



Statement on Restriction of Hazardous Substances (“RoHS”) for TI Products

TI products are designated as “RoHS-Compliant” when designated RoHS = Yes, or RoHS = Exempt, to comply with EU Directive 2011/65/EU (entered July 21, 2011) and the amended Directive (EU) 2015/863 (effective July 22, 2019) for Restriction of the Use of Hazardous Substances (“RoHS”).

To the best of TI’s knowledge, TI products that are declared as RoHS Compliant

- Do not contain restricted substances **above** the maximum threshold values shown in Table 1

OR

- Where applicable, may be subject to one of the RoHS Annex III exemptions for lead (Pb) as shown in Table 2. (For externally purchased components, other RoHS exemptions may apply):

TABLE 1

Substance	Threshold	EU RoHS Directive
Cadmium (Cd)	0.01% (100ppm)	2002/95/EC amended 2011/65/EU
Lead (Pb)	0.1% (1000ppm)	2002/95/EC amended 2011/65/EU
Mercury (Hg)	0.1% (1000ppm)	2002/95/EC amended 2011/65/EU
Hexavalent Chromium (Cr ⁶)	0.1% (1000ppm)	2002/95/EC amended 2011/65/EU
Polybrominated biphenyls (PBBs)	0.1% (1000ppm)	2002/95/EC amended 2011/65/EU
Polybrominated diphenylethers (PBDEs)	0.1% (1000ppm)	2002/95/EC amended 2011/65/EU
Bis(2-ethylhexyl) phthalate (DEHP)	0.1% (1000ppm)	EU 2015/863, enforced 22 Jul 2019
Butyl benzyl phthalate (BBP)	0.1% (1000ppm)	EU 2015/863, enforced 22 Jul 2019
Dibutyl phthalate (DBP)	0.1% (1000ppm)	EU 2015/863, enforced 22 Jul 2019
Diisobutyl phthalate (DIBP)	0.1% (1000ppm)	EU 2015/863, enforced 22 Jul 2019

TABLE 2

EU RoHS Exemption	Description	Category
7(a)	Lead in high melting temperature type solders (i.e. lead based alloys containing 85 % by weight or more lead)	2002/95/EC amended 2011/65/EU
7(c)-i	Electrical and electronic components containing lead in a glass or ceramic other than dielectric ceramic in capacitors, e.g. piezoelectronic devices, or in a glass or ceramic matrix compound	2002/95/EC amended 2011/65/EU
15(a)	Lead in solders to complete a viable electrical connection between the semiconductor die and carrier within integrated circuit flip chip packages where at least one of the following criteria applies: - A semiconductor technology node of 90 nm or larger; - A single die of 300 mm ² or larger in any semiconductor node; - Stacked die packages with die of 300 mm ² or larger, or silico interposers of 300 mm ² or larger	2011/65/EU amended (EU) 2019/172: Categories 1 to 7 & 10
15	Lead in solders to complete a viable electrical connection between the semiconductor die and carrier within integrated circuit flip chip packages	2011/65/EU amended (EU) 2019/172: Categories 8, 9 & 11

- Do not exceed the IEC 62474 database (formerly the Joint Industry Guide –JIG101) and the Global Automotive Declarable Substance List (GADSL) for regulated substances, thresholds and applications in electronics.
- Meet the China Management Methods for controlling Pollution by Electronic Information Products (“China RoHS”). For products containing lead, the China RoHS EFUP is 50 years (www.ti.com/leadfree).

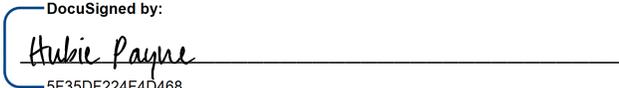
TI defines “RoHS Compliant” products as follows:

- **RoHS = Yes:** Means TI semiconductor products that are compliant with the current RoHS requirement that the maximum concentration values of the ten substances listed in RoHS Annex II do not exceed 0.1% by weight in homogeneous materials (0.01% for Cd). Where designed to be soldered at high temperatures, TI semiconductor products labeled as “RoHS Compliant” are suitable for use in specified lead-free processes. TI may also reference these types of semiconductor products as “Pb-Free.”
- **RoHS = Exempt:** Means TI semiconductor products that contain lead (Pb) above the RoHS Annex II threshold, but that fall within one of the specific RoHS exemptions listed above. TI products with this designation contain below the regulatory thresholds for all RoHS restricted substances except Lead (Pb), which may be found in materials such as leadframe plating or solder balls. EU RoHS status can be checked at www.ti.com/productcontent.
- **RoHS = No:** TI products **not** designated as “RoHS Compliant” are **below** the regulatory thresholds for all RoHS Annex II substances except Lead (Pb), which may be found in materials such as leadframe plating or solder balls where a RoHS exemption cannot be claimed. EU RoHS status can be checked at www.ti.com/productcontent

Note: Although not publicly available, the existence and/or concentrations of TI proprietary materials in TI semiconductor products are in full compliance with regulatory requirements in effect as of the date below.

TI’s semiconductor products, as well as most module products are considered “components” under RoHS. Therefore, the CE marking, declaration of conformity, and internal product control provisions set forth in Article 7 of RoHS do not apply.

Evaluation modules (EVMs): As of July 22, 2019, TI EVMs are in compliance with all RoHS Article 7 requirements.

Signature: 
Name/Title: Hubie Payne, Vice President, Worldwide Quality
Date: 8/13/2020

Important Information/Disclaimer

TI bases its material content information on information provided by third-party suppliers and has taken, and continues to take, reasonably diligent steps to provide any required or available information. TI may not have conducted destructive testing or chemical analysis on incoming materials and chemicals. TI and TI suppliers may consider certain information to be proprietary, and thus certain information may not be available for release by TI. The material content information is provided by TI "as is."

For additional information, please contact [TI customer support](#).

IMPORTANT NOTICE FOR SEMICONDUCTOR PRODUCTS

Texas Instruments Incorporated and its subsidiaries (TI) reserve the right to make corrections, enhancements, improvements and other changes to its semiconductor products and services per JESD46, latest issue, and to discontinue any product or service per JESD48, latest issue. Buyers should obtain the latest relevant information before placing orders and should verify that such information is current and complete. All semiconductor products (also referred to herein as "components") are sold subject to TI's terms and conditions of sale supplied at the time of order acknowledgment.

TI warrants performance of its components to the specifications applicable at the time of sale, in accordance with the warranty in TI's terms and conditions of sale of semiconductor products. Testing and other quality control techniques are used to the extent TI deems necessary to support this warranty. Except where mandated by applicable law, testing of all parameters of each component is not necessarily performed.

TI assumes no liability for applications assistance or the design of Buyers' products. Buyers are responsible for their products and applications using TI components. To minimize the risks associated with Buyers' products and applications, Buyers should provide adequate design and operating safeguards.

TI does not warrant or represent that any license, either express or implied, is granted under any patent right, copyright, mask work right, or other intellectual property right relating to any combination, machine, or process in which TI components or services are used. Information published by TI regarding third-party products or services does not constitute a license to use such products or services or a warranty or endorsement thereof. Use of such information may require a license from a third party under the patents or other intellectual property of the third party, or a license from TI under the patents or other intellectual property of TI.

Reproduction of significant portions of TI information in TI data books or data sheets is permissible only if reproduction is without alteration and is accompanied by all associated warranties, conditions, limitations, and notices. TI is not responsible or liable for such altered documentation. Information of third parties may be subject to additional restrictions.

Resale of TI components or services with statements different from or beyond the parameters stated by TI for that component or service voids all express and any implied warranties for the associated TI component or service and is an unfair and deceptive business practice. TI is not responsible or liable for any such statements.

Buyer acknowledges and agrees that it is solely responsible for compliance with all legal, regulatory and safety-related requirements concerning its products, and any use of TI components in its applications, notwithstanding any applications-related information or support that may be provided by TI. Buyer represents and agrees that it has all the necessary expertise to create and implement safeguards which anticipate dangerous consequences of failures, monitor failures and their consequences lessen the likelihood of failures that might cause harm and take appropriate remedial actions. Buyer will fully indemnify TI and its representatives against any damages arising out of the use of any TI components in safety-critical applications.

In some cases, TI components may be promoted specifically to facilitate safety-related applications. With such components, TI's goal is to help enable customers to design and create their own end-product solutions that meet applicable functional safety standards and requirements. Nonetheless, such components are subject to these terms.

No TI components are authorized for use in FDA Class III (or similar life-critical medical equipment) unless authorized officers of the parties have executed a special agreement specifically governing such use.

Only those TI components which TI has specifically designated as military grade or "enhanced plastic" are designed and intended for use in military/aerospace applications or environments. Buyer acknowledges and agrees that any military or aerospace use of TI components which have **not** been so designated is solely at the Buyer's risk, and that Buyer is solely responsible for compliance with all legal and regulatory requirements in connection with such use.

TI has specifically designated certain components as meeting ISO/TS16949 requirements, mainly for automotive use. In any case of use of non-designated products, TI will not be responsible for any failure to meet ISO/TS16949. Further information can be found at www.ti.com or by contacting support@ti.com.

Mailing Address: Texas Instruments, Post Office Box 655303, Dallas, Texas 75265
Copyright © 2014, Texas Instruments Incorporated

IMPORTANT NOTICE AND DISCLAIMER

TI PROVIDES TECHNICAL AND RELIABILITY DATA (INCLUDING DATASHEETS), DESIGN RESOURCES (INCLUDING REFERENCE DESIGNS), APPLICATION OR OTHER DESIGN ADVICE, WEB TOOLS, SAFETY INFORMATION, AND OTHER RESOURCES "AS IS" AND WITH ALL FAULTS, AND DISCLAIMS ALL WARRANTIES, EXPRESS AND IMPLIED, INCLUDING WITHOUT LIMITATION ANY IMPLIED WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE OR NON-INFRINGEMENT OF THIRD PARTY INTELLECTUAL PROPERTY RIGHTS.

These resources are intended for skilled developers designing with TI products. You are solely responsible for (1) selecting the appropriate TI products for your application, (2) designing, validating and testing your application, and (3) ensuring your application meets applicable standards, and any other safety, security, or other requirements. These resources are subject to change without notice. TI grants you permission to use these resources only for development of an application that uses the TI products described in the resource. Other reproduction and display of these resources is prohibited. No license is granted to any other TI intellectual property right or to any third party intellectual property right. TI disclaims responsibility for, and you will fully indemnify TI and its representatives against, any claims, damages, costs, losses, and liabilities arising out of your use of these resources.

TI's products are provided subject to TI's Terms of Sale (<https://www.ti.com/legal/termsofsale.html>) or other applicable terms available either on [ti.com](https://www.ti.com) or provided in conjunction with such TI products. TI's provision of these resources does not expand or otherwise alter TI's applicable warranties or warranty disclaimers for TI products.

Mailing Address: Texas Instruments, Post Office Box 655303, Dallas, Texas 75265
Copyright © 2021, Texas Instruments Incorporated