

MANAGING HEAT BUILD UP IN PAINT WASTES

WHAT IS HEAT BUILD UP IN PAINT WASTES?

In some situations, waste materials from a paint job, such as paint covered rags, can spontaneously heat up sufficiently to create an ignition risk or even catch fire. This is sometimes called “Spontaneous Combustion”.

WHAT CAUSES THE HEAT BUILD UP?

Some coatings (most commonly alkyd enamels), cure through auto-oxidation. The resin chemically reacts with atmospheric oxygen and the metal driers in the coating. This curing reaction is exothermic – it releases heat. In most situations, this heat release is fairly low and dissipates quickly. Under certain circumstances, however, this heat release can be substantial. When waste material, with a relatively large surface area, covered with an alkyd enamel coating is compacted into a small area with poor airflow, the heat generated cannot dissipate easily. Examples are:

- A pile of paint soaked rags.
- Fresh paint residues or overspray piled into a waste bin.
- Filters from a dry wall spray booth compacted into a waste skip.

The issues are:

1. A large surface area means a lot of paint curing and generating heat.
2. Compacting this large surface area into a small volume prevents the generated heat from escaping.
3. The increasing temperature actually accelerates the chemical curing reaction, which generates more heat, which accelerates the reaction, etc.
4. Under the right circumstances, the resulting heat can be enough to ignite the bulk material eg rags, spray booth filters, paint overspray residues.
5. Furthermore, if the wastes are in a bin this can act as a sump to hold residual solvent vapour which can make ignition easier and may provide more fuel once the material has ignited.

HOW CAN HEAT BUILD UP BE AVOIDED?

To lower the risk of this type of incident occurring, it is necessary to remove the contributing factors:

- Wait until the curing reaction has completed before disposing waste materials in bins
- Prevent the heat build up
- Remove the fuel source
- Use an airtight seal on the bin lid to starve the paint of oxygen

A simple way to avoid heat build up is to ensure all paint wastes are thoroughly soaked in water before disposal. This simple act retards the curing reaction, prevents wastes from heating up, and separates solvent vapours from the combustible materials, eg rags.

For more information, please contact the Dulux Protective Coatings Technical Consultant in your state.



Bad rags



*Good rags
A handy plunger pushes the contaminated rags under water without having to touch the rags.*

