BEST TECHNIQUE FOR BIG BAGS BETWEEN 500 OR 1000 KG

1

Check if ventilation system is running.

Mount big bag above hopper.

2

Open bottom closures.

3

Secure sack to hopper to prevent spillage.

4

Product should discharge by gravity.

5

Shake all corners of sack vigorously.

6

Shake all four corners of sack vigorously.

Take care that the empty packaging is folded carefully and packed into a polyethylene plastic bag for disposal. Close this plastic bag and put it in a shipping container for proper disposal.

For further information:

Contact the VECAP Product Steward at info@vecap.info or visit **www.vecap.info**

VECAP is a voluntary initiative of member companies of the European Flame Retardants Association (EFRA) together with the industry's global organisation, the Bromine Science and Environmental Forum (BSEF).

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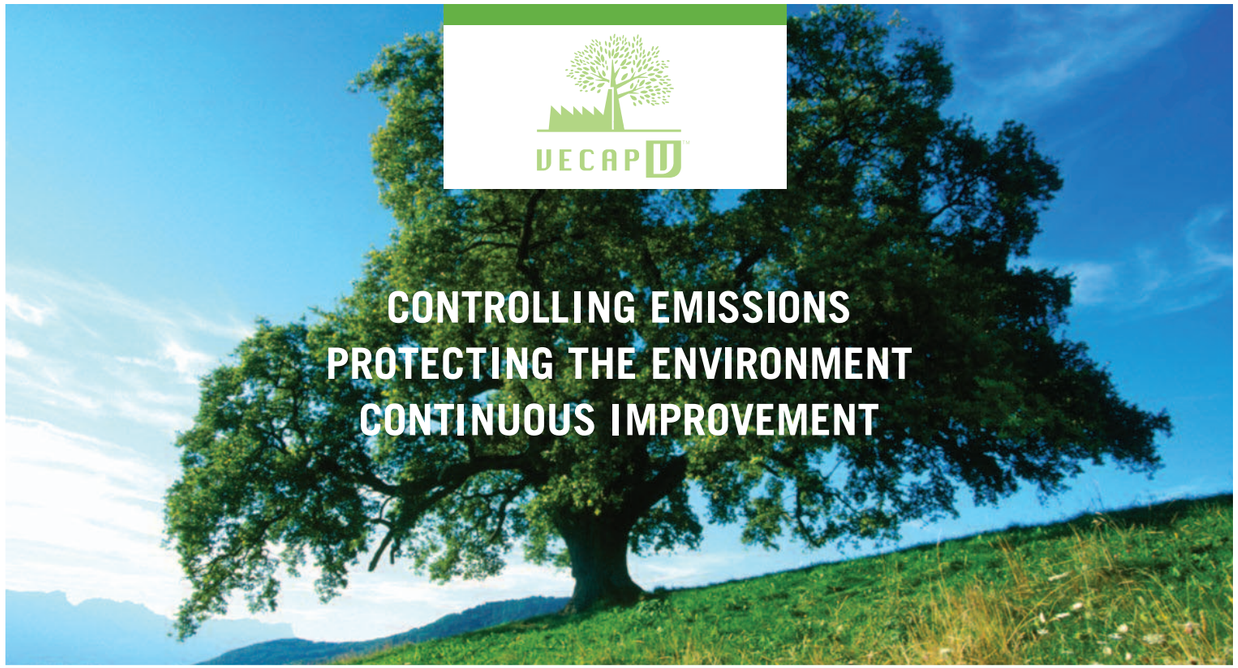

Best Available Technique for Emptying Bags Containing Polymer Additives

An appendix to the Code of Good Practice

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WHAT IS THE BEST TECHNIQUE TO EMPTY PACKAGING CONTAINING POLYMER ADDITIVES?

This document is an addendum to the Code of Good Practice and is valid for all use-processes where polymer additives are delivered in 20-25 kg bags or 500-1000 kg big bags. The objective of this document is to offer advice to minimize emissions when emptying and disposing of polymer additives packaging.

The type of packaging influences the amount of emissions during emptying and what will be left per metric tonne of used polymer additives.

- Always wear proper Personal Protective Equipment (PPE):
  - Respirator
  - Gloves
  - Protective clothing
- Switch on the ventilation system before starting to unload the bags
- Put the polymer additives bags in front of the loading point

An air aspiration system equipped with well-operated fabric filters is recommended as the minimum standard to reduce dust emissions to air.

Dust emissions can also be reduced as the air stream is sucked into the mixer when dosing. Furthermore, it is important to recognize that diffuse emissions (e.g. via open windows, doors and workers clothing) can be a key emission source as well. It is recommended to implement procedures requiring immediate cleaning up of the work place after finalisation of a batch. An air extraction/ventilation system equipped with adequate fabric filters is essential to collect dust during this operation.

Best available technology for the ventilation system

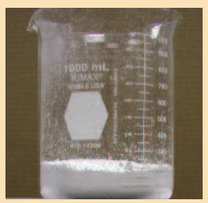
A tiered system with different filters in a row can be used to achieve emissions lower than 0.03 mg/Nm^3. The first filter is a standard bag filter (to catch the bulk dust). This will result in a remaining dust emission of <5 mg/Nm^3. Secondly, the air is sent to a sintered lamella filter which brings the dust emission back to <1 mg/Nm^3. Finally an absolute filter is used which brings the emissions to below <0.03 mg/Nm^3. The last two operations are needed when the aim is “zero emission”.

The air aspiration system should only run during emptying/unloading of the bags and be switched off afterwards to prevent a continuous emitting of dust via the bag filters (the so-called tailing effect).

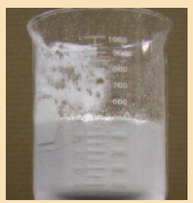
A control system should be in place to ensure that the filters are cleaned, shaken or replaced at right intervals.

Because of the small particle size, some dust formation will take place even in the presence of a good air extraction system. Dust on the floor and equipment should preferably be collected by means of a proper vacuum cleaner (i.e. a cleaner equipped with filters that collect small particles or a cleaner connected to the air aspiration system) or a broom. Cleaning with water should be avoided.

HOW MUCH RESIDUE IS LEFT IN EMPTY PACKAGING?



Polymer additive residue left after emptying a 25 kg bag: 150 - 200 g.



Polymer additive residue left after emptying a 1000 kg big bag: 500 - 600 g.

We expect use of best practices will significantly lower these residues.

For 500 and 1000 kg big bags, the highest efficiency is probably achieved by using a vibrating platform (bag hopper).

An example of this technique can be found at:
http://www.directindustry.com/soc/flomat-bagfilla-21954.html

THERE ARE DIFFERENT TYPES OF PACKAGING, MAINLY SPLIT IN 20-25 KG BAGS (POLYETHYLENE OR PAPER) AND BIG BAGS OF 500 OR 1000 KG

BEST TECHNIQUE FOR 20-25 KG BAGS

1

Start the ventilation system.

Put the bag under the ventilation system on top of the funnel or other filling opening.

2

Place the bag in such a way that the fill spout is facing the operator.

Cut the bag on the opposite side of the fill spout.

3

Turn the bag with cut side down to empty bag.

4

Shake bag vigorously.

5

Notice the spout. If the bag was cut on the opposite side, the fill spout would be full of product. Notice the exhaust port on the ventilation system. The exhaust hood should be adequate to capture the fine dust.

6

Roll up bag to get all of the air out.

7

Place rolled up bag in a plastic bag for disposal.

8

Close the plastic bags and put this one full of empty paper bags in a shipping container for proper disposal.