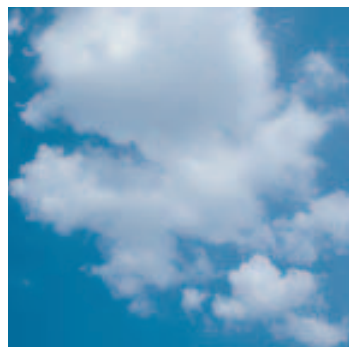
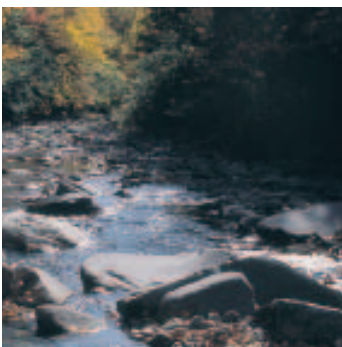




ATMEL QUALITY

ENVIRONMENTAL POLICY



ENVIRONMENTAL WORLDWIDE POLICY STATEMENT

The management at Atmel is committed to providing for the environment by decreasing our sites' overall ecological impact. Our goal is to make measurable improvements in all of the environmental aspects of our manufacturing activities and products. This commitment follows our continuous improvement philosophy and will be achieved by setting goals and objectives, followed by a plan to implement, review and audit our achievements.

Atmel has always been committed to upholding local, state and federal environmental regulations and will continue to do so in the future.

As part of our worldwide ecological obligations and commitments, Atmel will actively pursue ways to prevent pollution and reduce energy, water and other natural resource consumption by our facilities.


Additionally, we realize our sites' obligations to the community. In keeping with this, we have employed methods, and will continue to employ methods and implement appropriate actions to prevent and mitigate any environmental impacts that could happen as a result of our operations.



George Perlegos
President and
Chief Executive Officer



Gust Perlegos
Executive Vice President and
General Manager



Tsung-Ching Wu
Executive Vice President
of Technology



QUALITY ROAD MAP



ISO 14001 Registrations and Certification Plan for Atmel’s Manufacturing Locations

	Granted	Plan 2003
Colorado Springs (USA)	ISO 14001	
Nantes (France)	ISO 14001	
Rousset (France)	ISO 14001	
Heilbronn (Germany)		ISO 14001
North Tyneside (U.K.)	ISO 14001	

All Atmel non-manufacturing sites also participate in energy and recycling activities.

Lead- (Pb) Free Policy

In accordance with environmental concerns, the need for lead- (Pb) free solutions in electronic components and systems is receiving increasing attention within the semiconductor and electronics industries.

Atmel is committed to working with our customers to be able to offer products which meet their specific needs in this area.

The need for halogen-free solutions is also of concern for the semiconductor industry. Atmel is working with its subcontractors to use mold compounds, die attach and substrates (xxBGA) that do not contain halogens (chloride and bromine) or antimony trioxide (Sb_2O_3).

The following pages present a global overview of Atmel's Lead- (Pb) Free Policy.

Background to the Lead- (Pb) Free Movement

Over the past few years, governments, scientific communities and citizens have become more and more sensitive to environmental issues. Ozone depleting substances, particularly solvents such as CFCs and HCFCs, have been banned from the industry. The use of lead (Pb) and its compounds have been considered a threat to human health (level of lead in the blood). Consequently, major reductions or bans have been implemented in plumbing pipes, gasoline, and paint.

Today, the Lead- (Pb) Free program is moving steadily towards the electric and electronics communities, indeed some announcements have already been made by customers on these topics.

Legislation

Various regulatory agencies have enacted or proposed limits that will restrict the amount of Pb and halogen containing compounds in the future. Atmel is working to insure that its packages will meet the requirements of these groups. The key groups and regulatory agencies are:

- European Union End-of-Life Vehicle Directive (2000/53/EC)
- Waste from Electrical and Electronic Equipment (WEEE)
- Japan Electrical Insulating Materials Association
- Japanese Ministry of International Trade and Industry
- USA EPA



Definitions and Goals

Atmel defines Pb-free and halogen-free as packages that do not have either Pb or halogen containing compounds intentionally added.

The Moisture Sensitivity Level (MSL) is defined per JEDEC Standard J-STD -020 Rev.-B.

Lead-free tin alloys require higher processing temperatures. Moisture sensitivity testing of IC packages built with current assembly materials indicates a negative impact to moisture performance with a peak reflow temperature of 250°C. A drop of 1-2 MSL has been indicated for several package types. For some packages that were previously classified as MSL 1, the need to support higher reflow processing temperatures (> 235°C) will drive the need to ship product in dry-pack bags. For other packages, it may result in the implementation of more expensive, advanced assembly materials in order to maintain the same MSL as before.

Packages in the same family, are qualified in accordance with J-STD -020 Rev. B.

- A package family is defined as having the same die passivation, die attach, and mold compound.
- Qualification is completed by using the largest die paddle and die size as a worst case scenario.

The goal is to have totally Pb-free products in preferred Atmel manufacturing locations by January, 2005 and for all locations by January, 2006.

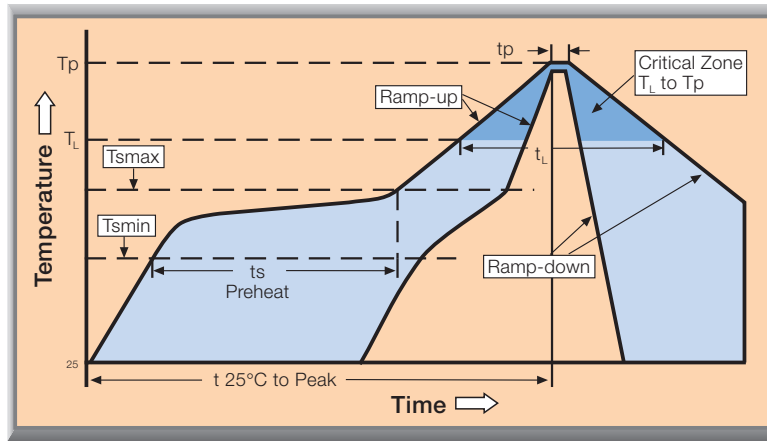
- Customer-specific and non-standard package options can undergo an accelerated qualification; several ASIC products have already been qualified and delivered using Pb free packages.
- Depending on customer requests, as of Q4/2002, Atmel could deliver Pb-free products for customer qualification needs.

Classification Reflow Profiles

All qualifications, evaluations and tests for Lead- (Pb) free packages are carried out with reflow profiles according to JEDEC J-STD-020 Rev. B.

Profile Feature	Sn-Pb Eutectic Assembly		Pb-Free Assembly	
	Large Body	Small Body	Large Body	Small Body
Average ramp-up rate (T _L to T _p)	3°C/second maximum		3°C/second maximum	
Preheat				
– Temperature minimum (T _{Smin})	100°C		150°C	
– Temperature maximum (T _{Smax})	150°C		200°C	
– Time (min to max) (ts)	60-120 seconds		60-180 seconds	
T _{Smax} to T _L				
– Ramp-up rate			3°C/second maximum	
Time maintained above:				
– temperature (T _L)	183°C		217°C	
– Time (t _L)	60-150 seconds		60-150 seconds	
Peak temperature (T _p)	225 +0/-5°C	240 +0/-5°C	245 +0/-5°C	250 +0/-5°C
Time within 5°C of actual peak temperature (tp)	10-30 seconds	10-30 seconds	10-30 seconds	20-40 seconds
Ramp-down rate	6°C/second maximum		6°C/second maximum	
Time 25°C to peak temperature	6 minutes maximum		6 minutes maximum	

Note: All temperatures refer to the topside of the package, measured on the package body surface.



Moisture Sensitivity Level

Based on the JEDEC J-STD-020 Rev.B Moisture Sensitivity Level definition, Atmel products will be classified as MSL 3 or better. All other levels can be qualified upon customer request.

Level	Floor Life		Soak Requirements			
			Standard		Accelerated Equivalent ¹	
	Time	Conditions	Time (Hours)	Conditions	Time (Hours)	Conditions
1	Unlimited	≤ 30°C/85% RH	168 +5/-0	85°C/85% RH		
2	1 year	≤ 30°C/60% RH	168 +5/-0	85°C/60% RH		
2a	4 weeks	≤ 30°C/60% RH	696 ² +5/-0	30°C/60% RH	120 +1/-0	60°C/60% RH
3	168 hours	≤ 30°C/60% RH	192 ² +5/-0	30°C/60% RH	40 +1/-0	60°C/60% RH
4	72 hours	≤ 30°C/60% RH	96 ² +2/-0	30°C/60% RH	20 +0.5/-0	60°C/60% RH
5	48 hours	≤ 30°C/60% RH	72 ² +2/-0	30°C/60% RH	15 +0.5/-0	60°C/60% RH
5a	24 hours	≤ 30°C/60% RH	48 ² +2/-0	30°C/60% RH	10 +0.5/-0	60°C/60% RH
6	Time on Label (TOL)	≤ 30°C/60% RH	TOL	30°C/60% RH		

Note 1: CAUTION - The "accelerated equivalent" soak requirements shall not be used until correlation of damage response, including electrical, after soak and reflow is established with the "standard" soak requirements or if the known activation energy for diffusion is 0.4 - 0.48 eV. Accelerated soak times may vary due to material properties, e.g., mold compound, encapsulant, etc. JEDEC document JESD22-A120 provides a method for determining the diffusion coefficient.

Note 2: The standard soak time includes a default value of 24 hours for semiconductor manufacturer's exposure time (MET) between bake and bag and includes the maximum time allowed out of the bag at the distributor's facility.

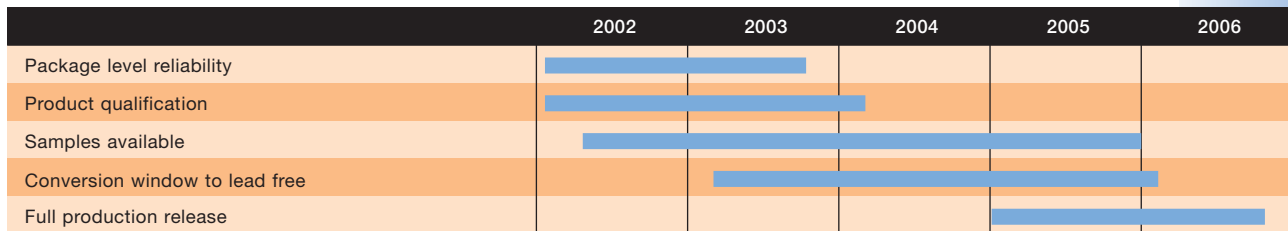
Pb-Free Package Matrix

Application	Package Type	Package View	Pb Free		Bumps SNAgCu	Mold Material		Pb Free Samples Available?
			Sn	Sn-(Ag, Cu,..)		G600 G700	EME 6650U	
Through Hole Type	PDIP		✓			✓	✓	Yes
Surface Mount Type	SOIC/ SOP		✓			✓		Yes
	SSOP/ TSSOP		✓			✓		Yes
	QFP/ TQFP		✓			✓		Yes
	QFN		✓			✓		Yes
	PLCC		✓	✓		✓		Yes
Area Array	BGA/ Package				✓			Yes
	Flip Chip				✓			Yes
	CSP				✓			Yes

✓ Denotes that the package is available in the specific type of terminal finish. This list is only indicative; other Bill of Materials can be used per package family and/or assembly sites. Customer specific packages will be addressed as required.

Lead- (Pb) Free Roadmap

The goal is to be Pb-Free compliant for all plastic packages by 2006.



For additional information or further questions, please contact your relevant sales representative.

Substances of Concern

In addition to Atmel's environmental worldwide policy, Atmel complies not only with CEE ref (European Community) directive, but has also decided to prohibit some banned substances according to environmental protection regulation directives such as Waste from Electrical and Electronics Equipment (WEEE) in order to increase the re-use and re-cycle rates of materials.

The table below presents the list of substances which are not present in Atmel products or else in negligible or detectable traces (ppm).

Polychlorinated Biphenyls (PCB)	Thallium and compounds
Polychlorinated Terphenyls (PCT)	Toluene
Benzene	Xylene
Asbestos (all types)	Polycyclic aromatic hydrocarbons
Poly brominated biphenyls (PBB)	Cyanides
Polybrominated Biphenyl Ethers (PBBE)	Acrylonitrile (monomer)
Polybrominated Diphenyl Ethers (PBDE)	Chlorine paraffin
Mercury and compounds	N,N-Dimethylacetamide (DMA)
Arsenic and compounds	N-Methylformamide (NMF)
Pentachlorophenol (PCP)	N,N-Dimethylformamide (DMF)
Cadmium and compounds	Diethylamine
Carcinogens category 1 and 2	Dimethylamine
Mutagens category 1 and 2	Nitrosamide
Carbon Tetrachloride	Nitrosamine
1,1,1-Trichloroethane	Ethylene glycol ethers and acetates
Chlorofluorocarbons (CFC)	Phthalates (all monomers)
Hydrochlorofluorocarbons (HCFC)	Formaldehyde (monomer)
PVC and PVC blends	Picric acid
Beryllium and compounds	Dioxines
Chromium (VI) and compounds	Dibenzofurans
Cobalt and compounds	Halogenated aromatic compounds
Selenium and compounds	Vinylchloride
Tellurium and compounds	Other halogenated aliphatic compounds

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