

Product Change Notification**No. 2003.001**

FOR INFORMATION ONLY

Subj.: Micronas “Green Product” Roadmap

January 17, 2003

Dear Customer,

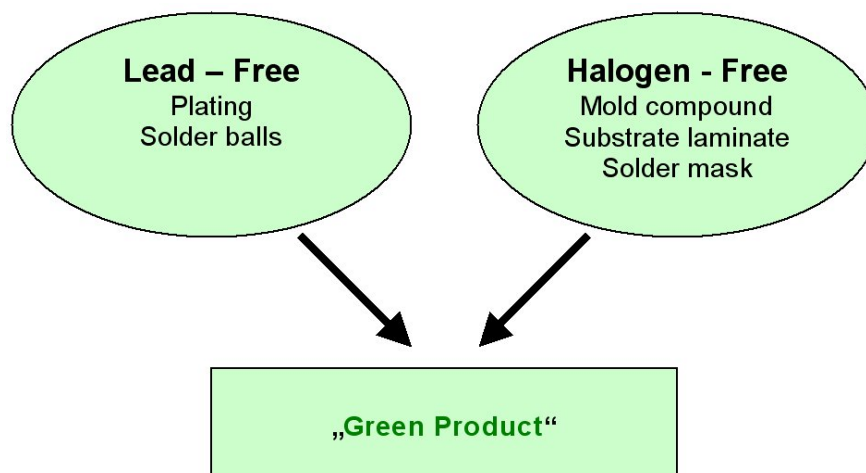
Being aware of the importance of environmental protection in the electronics industry, Micronas will start the introduction of environmentally friendly materials for its products.

This information letter will give a general overview about the implementation of lead-free and green materials for Micronas products. A roadmap is included to show the planned conversion steps and a preliminary schedule of the conversion.

Definition “Green Product”:

Micronas understands “Green Product” as an environmental friendly product with the following two aspects:

1. Only lead-free alloy will be used for plating and solder balls.
2. No halogen will be used anymore in flame – retardants for mold compound, substrate laminates and solder masks.



Products affected:

Micronas products are going to be assembled in green packages according to our attached roadmap.

Schedule of the change (Micronas Roadmap):

The change to “Green Products” will take place in four phases:

- Phase 1: Green compatibility phase
- Phase 2: Transition phase
- Phase 3: Lead-free phase
- Phase 4: “Green Product” phase

Phase	1 Green Compatibility	2 Transition Phase	3 Lead-free Phase	4 “Green Product”
Plating	<p>Micronas packages will be plated with current SnPb finishing.</p> <p>The packages will be tested for their compatibility for lead-free solder processes (acc. to J-STD-020B).</p> <p>Reliability data for lead-free soldering are available.</p>	<p>Lead-free plating will be introduced step by step for all packages.</p> <p>During this transition phase, mixed deliveries will take place.</p>	<p>Conversion to lead-free plating will be completed.</p>	<p>Conversion to lead-free plating will be completed.</p>
Mold Compound Substrate Solder Mask	<p>Current materials will be used.</p>	<p>Green materials will be introduced step by step.</p>	<p>Green materials will be introduced step by step.</p>	<p>Conversion to green materials will be completed.</p>
Time horizon	<p>now to Q3/2003</p>	<p>Q3/2003 to Q2/2004</p>	<p>Q3/2004 to Q4/2005</p>	<p>from 2006 on</p>

* For detailed schedule for different packages please refer to the attached table on page 5 of this information letter.

“Green Product” Materials:

To reach our goal of providing environmental friendly “Green Products” the following material will be used:

- Lead-free plating: pure Sn (matte) for leadframe packages
- Lead-free solder balls: SnAgCu for BGA packages
- Green materials: Micronas will not use Antimony(III)Oxide (Sb_2O_3), halogenated flame- retardants and Red Phosphorus containing materials according to WEEE-directive.

Impact on the customer’s application:

The change will not have any impact on the customer’s application and assembly processes.

Lead-free plated products can be assembled with either lead-based or lead-free solder pastes without negative impact on reliability.

Products with lead-based plating can also be assembled on SnAgCu lead-free solder processes.

Deliveries:

During “Phase 2: Transition phase”, **mixed deliveries** (Lead-based plating / Lead-free plating) may occur.

Reason for the change:

The approach is supported by

- Customer requests
- International standards like **Waste Electrical and Electronic Equipment (WEEE) directive** **Restriction of the use of Hazardous Substances (RoHS) directives** of the European Parliament and
- environmental initiatives of other countries worldwide.

Qualification:

All changes on products during the “Green Product” approach, will be qualified according to the AEC-Q100 / JESD47-A standards.

Product/Process Change Notification (PCN):

Before the actual delivery start of changed materials, individual PCNs will be distributed, including all necessary details and supporting documents required.

Samples:

Lead-free dummy devices for solderability evaluations will be available on request as of Q1.2003. Availability dates for qualification samples will be announced in the individual PCNs.

Support:

If you have any questions regarding “Green Product” please do not hesitate to contact your local sales representative or alternatively Micronas reliability department (Joachim.Mildenberger@micronas.com).

New Packages:

For the development of new package types lead-free and green materials are used solely.

Appendix:

Micronas “Green Product” conversion Road-Map

Your sincerely,

Micronas GmbH



Micronas "Green Product" conversion Road-Map:

