

10 Golden Rules for Dust Control

Rule 7: Immediately dispose of waste in a dust-free manner

Even in enclosed plant systems the occasional escape of process or waste material, for example, during maintenance and servicing work cannot be reliably prevented. In order to avoid further dispersion and dust formation, it is important to dispose of the escaped substances immediately in a dust-free manner.

Collect waste

Even in the planning stage of an operational plant, devices are to be provided which collect falling or escaping material. The collection devices for the waste material must be provided in such a way that they are easily accessible and easy to empty. **Since the emptying should take place regularly, the design must be robust and easy to handle.** It is to be taken into account that the loads to be moved (collection device + material) are able to be managed by the machine operators. In the event of larger loads, lifting aids are to be provided. The weight of the load that is to be regularly handled should be a maximum of 15 kg.

At the emptying point of the collection device measures must be taken to prevent new dusting of the material. In this case, for example, an exhaust ventilation can be installed or the material can be dampened.

In some production and manufacturing processes wet or paste-like material is used. When dealing with these forms of use, no dust can be produced – but only as long as the material is damp! In the course of different process steps, for example, when casting slurry or when processing mortar, the damp materials can fall on the ground. These wastes dry very rapidly and can then, with the slightest air movement caused by plant-internal transportation or personnel traffic, reach the breathable air as dust. **For this reason particular attention is to be paid that the waste does not fall on the ground at all in the first place, for example by using a collection sack.**



Fig. 1: Modeller and fettling workplace with collection sack

Technical protective measures, which prevent a dispersion and carrying over of waste material, are to be granted the highest priority. Once material has fallen on the ground it can frequently only be picked up again with a lot of effort. This applies also to raw materials which are provided as granulate, pellets or in tablet form. If the pressed items are spread on the ground there is the danger that they will be crushed by being stepped on or driven over. As a result the substances cover the ground in the finest distribution and can easily be swirled up in the air.



Fig. 2: Barium carbonate sacks damaged by plant-internal traffic; the raw material is provided as granulate

Bagged material – a problem

For stores with bagged material an impact protector is to be provided. This measure not only prevents the escaping of raw materials which tend to produce dust but also avoids the loss of these materials. For cost-effective and dust-free storing, an impact protector against industrial trucks is therefore essential. Material falling on the ground is to be picked up as quickly as possible to avoid additional formation of dust.

Dealing with loose bagged materials places the highest demands on the operators on site. **Opening of the bag, the emptying and subsequent folding up of the empty bag are significant potential sources of dust. For the dust-free feeding of bagged materials into silos, vessels or pneumatic conveyor systems the industry provides specific bag emptying stations.** These stations now facilitate a virtually dust-free manual introduction of bagged materials into the production process. The emptying station is directly mounted above the feed opening. It has a bag supporting table which is enclosed on three sides. The back wall of the enclosure is attached to an extraction system. The extraction takes place as a result of an attached dust extraction system. Above the feed opening there is a coarse grid which prevents parts of the bag falling into the fill opening. The front wall of the emptying station (bag supporting table) is ideally provided with a flap or door that swivels inwards. If the flap is opened inwards the exhaust ventilation system starts up. At the end of the emptying procedure the flap can be redirected outwards. This leads to a shutdown of the extraction system (energy saving!) and ensures that no impurities are able to reach the feed opening.



Fig. 3: Bag emptying station

For low-dust disposal of paper and plastic bags, the use of a so-called empty bag compactor is provided. This can also be combined with the bag emptying station. The compressing process takes place in a closed machine which is attached to an extraction system. The bags are then very heavily compressed in a space-saving manner.



Fig. 4: Dust source as a result of the storage of empty paper bags