

BOURNS®

Bourns Definitions: Halogen-free, Green, RoHS3/RoHS10

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.

RoHS3

The EU RoHS 2011/65/EU and recent amendment of Annex II, 2015/863 added four additional substances to total ten 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
Bis(2-ethylhexyl)phthalate	DEHP	1000 ppm
Butyl benzyl phthalate	BBP	1000 ppm
Dibutyl phthalate	DBP	1000 ppm
Diisobutyl phthalate	DIBP	1000 ppm

The above RoHS permitted concentrations are by weight at the homogeneous material level. The RoHS Directive allows specific exemptions when adequate substitutes for these regulated

substances cannot be found. These exemptions are reviewed by the EU approximately every four years to determine whether the exemptions are still needed.

With the added four substances and the 2015/863 amendment, many unofficial terms are used to reference RoHS. RoHS3 refers to the 3rd amendment for RoHS since its inception in 2002. RoHS10 references the ten substances. They all refer to the 2011/65/EU regulation and its annexes along with the additional substances in 2015/863. RoHS3 effective date is July 22, 2019.

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