Clariant introduces innovative halogen- and cobalt dichloride-free Type 2 Non-reversible Humidity Indicator Cards to ensure integrity of moisture sensitive electronic components

- **Humitector™ Type 2 delivers advanced sustainable attributes including halogen-free*, cobalt dichloride-free, and reduced cobalt dibromide content**
- **The use of Type 2 Humidity Indicator Cards with a non-reversible 60% RH spot indicator is preferred by IPC/JEDEC standard J-STD-033D**
- **Clariant retains its pioneering status in Humidity Indicator Card development**

Advanced technology is an integral part of society, with electronic and digital devices becoming ubiquitous. To ensure the integrity of devices ranging from personal electronics, including computers and cell phones, to industrial automation solutions, it is critical that these moisture-sensitive components such as printed circuit boards (PCBs) and surface mount devices (SMDs) are carefully transported and stored. SMDs for instance, are comprised of many powerful and essential processors, chipsets, diodes, transistors and integrated circuits that power today's digital devices and products. These components are very sensitive and can easily fail when exposed to moisture, due to cracking, delamination and "popcorning."

To mitigate these issues, industry standards require that SMDs are transported and stored in moisture protective packaging known as dry packs. These "dry packs" are composed of a moisture-barrier bag, a desiccant, such as Clariant's Desi Pak® bentonite clay desiccant, and a humidity indicator card (HIC) such as Clariant's Humitector. The HIC will signify the presence - or absence - of moisture via moisture-sensitive spots that change color when moisture exposure occurs. Traditionally, the moisture-reactive material used in these indicator spots is a halogen compound, such as cobalt dibromide ($CoBr_2$), copper dichloride ($CuCl_2$) or copper dibromide ($CuBr_2$).

Conventional Type 1 HICs are "reversible" and only reflect current levels of humidity. In dry packs with improper, defective, or damaged seals, exposure to high humidity (>60%) can occur, but it may not be reflected on a Type 1 reversible card. A Type 1 reversible HIC would register humidity exposure via a color change from blue (dry conditions) to pink (wet conditions).

However, once returned to a low humidity environment, the reversible spot would change back to blue, indicating the current lower humidity level. This Type 1 HIC would show no evidence of the earlier high humidity exposure which could indicate potential damage to the PCBs or SMDs.

Clear indication of any exposure to high humidity is vitally important for PCBs and SMDs. In response to limitations of Type 1 reversible HICs, Clariant, the innovator of the original color change HIC, has developed the new Humitector Type 2 HIC, a “non-reversible” halogen* and cobalt dichloride free card. This new Type 2 HIC has a non-reversible 60% humidity indicator which remains blue after moisture exposure. When the 60% RH spot is exposed to humidity for a prolonged period of time the blue color migrates beyond the indicator circle, providing a permanent visual signal of humidity exposure.

In a further breakthrough, by eliminating cobalt dibromide (CoBr2) in the 60% RH spot, Clariant’s new Humitector Type 2 HIC also offers an improved environmental profile. As such, the Humitector Type 2 HIC represents an overall halogen reduction of more than 50% compared to its HIC Type 1 predecessor. Halogens have become of particular concern due to the rise of indiscriminate disposal and unregulated recycling of electronic devices in many parts of the world.

Clariant regularly tests its HIC products to industry standards such as BS EN 14582, a widely accepted halogen test method. Recent test results clearly demonstrated that Humitector Type 2 meets the rigorous halogen-free requirements contained in IEC-61249-2-21 and IPC 4101-B.

“As a pioneer in the creation of color change humidity indicator cards, Clariant is proud to continue its innovation leadership in protecting vital technology components from moisture damage,” said Justin Mueller, Head of Clariant's Business Group Cargo & Device Protection, North America. “With our relentless commitment to embed sustainability across our product platforms, customers can be confident that they are not only investing in the most advanced solutions, but also ones that can be used over their entire life cycle in a safe and environmentally responsible manner.”

Clariant Humitector humidity indicators provide verifiable color-change accuracy as required by the Joint Electron Device Engineering Council (IPC/JEDEC) standards and meet applicable Registration, Evaluation, Authorisation, and Restriction of Chemicals(REACH) regulations. The use of Type 2 HICs with a non-reversible 60% RH spot indicator is preferred by IPC/JEDEC standard J-STD-033D – the standard that SMD manufacturers refer to for industry best practice.

* meets the International Electrochemical Commission's Halogen Free Definition (61249-2-21) and IPC 4101-B Halogen Content Specification.



Clariant introduces innovative halogen- and cobalt dichloride-free Type 2 Non-reversible Humidity Indicator Cards.
(Photo: Clariant)