About PVC stabilisers and Sustainability
Dr. Alain Cavallero
European Stabiliser Producers Association - ESPA
ABOUT ESPA

Sustainability: definition, measure and other considerations

Sustainability and Regulatory measures

Evolution of formulations

Together with VinylPlus towards more sustainability

Summary and outlook
European Stabiliser Producers Association

- Pan-European trade association representing more than 95% of the PVC stabiliser industry across Europe ([www.stabilisers.eu](http://www.stabilisers.eu))
- A founding Member of VinylPlus ([www.vinylplus.eu](http://www.vinylplus.eu))
- A unique organisation representing three chemical families of stabilisers:
  - **Calcium-based stabilisers** (including Ca-Zn and Ca-organic) for food contact & medical applications, plus all lead* replacement systems
  - **Tin-based stabilisers** used primarily in rigid applications including food contact use
  - **Liquid stabilisers** used in a wide range of flexible PVC

*Lead-based stabilisers have been fully replaced in the EU for all applications by end 2015
ESPA 2017: 10 Members
Sustainability: how to define it?

High level definition (World Commission on Environment and Development)
«To allow to meet the needs of the present without compromising the ability of future generations to meet their own needs»

Sustainable chemistry (OECD definition)
“Promoting the design, manufacture and use of efficient, effective, safe and more environmentally benign chemical products and processes.
… maximise resource efficiency, … minimisation of waste at all stages of a product life-cycle, and the development of products that are durable and can be re-used and recycled”
Assessing Sustainability

- To assess the sustainability of a chemical in a given use/article various sets of indicators can be used to reflecting the aspects covered by the above-mentioned OECD definition.

- “spider graphs” are convenient and often used to compare the sustainability scores of different articles.
Stabilisers are crucial for PVC!

Stabilisers are crucial to produce and maintain the properties of the finished article:
- heat / weathering resistance
- colour stability for sheathing applications
- electrical characteristics

ensure an extended service life of the cable
contribute to save the “grey energy” associated to the premature replacement of a cable

The impact of stabilisers on the life cycle of articles is huge. Therefore stabilisers must not be evaluated in their bag but in the articles
Sustainable product development: what we achieved so far

As part of the Voluntary Commitment of the PVC industry (VinylPlus) ESPA members have progressively replaced in the EU:

- **cadmium** stabilisers: completed in the EU-15 already by 2001 and by now in the EU 28
- **lead** stabilisers replacement:
  - RoHS compliance; voluntary replacement in the other applications completed in EU-28 in 2015
  - Replacement promoted worldwide and expanding
- **Bisphenol-A** (meanwhile included in the REACH Candidates List for Authorization): alternative formulations developed and available since many years

Stabilisers formulations are being continuously adapted to anticipate on the regulatory context and with sustainability in the visor
Sustainable product development: Additives Sustainability Footprint as a tool

VinylPlus is developing ASF, a voluntary, European-wide approach to assess the sustainability of PVC additives in various types of articles

- ASF builds on available Life Cycle information (cradle to grave) and informed analysis by industry experts to provide a qualitative screening assessment of the relative performance of additives
- The methodology is a complement to (and compatible with) schemes such as Environmental Product Declarations (EPD) and Product Environmental Footprint (PEF) but not positioned as a substitute for quantifiable product claims
- It takes a wider perspective giving a clear picture of where to aim and what to do to improve additives sustainability performance
Sustainable product development: an iterative process

- Intrinsic properties
- Life Cycle Analysis
- ASF evaluation
- R & D

Illustrative sample only
SUMMING UP

• Integration of the sustainability principles in planning the future of chemicals reduces the risk of hitting regulatory barriers at a later stage.

• Stabilisers are crucial to maintain the properties of articles throughout their entire life. Hence the use phase, including recycling, has to be taken into account when assessing their sustainability.

• Measuring sustainability is key to foster progress; however, data must be interpreted carefully when comparing different (stabiliser) systems.

• ESPA members are devoting important resources to R&D to supply REACH-compliant and performing solutions to the PVC chain.

• The European PVC industry, represented by VinylPlus, is progressing constantly on the sustainability scale. Its effort exerts an influence on markets beyond the EU boundaries and continent.
Thank you
For more information, please visit: www.stabilisers.eu

Or contact espa@cefic.be