The quality of the bags is crucial to preventing leakage of dust It is strongly recommended to use automated bag feeding machines so that human operation is restricted to monitoring, unblocking, maintenance & repair. Placing onto pallets may be automated using a robot palletiser.
- Use long roll of plastic film to produce the bags. The plastic film is formed into a continuous, sealed sock, into which the silica containing material is poured. As such, the process is largely enclosed. The top and bottom of each bag is sealed using a heat sealer.
- Use local exhaust ventilation at all points where airborne dust may be generated.
- Release entrained air in order to allow the bags to be stacked onto pallets. This may be done by lightly compressing the bags after filling. For coarse materials (e.g. sand sized), entrained air is released through micro-perforations in the bags. For fine/flour materials, the use of micro-perforations may not be suitable. In this case, the air may be released through a specially designed seal on each bag, with local exhaust ventilation.
- Get advice from a specialist provider of bagging machinery in order to ensure the machinery, including the local exhaust ventilation system, is designed correctly for the type of material.
- Use bagging equipment designed & manufactured by specialised companies, conforming to the European legislation for Environmental protection, Safety & Health.
- Ensure that bags are effectively attached onto the bagging head during bag filling to prevent the escape of dust.




- Provide properly designed de-dusting systems as integral parts of the bagging machines.
- Bags must be sealed shut as soon as they are removed from the bagging head. Bags with self-sealing valves are available or, alternatively, bag stitching techniques, heat and ultrasonic sealing may be used.
- Consider mechanical/pneumatic assistance with bag handling.
- When bagging silica powder products, consideration should be given to full or partial automation of the process in order to prevent personal exposure to respirable crystalline silica dust.
- In automated bagging systems, the use of a carousel system enables many bags to be filled simultaneously. When bags are filled slowly, less dust is emitted.

## MAINTENANCE

- Ensure equipment used in the task is maintained as advised by the supplier/installer in efficient working order and in good repair.
- Replace consumables (filters etc.) in accordance with the manufacturer's recommendations.

AGG AST CEM GYP IMA MOR

## EXAMINATION AND TESTING

- Visually check the 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.
- Obtain information on the design performance of the dust suppression and/or extraction equipment from the supplier. Keep this information to compare with future test results.
- Keep records of inspections for a suitable period of time which complies with national laws (minimum five years).
- 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.

## CLEANING AND HOUSEKEEPING

- Clean your workplace on a regular basis.
- **DO NOT clean up with a dry brush or using compressed air.**
- Use vacuum or wet cleaning methods.
- Store bags in a safe place and dispose of empty bags safely.

## 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** dedicated to Supervision.
- 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 respiratory protective equipment at intervals recommended by its suppliers.

## EMPLOYEE CHECKLIST

- ☐ Make sure that the bagging machine is working properly.
- ☐ Make sure that bags are free from defects, especially as regards valve construction.
- ☐ Make sure that the dust extraction system is switched on and is working correctly.
- ☐ Look for signs of damage, wear or poor operation of any equipment used.
- ☐ If you find any problems, tell your supervisor. 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 while the problem persists.
- ☐ Even if it is not normally necessary for you to wear a dust mask, it may be necessary for you to wear one temporarily in the event of a spillage or if other control measures fail.
- ☐ Clear up spills straight away. Use vacuum or wet cleaning methods.
- ☐ Use, maintain and store any respiratory protective equipment provided in accordance with instructions.
- ☐ Use handling aids when available.
- ☐ Check and implement the measures of controlling the risk of bacterial growth within water sources used across site, focusing most on systems where water droplets will be generated.

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 advice on dust control during the filling of small bags with flour, fine and powder products.

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 Guide on silica dust prevention, which is aimed specifically at the control of personal exposure to respirable crystalline silica in the workplace.