



## Bourns Definitions: Halogen-free, Green, RoHS 5/6 & RoHS 6/6

Certain environmental terms are widely used in the electronics industry, but lack any specific regulatory definition. In order to avoid ambiguity, below is an explanation of the meanings of certain specific terms when used by Bourns, Inc. (“Bourns”).

### Halogen-free

Bourns is using the definition that appears to be the prevalent definition used in the industry standard at this time. The Bourns definition of “halogen-free” is:

Bromine (Br) content:	≤ 900 ppm
Chlorine (Cl) content:	≤ 900 ppm
Total Br + Cl content:	≤1500 ppm

### Green

The term “Green” is used quite commonly, but there does not yet appear to be a prevalent definition used in the industry. When Bourns refers to a product or formulation as being “Green”, Bourns means that such product or formulation is:

1. RoHS compliant (including the use of valid exemptions);
2. Halogen-free; and
3. The antimony oxide content is ≤ 900 ppm.

### RoHS 5/6 & RoHS 6/6

The EU RoHS directive 2002/95/EC and subsequent amendments including RoHS Recast 2011/65/EU limit the permissible concentrations of six regulated substances:

<u>RoHS Regulated Substance</u>	<u>Chemical Symbol</u>	<u>RoHS Maximum Permitted Concentration</u>
Cadmium	Cd	100 ppm
Lead	Pb	1000 ppm
Mercury	Hg	1000 ppm
Hexavalent chromium	Cr+6	1000 ppm
Polybrominated biphenyls	PBB	1000 ppm
Polybrominated diphenyl ethers	PBDE	1000 ppm

The above RoHS permitted concentrations are by weight at the homogeneous material level. The RoHS Directive allows exemptions when adequate substitutes for these regulated substances cannot be found.

The term “RoHS 5/6” refers to products that are compliant with the limits for five RoHS regulated substances – Cd, Hg, Cr+6, PBB and PBDE – but not Pb. To be able to use the RoHS 5/6 compliance reference, the lead (Pb) usage in excess of RoHS permitted concentrations (i.e., >1000 ppm) can only be in solder, component finishes and/or the resulting joint formed in the

soldering process. Any other usage of lead (Pb) in excess of RoHS permitted concentrations disqualifies the part from RoHS 5/6 compliance.

The term “RoHS 6/6” refers to products compliant with the limits for all six RoHS regulated substances: Cd, Pb, Hg, Cr+6, PBB and PBDE.

Valid RoHS exemptions may be used in determining whether the terms RoHS 5/6 or RoHS 6/6 apply.

### **RoHS Exemption 7b**

Unlike the above terms, RoHS Exemption 7b has a specific defined meaning. RoHS Exemption 7b permits the use of lead (Pb) in solders for:

*servers, storage and storage array systems, network infrastructure equipment for switching, signaling, transmission as well as network management for telecommunications*

This exemption is typically used by companies whose end products fall under the categories listed within the exemption. Bourns does not presently offer products falling under any of these categories. Therefore, Bourns does not rely on RoHS Exemption 7b for any of its RoHS compliant products.

Updated October 25, 2011

Bourns reserves the right to change this document at any time without notice.