

Effects of China RoHS on Packaging and Crating

Since February of 2003, suppliers of electronic materials have been making significant changes to their products in compliance with the Restriction of Hazardous Substances (RoHS) Directive initiated by the European Union (EU). While the economic implications of following this new standard have adversely affected a number of companies, overall the directive helps reduce pollution and protect both the environment and health of humanity. RoHS regulation restricts the use of six materials in the components of most electronic devices. These materials are:

- Lead
- Mercury
- Cadmium
- Hexavalent Chromium
- Polybrominated biphenyl (PBB)
- Polybrominated Diphenylether (PBDE)

The EU directive took effect on July 1st, 2006, and RoHS is now part of a vernacular with which electronics manufacturers are very familiar. In March of 2007, China adopted its own environmental standards, known as China RoHS. China's standards are similar to those implemented by the EU; however, the differences in the China RoHS have put North American companies who import and export across the globe in a tight spot. Here we will look at some of the major differences in the standards set by the EU and China, and how they apply to the packaging industry.

China Initiative

In the last few decades, China's Gross Domestic Product (GDP) has increased at a stunning rate. Compared to the minimal industrial activity in the 1970's, China's GDP growth has been a miraculous change for their economy. Their growing middle class population is spending trillions of dollars on electronics like computers, televisions, and cell phones. However, this economically-beneficial trend has caused China to be home to 5 of the 10 most polluted cities in the world. According to the World Bank, China surpassed the US as the world's largest waste generator in 2004. They stated that, "No country has ever experienced as large or as fast an increase in solid waste quantities." Desperately needing to promote waste minimization, reuse, and recycling, it is no wonder China has adopted such strict and profound environmental standards.

In short, just as companies were recovering from the high cost of complying with the EU standards – which included everything from changing assembly lines to managing the quality of the new solders – China announced new standards that were even less flexible. Some companies have responded by setting their own standards to cover the strictest of implications they may encounter when doing business overseas. Even so, China requires specific markings separate from other regulation checklists to indicate whether the materials comply.

An overview of the differences between the EU and China RoHS include:

- While the same six restricted substances are identified in both directives, China tolerates even smaller amounts.
- The EU standards have allowed certain domestic materials to be exempt from the restrictions (for the time being), but China included no such exemptions.
- The amount of time given to companies to comply with the standards was significantly less than when the EU announced their change.
- China restricts the materials not only in the electronic components, but also in the **product packaging**.
- If the materials do not comply with China RoHS, companies need to determine the environmentally-friendly life span of their product.

Packaging Implications

Dealing with tighter guidelines in the manufacturing aspect is one thing, but when the restrictions affect packaging, the process becomes quite complex. Note the last two items listed above. These points have a significant impact on the ease of exporting goods to China.

Article 14 in the English translation of China's Measures for the Administration of the Control of Pollution by Electronic Information Products details the packaging inclusion:

“When making and using packaging for electronic information products, the producers and importers of electronic information products shall use nontoxic, non-hazardous, degradable, and recyclable materials in accordance with State standards or industry standards for the control of the toxic and hazardous substances or elements in electronic information products.

The producers and importers of electronic information products shall mark the names of packaging materials on the packaging of electronic information products; in the event that it is impossible to make such marking due to limitations in size and external surface [area], [such information] shall be placed in the product instructions.”

The greatest downside to China's packaging restrictions is that they only enforce them on packages that come into the country, not on goods exported out of the country. As a result, companies who buy materials from China to use in their electronic information products (EIP) *or* packaging of such products may not be able to send these products back into China. Realistically, adhering to such restrictions should be made easier by first buying from China. If the process of packaging a product has complex restrictions, ideally a company could play it safe by using materials already approved to leave the country. Here this is not the case. Companies must custom each package about to enter China to meet their environmental standards. “Packaging” is not explicitly defined in the China RoHS, but presumably it entails materials or material sets used in the shipping, storage, retailing and protection of the product. By this definition, crates, shipping containers, cases, and boxes are all subject to China RoHS standards. Items to consider span every element of packaging:

- Screws and Brackets – zinc plated and zinc-alloy plated metals would require a chromate conversion coating
- **Foam for Packaging** – some foam plastics contain fire retardant materials that would violate China's specifications
- Plastic Trays and Brackets – PBB's, used as flame retardants, are added to plastics to make them difficult to burn
- Plastic coverings – again, the brominated flame retardant materials typically found in plastic breach China RoHS.

In addition to the restrictions on packaging materials, China requires that all components and packaging display specific markings that indicate whether the materials are China RoHS compliant. If the materials meet the specifications, products are marked with a green symbol that appears as two arrows forming a circle with the letter "e" in the middle. If materials do not comply, a similar orange arrow-circle is displayed with a number in the middle. The number displayed is how many years the materials will last before potentially leaking the restricted substances. Even if the package and materials indicate EU RoHS compliance, the arrow-circles must be present to be accepted into China. If a company cannot adhere to the China RoHS directive, they must calculate the environmentally-friendly lifespan of their product(s).

Compliance

For those companies who unknowingly violate the standards or are tempted to feign compliance with the China stipulations, the risks are enormous. Phase 2 of the China RoHS entails mandatory toxicity testing. Failure to meet requirements brings about severe consequences. Fines are amongst the most obvious, and no company wants to take such a hit. Both suppliers and finished goods manufacturers face legal liability.

Companies who are not armed with resources to understand the China RoHS face the challenge of deciphering some confusing and ambiguous descriptions of the standards. Companies who are frantically working to develop a packaging system may be best off looking outside their company for answers. The safest way to package a product to comply with China RoHS is to recruit help from a company who is familiar with the restrictions. While companies are capable of understanding the China RoHS as it applies to their own packaging, even a shred of doubt may lead to unrecoverable ramifications. Knowing that even materials purchased in China might be restricted from entering back in, it is best to leave the RoHS compliance to experts. Enlist a company you can trust for your China RoHS-compliant packaging needs; it may save your business a lot of time and money.