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# **SALES BULLETIN**

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To: Atmel Worldwide Sales, Representatives and Distributors

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## **Environmentally Friendly Packaging Options**

More and more of our customers are requesting Lead-free and/or Halide-free packaging material for our products, which they incorporate into their end equipment. This requirement supports environmental concerns regarding the eventual disposal of the equipment, eliminating potential sources of ground water pollution. Lead has traditionally been used to plate the leads of our components to make them compatible with industry practices for soldering to a circuit board. Halides are compounds of Chlorine, Fluorine, Bromine, Iodine, or Astatine that have been used in plastic molding compound for IC packages. Some countries are legislating the elimination of lead and/or halides in consumer and industrial equipment, over varying time periods.

Atmel has begun offering versions of our products that eliminate lead or lead and halide materials. Though the Lead-free versions cost slightly more to produce at this time, we are offering them at the same price as their existing counterparts. Because Lead-free board production uses higher solder reflow temperatures, typically 260°C, some plastic packages that have relatively low moisture resistance must be shipped in extra-cost dry-packs. Halide-free molding compounds are significantly more expensive than currently popular material, so there is a price premium for these versions. To date, we have had relatively few requests for Halide-free packaging. Nevertheless we are prepared to serve this demand. Note that these options are available only for Commercial and Industrial grade products. The end equipment disposal issues are quite different for Automotive and Military and Aerospace grade products. See the table below for ordering information to specify which versions the customer prefers.

Note also that we are upgrading our procedures and materials at all of our principal manufacturing facilities, to eventually have them certified to the ISO14000 environmental standard.

## **Why would we use lead in the first place?**

To ensure reliable connections between semiconductor components and printed wiring circuit boards, system manufacturers have long soldered the components to the boards using 63/37 Tin-Lead solder, usually via controlled temperature solder equipment. They prepare the circuit board and the components for this process by specifying Tin-Lead plated component leads, and applying solder paste to the relevant areas on the circuit board. This system has worked well for years, but it has the side effect of allowing lead to leach into ground water when equipment is discarded at the end of its life and not fully recycled.

There are other reliable ways to connect component leads to circuit boards, without the use of Lead material. These new methods solve the Lead pollution problem. They require slightly different board assembly techniques, higher solder reflow temperatures, and sometimes different solder paste materials. Some of our customers are quickly adopting these new methods, and requiring us to supply appropriate component package materials.

## **Why not switch all our production to lead-free materials and convert all customers right away?**

Some customers have not yet converted their manufacturing processes, and will continue to use existing materials for some time. When any customer switches from Lead material components to Lead-free components, the customer may wish to re-qualify the components to ensure that the new versions perform as intended in the new manufacturing process and continue to meet the requirements for end equipment function and reliability. Some customers will take extended time to convert and re-qualify their existing products. Others may not convert any existing products, but gradually phase-in Lead-free production with new products only. There are similar arguments regarding the eventual switch to Halide-free materials.

So we will continue to offer both our existing and new material versions for the foreseeable future.

## **What package types are available Lead-free or Halide-free?**

Our goal is that by 2006 all Atmel products housed in Plastic packages will have Lead-free versions available. At first, the main volume runners will be made available. Others will be added as demand dictates.

## Order codes for standard packages

Because the change in material affects the temperatures to which our components may be subjected during the board assembly process, we have created several new temperature designations that specify these various material options in the dash number portion of our standard part numbers. The new versions include the traditional operating temperature designations of Commercial, Industrial, Automotive and Military; and new higher assembly-temperature versions for the Commercial and Industrial operating temperatures with the ability to withstand higher assembly temperatures, both with and without Lead and without Lead and Halides. The expanded list of temperature designations is:

Product Grade	Pb/Halide Grade			
	Std Paste	Pb-free	Pb-leads/high temp	Fully LHF
Commercial	C	L	G	X
Industrial	I	J	H	U
High Grade	E	N	P	Q
Automotive	A	-na-	-na-	-na-
Military	M	-na-	-na-	-na-
*Note 1: All Pb-free parts currently are backward compatible with Pb-containing solder paste				
*Note 2: LHF = "Lead and Halide Free"				

## What about Atmel Data Sheets?

As new product Data Sheets emerge, they will include ordering information for Lead-free and Halide-free product versions. At the next normal update time for every existing Data Sheet, they all will be eventually updated to reflect ordering procedures for Lead-free and/or Halide-free package options. To serve in the interim, we are publishing separate documentation that describes the new materials and the ordering information to get them. The first such documentation is a new Lead-free Policy – Environmental Brochure, attached. You can download additional copies from the web address below. This new documentation is general in nature, applying to all standard packages.

## For more information

See [http://www.atmel.com/quality/quality\\_env.asp](http://www.atmel.com/quality/quality_env.asp)

And [http://www.atmel.com/quality/quality\\_ISO.asp](http://www.atmel.com/quality/quality_ISO.asp)