

# No Lead, and Hold the Extras

**W**ill the conversion to lead-free products have a near-term increase on the total number of pieces built for a certain part number? That's the question I asked component vendors, OEMs and EMS companies last month.

Why would it? Only because with so much customer satisfaction at stake, OEMs may seek a hedge just in case the number of failures and returns runs higher on lead-free assemblies. As such, the thinking goes, they might overbuild inventories to ensure ample tin-lead replacements.

For complex designs, OEMs are performing BoM scrubs, planning to be RoHS ready by Jan. 1, 2006 – six months ahead of the deadline. (Makers of consumer durables are either lead-free already or are expected to wait until the last moment, to gain economies-of-scale for lead-free parts.) One scenario has OEMs of high-rel gear buffering stocks by placing orders for specific parts in lead-free versions while also ordering additional safety tin-lead stocks, instead of simply (OK, maybe not “simply”) shifting *en masse* to alternate alloys. The result, then, would be a shift upward – albeit a short-lived one – in end-product demand (at the OEM level, if not the end-customer).

Except the evidence, anecdotal and statistical, says otherwise. (Damn.)

Dell Computer's lead-free program director Dave McCarron says that while the world's leading computer maker will build and ship tin-lead and lead-free part numbers simultaneously, the total pieces won't change. So, for example, if Dell were to ship two million Dimension desktops, that number would be divided (not necessarily equally) into tin-lead and lead-free versions.

Major electronics manufacturing services providers echo that sentiment. As Solectron senior manager of technical marketing Art Morgan says, customers are not doubling orders and any increase would be marginal at best. Advisory process engineer Jasbir Bath adds, “I don't think anyone has thought of overbuying ... in case there are more defects” in lead-free environments.

Ditto the analysts. iSuppli senior analyst Adam Pick says while he's taken calls from OEMs seeking assistance on how to handle the conversion, he hasn't heard of companies building stock for this scenario.

Even if OEMs wanted to build in reserves – and with the swing to JIT inventory and Lean Manufacturing, the evidence is they do not – component vendors aren't going along. Most vendors do not plan to maintain dual line cards. The reason, as Intel told me, is OEMs have “worked out most of the issues” with lead-free and are just awaiting word from customers on when to ramp, probably the middle of next year. Solectron's suppliers are moving to lead-free components and starting to remove from inventories tin-lead components for the same part number. Once the shift is in full swing, manufacturers will have little choice but to acquiesce (or pay a premium on the gray market). Morgan believes that

were the European Union to call off the legislation tomorrow there's enough momentum to switch anyway. “Component suppliers have jumped on this.”

From a processing standpoint it may not even cause that much grief. McCarron says – and others agree – most components are backward-compatible for lead-free processing and will be converted. (Parts that are not include BGAs and flip chips, and those with tin-bismuth coatings. Yet despite known reflow problems, says Bath, some suppliers are nevertheless implementing lead-free CSPs and BGAs.) Same goes for makers of Class 2 product: A designer at a maker of high-end power supplies and transformers says the company is following its standard approach of performing extraordinary process testing prior to ramp, and maintaining dedicated lead-free lines to avoid cross-contamination.

The approach, then, has been to extend the battery of tests to actual lead-free product coming off the lines, not just test vehicles. Dell, for example, is conducting testing for “HALT, ALT; every type of reliability test,” says McCarron. Likewise, EMS firms are trying to extend the design-to-maturity cycle to test for tin whiskers and voids by mitigating such issues early, says Morgan.

If anything, the ramp may be already past. One Class 3 OEM, we're told, faced with losing its tin-lead parts, executed end-of-life scenarios for five to 10 years out to ensure a supply. Intel knows of OEMs that have taken the same approach, performing “build aheads” as their EOL plan for lead versions. Even the server and telecom industries, which are exempt until 2010, are moving rapidly because, as Morgan says, “they want to get it over with, because they are still liable for five other chemicals,” including bromine.

That would track with the latest Semiconductor Industry Association poll. The trade group on Nov. 3 forecasted a flat 2005 for semiconductors (with drops in passives and memory offsetting modest upturns for microprocessors, logic and DSPs).

It would appear, then, that generally speaking the overall number of pieces built would remain the same throughout the conversion process. So come 2005, don't expect a healthy upswing in orders owing just to lead-free. Well, not unless all those environmentally friendly I-Pods, cellphones and servers stop working.

Happy holidays everyone.



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