



Paint Spray Booth Chemical Terms

Detackification, Coagulation, Flocculation, Dewatering – What Do These Terms Mean?

All of these terms describe mechanisms by which paint spray booth chemicals might come into play in your paint spray booth/sludge handling system. Let's briefly describe each:

Detackification – Also known as “killing” the paint, is the process of removing the sticky or tacky nature of the paint overspray in the booth recirculating water system. Paint detackifiers achieve this through charge neutralization (coagulation) and/or encapsulation of the paint particles. Rapid mixing is required for detackification.

Coagulation – Is the process of neutralizing the surface charge of paint particles to promote attraction of the particles rather than repulsion. This enhances the ability of the particles to agglomerate and form “pin floc”, slightly visible groups of particles clumping together. Many coagulants are also paint detackifiers. Rapid mixing is required for coagulation.

Flocculation – Is the chemical “bridging” process whereby high molecular weight, long chain polymers are used to entangle the pin floc forming larger floc masses. Flocculants generally work best under slower mixing conditions (to prevent shearing of the bridged floc) and are typically fed in front of equipment where flotation or dewatering of the paint solids are desired.

Dewatering – Is the separation process in which water is removed from the sludge for the purpose of concentrating the solids. Chemically, this is achieved by promoting a rigid sludge structure of a porosity and pore size to allow drainage of the water. Mechanically, dewatering is achieved by the use of appropriate equipment such as dewatering bags, gravity filters, vacuum filters, plate and frame filters, centrifuges, and more.

Where are these products fed in a recirculating paint booth system?

Detackifiers are generally fed to the header(s) going back to the booth system(s) to promote maximum paint kill efficiency.

Coagulants can be fed to either the booth header(s) and/or the water going back to the main pit – the latter can sometimes enhance paint particle flotation in the pit.

Flocculants can be fed ahead of where enhanced flotation is required as long as the mixing energy isn't excessive. They are typically fed into flotation/dewatering equipment.

Dewatering agents are fed directly ahead of the dewatering equipment being utilized. In most cases flocculants and dewatering agents are the same chemical species.