Infineon

“Green / RoHS“ information package

November, 2005

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General information

Green Products are being taken in support of government regulations and the world-wide customer requirements to supply environmentally friendly products.

What is RoHS ?

Restriction for the use **o**f **H**azardous **S**ubstances (**RoHS**) to prohibit lead (Pb), mercury (Hg), cadmium (Cd), chromium (Cr6), PBDE, PBB.

Enforcement date for Lead-free materials: 01. 07. 2006

What is WEEE ?

Waste of **E**lectrical and **E**lectronic **E**quipment (**WEEE**): A directive to recycle ‘plastic containing brominates flame retardant (halogens: chlorine, bromine) in the electro- and electronic equipment.

Enforcement date for halogen-free materials: 01. 01. 2007

What is green?

green Product

=

Robustness
Capability for lead-free

+

Lead-free
Balls, FC bumps, Lead finish

RoHS compliant 01.07.2006

+

Halogen-free
Substrate materials,
Mold compound
If technically / economically beneficial

WEEE compliant 01.07.2007

To fulfill the solder conditions for lead-free board assembly

To fulfill legal and market demands

Definition

green product	= a RoHS compliant product; (meaning lead-free plating; BGA-balls; …); plus the capability to be soldered in a lead-free board assembly process; and if technical / economical beneficial also halogen-free (mould compound; substrate; ...)
lead-free	= a product with <1000ppm of Pb per material used; e.g. Sn-plating, SnAgCu for BGA balls or solder paste; plus RoHS exemptions
halogen-free	= a product with <900ppm of Cl and Br; e.g. mould compound, substrate; no use of brominate flame retardants; (PBB and PBDE are not in use since many years)
robust (capability for lead-free)	= a product processable at higher (lead-free) peak temperature, based on actual IPC/JEDEC STD 020

Definition

RoHS	Restriction of Hazardous Substances. EU-directive to prohibit the use of certain materials (e.g. Pb, Hg, ...) in electrical and electronic equipment (EEE). Contains exemptions (e.g. high lead die attach solder). Effective: 01.07.2006
WEEE	Waste Electrical and Electronic Equipment. EU directive to regulate the recycling process of EEE. Contains a listing of affected products (with exemptions). Not a ban of materials. Effective: 01.01.2007
MSL	Moisture Sensitivity Level. Based on IPC / Jedec JStd. 020. Does indicate the max. time between opening the packing and board assembly
compatibility	The package termination finishes are compatible with respective solder and solder-process. E.g. a lead-free component can be soldered in with a SnPb-solder paste and vice versa

Overview of status of “green” legislation

Scope of RoHS & WEEE affected by	RoHS	WEEE
household applications	yes	yes
IT equipment	yes	yes
consumer devices	yes	yes
lighting equipment	yes	yes
electrical tools	yes	yes
toys, leisure, sport equipment	yes	yes
medical devices	no	yes
monitoring & control devices	no	yes
military applications	no	no
automotive	no	no
spare parts (application < 07/2006)	no	

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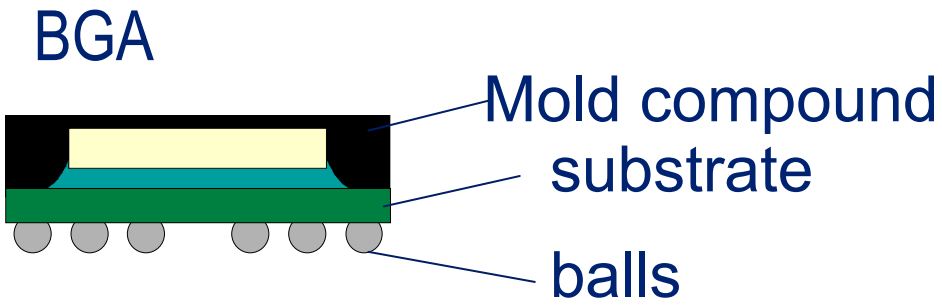
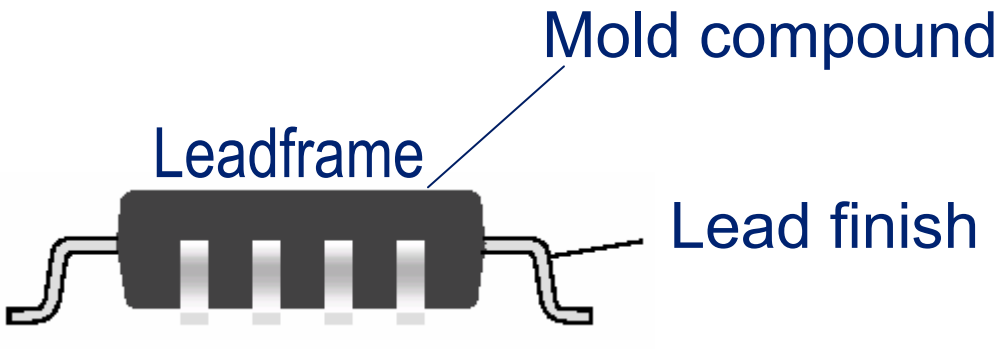
Affected materials in the package

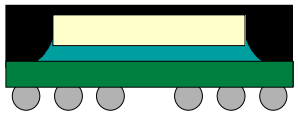




Leadframe packages compatibility

solder / device	Pb – (215-240 °C)	~~Pb~~ – (235-260 °C)
	Increase temp. by > 20 °C	
Pb	✓	Processibility: o.k. Solderability: o.k. Reliability: o.k. (Precondition: Product must be robust) ✓
~~Pb~~	Processibility: o.k. Solderability: o.k. Reliability: o.k. ✓	Processibility: o.k. Solderability: o.k. Reliability: o.k. ✓

BGA packages compatibility



solder / device	Pb – (215-240 °C)	Pb – (235-260 °C)
Pb		Increase temp. by > 20 °C Processibility: o.k. Solderability: o.k. Reliability: o.k. 
Pb	Processibility / Solderability below 230 °C critical Reliability: o.k. **For low temperatures critical**	Processibility: o.k. Solderability: o.k. Reliability: o.k. 

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Conversion overview

- As of September 2005 IFX converted app. 75% of all Distribution relevant products to green.
- End of 2005 IFX will have over 90% of all Distribution relevant products available in green.
- Remaining business / products are mainly fulfillment business towards automotive accounts and therefore uncritical.

Green Rate	Products	Revenue
Q3/2005	74,2%	74,5%
Q4/2005	93,0%	91,5%

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Identification of “green“ products

Lead-free identification on Product Level

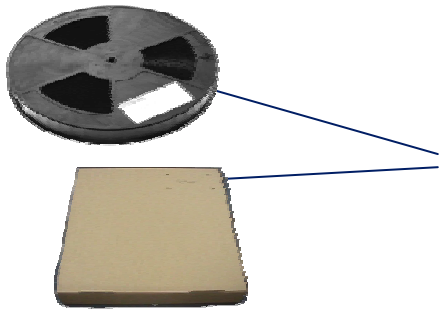
- Conversion is always traced by datecode information
- "G" in front of the datecode, if applicable. Very small packages, especially discrete products are excluded

"G" in front of the datecode

Datecode Datecode Green
YYWW ⇨ GYYWW = "Green"

Lead-free identification on Packing Level

- Lead-free logo on the Barcode Product Label (on product box and reels)
- During transition period a sticker with the same logo might be used instead



Pb = RoHS compliant

Multiple MSL
e.g. MSL2/235; MSL3/260

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Green - communication

- Regular communication through:
  - '**push**' - communication via direct emailing of 'green' Product Status List
  - '**pull**' – communication through ODIN Bulletin Board, where the 'green' status list and the conversion list can be downloaded

- If you got Individual questions, please contact:
  Bernhard.Huber@infineon.com or Markus.Kroh@infineon.com

Dear valued Partners,

As you are aware of, in the European Committee a law to prohibit the usage of hazardous materials is currently on the way to be effective by July 1st 2006. Products must be compliant to RoHS with the exception of the automotive, military and medical industry. The electro- and electronics-industry has to eliminate lead and other hazardous materials from their products. Additionally the recycling of certain materials is defined. The law is aiming to avoid certain materials to be dumped into landfills. It should prevent an environmental pollution. Infineon is highly adapted to environmental issues and is therefore interested in eliminating the usage of hazardous and environmentally dangerous materials.

Infineon policy: Infineon will introduce the environmental friendly materials according the law emplacement. The safety of our environment is part of Infineon policy.

We would like to provide you with information on the 'Green'-Status of Infineon products relevant to Distribution. Therefore we created a Product Status List which provides you with a list of products by part number and ordering code (OI / SP - number) of the products already available in green. The list is not complete yet but will be regularly updated in order to provide you with most accurate information which should be useful and beneficial to your work.

For more information on green, e.g. general information, identification of lead-free products, technical information and so on, please go to

For more details or questions, please contact: Bernhard.Huber@infineon.com or Markus.Kroh@infineon.com

Best regards,

'Push' communication through direct emailing

Green Product Status List

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Useful link / documents

Infineon's green products website:

http://www.infineon.com/greenproduct

Find useful documents such as:

Solderability
Technical notes
Publications
Further links to organizations / law initiatives …

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