POSITION PAPER

Japan Business Council in Europe

Date: 17/08/23

JBCE'S POSITION ON ECHA'S DRAFT SCREENING REPORT ON THE PRESENCE AND RISK OF THE FOUR PHENOLIC BENZOTRIAZOLES IN ARTICLES

INTRODUCTION

Being a cross-sector association with member companies operating in different industries and stages in the supply chain (electronics, chemicals, polymer, automotive, machinery, semiconductor, wholesale trade, precision instruments, pharmaceutical, steel, nonferrous metal, textiles, ceramics, and glass products), JBCE welcomes the opportunity to contribute to the discussion regarding the draft screening report on the presence and risk of the four phenolic benzotriazoles in articles.

KEY MESSAGES

On a general note, JBCE understands that the draft screening report for the four phenolic benzotriazoles is in line with the target of having "a zero-pollution ambition for a toxic-free environment" which was proposed in the "Chemicals Strategy for Sustainability - Towards a Toxic-Free Environment- (CSS)". Although we agree with and support its concept and purpose to protect human health and the environment, we would like to point out that the currently proposed restriction raises various issues which need to be addressed in terms of scientific reasoning and socio-economic impact, as highlighted by various companies across different impacted sectors represented by JBCE.

Our main points of concern are listed below.

1: All the specific exemptions included in the Stockholm Convention decision for UV-328 should be included in the EU POPS

- JBCE urges ECHA to reflect all the specific exemptions[1] included in the Stockholm Convention decision for UV-328 in the EU POP Regulation from the perspective of facilitating the international distribution of goods and extending the effective lifespan of existing products including the spare parts for electrical and electronic equipment (EEE).

2: The UTC limit should be set at 1,000 ppm

- A large number of parts are used in EEE and it is necessary to check the Unintentional Trace Contaminant (UTC) for each part through the complex and long global supply chain. In addition, the UTC also has many uncertain contamination pathways that must be considered, such as from the raw materials, the manufacturing processes, the packaging materials and so on.

[1] https://www.pops.int/TheConvention/ConferenceoftheParties/Meetings/COP11/tabid/9310/Default.aspx

- UV-328 can be measured by precise quantitative analysis using the solvent extraction GC-MS method and be screened by pyrolysis GC-MS (Py/TD-GC-MS) as specified in IEC 62321-6 and IEC 62321-8. For both methods the detection limits for UV-328 in resins range from 50 ppm (0.005%) to 100 ppm (0.01%). Taking analytical testing across complex supply and global chain into account, a regulatory threshold of 1,000 ppm (0.1%) is suitable.

ABOUT JBCE

Founded in 1999, Japan Business Council in Europe (JBCE) is a leading European organization representing the interests of 100 multinational companies of Japanese parentage active in Europe. Our members operate across a wide range of sectors, including information and communication technology, electronics, chemicals, automotive, machinery, wholesale trade, precision instruments, pharmaceutical, textiles, and glass products.

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ANNEX

SPECIFIC INFORMATION

Based on information provided by JBCE's member companies, we would like to share the following specific information.

1: Applications for Photographic paper and Triacetyl cellulose (TAC) film in polarizers

1-1: Photographic paper

- A stakeholder for photographic paper is almost ready to replace **UV-328** with an alternative compound before the deadline from the viewpoint of manufacturing. However, they need (i) to guarantee the use of already shipped products within the transition period, and (ii) to allow the time for completion of switching new equipment for downstream customers. Therefore, we urge ECHA to reflect the five-year transition period[2] proposed in the Stockholm Convention decision for **UV-328** to the EU-POPs regulation as well.

1-2: TAC film in polarizers

- TAC film containing **UV-328** is used as a protective film for polarizing plates. This is incorporated to the many liquid crystal displays (LCDs), and it takes time for customer evaluation to switch the alternative (i.e. factor changes). The complicated value chain is explained in detail below.

- The value chain of manufacturing for LCD (Liquid Crystal Display) flat panel displays have several steps. The following is an overview of the key steps.

  [Step 1] Raw Materials:
  The manufacturing process starts with the purchasing of raw materials including glass substrates, polarizers, color filters, backlight units, liquid crystal materials, and various chemicals such as UV stabilizers (e.g. **UV-328**).

  [Step 2] Glass Substrate Preparation:
  Glass substrates are cleaned, polished, and cut into specific sizes to form the foundation for the LCD panel.

  [Step 3] Thin Film Transistor (TFT) Fabrication:
  TFT arrays, which control the color and brightness of each pixel, are created through various processes such as photolithography, deposition of semiconductor materials, etching, and implantation of dopants.

  [Step 4] Color Filter Fabrication:
  Color filters, responsible for generating colored images on the display, are manufactured by depositing colored layers through photolithography and other technologies.

  [Step 5] Liquid Crystal Alignment:
  Liquid crystal materials are coated onto the TFT array and aligned using alignment layers to ensure proper orientation and control of the liquid crystals.

[Step 6] Cell Assembly:

The TFT array and color filter layers are assembled, and a polarizer is added to enhance image clarity and contrast.

[Step 7] Backlight Unit (BLU) Assembly:

This assembly is constructed, incorporating a light source (such as LED (Light Emitting Diode) or CCFL (Cold Cathode Fluorescent Lamp)), light guide plates, diffusers, reflectors, and other optical components.

[Step 8] Module Integration:

The LCD panel and BLU are integrated, and additional components like driver Integrated Circuits (ICs), connectors, and control boards are added to form a complete LCD module.

[Step 9] Testing/Evaluation/Certification:

The assembled LCD panels undergo very strict testing to ensure functionality, color accuracy, and uniformity across the display. In case of factor changes of the products and components, this process takes huge time for guarantees.

[Step 10] Packaging and Distribution:

The LCD modules are packaged, which may involve protective coatings, anti-static sheets, and foam cushioning. They are then distributed to various customers or manufacturers who use them in various devices such as televisions, monitors, laptops, smartphones, etc.

- These are examples of the complicated process and value-chains for LCDs. Since every step has independent manufacturers as stakeholders, information sharing is key for factor changes. Even though certain stakeholders of step 1 and 2 above have proposed to change to the alternative, it is necessary to confirm the impact for each step. Unfortunately, there is no distinction between professional displays (e.g. medical devices) and consumer displays for polarizer film products, it is difficult for upstream suppliers to control the distribution to the end-products.

- Regulations might affect medical applications such as LCDs in medical and in-vitro diagnostic devices (such as ultrasound diagnostic devices, flexible endoscopes, immunoassay analysers, clinical chemistry analysers and blood coagulation analysers) and LCDs in instruments for analysis, measurements, control, monitoring, testing, production and inspection (such as recorders, infrared radiation thermometers, digital storage oscilloscopes and radiographic testing instruments).

- Upstream suppliers are almost ready for new TAC film products for polarizers which replaced **UV-328** with other UV absorbers. They will also encourage their customers to evaluate their use in polarizers/displays and accelerate the switch from conventional products. During the switching process, there could be concerns regarding the significant impact on the industries such as usual life, transportation, and medical applications within the EU. Although upstream stakeholders have already considered changing the material, the display industry has a long supply chain as mentioned above. Each customer needs to evaluate the switch for about one to two years. Therefore, we urge ECHA to reflect the five-year transition period[2] proposed in the Stockholm Convention decision for UV-328 to the EU-POPs regulation as well.

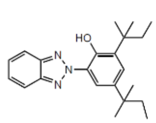
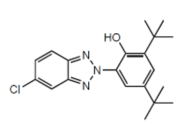
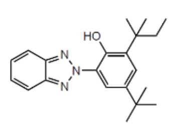
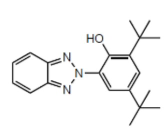
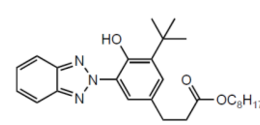
2: Alternatives

- In addition to benzotriazole-based compound, benzophenones, triazines and HALS (hindered amine light stabilizers) are known as common UV stabilizers. Since the wavelength which can absorb and cut Ultraviolet differs depending on the type of chemical substances, there are selected according to the objectives and applications.

- Phenolic benzotriazole-based UV stabilizers are characterized by their excellent ability to absorb UV light from short to long wavelengths. It also has excellent light resistance and good solubility with the matrix when mixed. From the viewpoint of the structure, the hydrogen bond between the phenolic hydroxyl group and the nitrogen atom of the benzotriazole skeleton stabilizes the structure at the excite state. The alkyl group substituents on the phenol structure contributes to the solubility to the matrix such as polymer.

- Both benzophenones and triazines UV stabilizers are inferior to phenolic benzotriazoles for their abilities to absorb UV light at short wavelengths. Furthermore, benzophenones are inferior in light resistance. Triazines are poor in solubility to the polymer matrix. Replacement is not so easy. In some cases, benzotriazole-based UV stabilizers are essential to reach the performance for special equipment. As regulations on other phenolic benzotriazole-based UV stabilizers are also being considered, we would expect appropriate regulations to take into account the hazards and risks of each substance and applications. Especially **3-[5-(tert-Butyl)-3-(2H-benzotriazol-2-yl)-4-hydroxyphenyl]propanoic acid octyl ester** are considered **not PBT** and **not vPvB** in the assessment of PACT (Public Activities Coordination Tool)[2]. Industrial stakeholders would like to follow this kind of scientific evidence.

Table 1. Phenolic benzotriazole type UV stabilizers

	UV-328	**UV-327**	**UV-350**	**UV-320**	**3-[5-(tert-Butyl)-3-(2H-benzotriazol-2-yl)-4-hydroxyphenyl]propanoic acid octyl ester**
CAS No.	25973-55-1	3864-99-1	36437-37-3	3846-71-7	127519-17-9
Chemical Structure					

[2]https://echa.europa.eu/de/pact?p_p_id=disspact_WAR_disspactportlet&p_p_lifecycle=0&_disspact_WAR_disspactportlet_substanceId=100.100.854&_disspact_WAR_disspactportlet_jspPage=%2FdetailsPage%2Fview_detailsPage.jsp