# Do I Need to Segregate Lead Free

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The leading manufacturer of cleaning and cleanliness testing products.

**Separate wash systems for leaded and non-lead boards?**

We have a aqueous non saponifier wash system. Do we need separate wash systems for leaded boards and non-lead boards?

**Ask the Experts Comments**

As with so many answers, yes and no.

From a strictly wash standpoint, there is no need to segregate lead from no-lead in the cleaning system. Although the cleaning profile for lead-free is generally more aggressive than leaded solder paste, the cleaning equipment and chemical do not know the difference. There is little chance of "transferring" lead from an assembly reflowed with leaded solder paste to another assembly reflowed with lead-free solder paste. Although minute traces of lead may be found in the wash solution (particularly with high pH saponifiers), the rinse process prevents any dissolved lead from hitchhiking its way onto the assembly. One should ensure that their cleaning equipment incorporates an aggressive rinse process to ensure the thorough removal of wash chemical (especially if it contains dissolved lead).

From a practical standpoint, not all cleaning systems are capable of removing lead-free solder paste residue. The reflow and soldering profiles for lead-free solder are generally more aggressive (hotter) than leaded solder. It doesn't matter if you are cleaning pizza pans or SMT assemblies, heat is always the enemy of cleaning. The removal of lead-free solder paste requires more aggressive wash chemistry and more aggressive mechanical energy (impact pressure, temperature, spray diffusion patterns etc). Additionally, you will need a cleaning system that filters the wash solution (in real time) to prevent the transfer of particulate matter (solder balls) onto subsequently washed assemblies. For example, if your cleaning system is not equipped with a wash solution filtration system capable of removing solder balls and other particulate matter from the wash solution "stream", it is possible to transfer particulate lead matter onto a lead-free assembly. A good "real-time" 10 – 25 micron bag filter in the wash solution stream will prevent cross particulate contamination.

The real answer to your question depends on the power and performance of your cleaning equipment and your chemical choice. From an effluent standpoint however, that's a different story. A cleaning application using any high pH wash chemistry has the potential to leach lead from the assembly. Additionally, any solder balls removed in the cleaning process contain lead (assuming the use of a leaded solder paste). The direct-to-sewer discharge of wash solution used to remove leaded solder paste residues should be avoided. When cleaning leaded solder paste residues, one should utilize a cleaning

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system that is equipped with wash solution filtration and recycling technology to prevent lead discharge in both dissolved and particulate forms.

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