



EUROPEAN STABILISER PRODUCERS ASSOCIATION

Stabilisers – What's new?

Update January 2017

Outline

- About ESPA
- Lead-based stabilisers fully replaced in the EU-28
- Calcium-based stabilisers
- Tin-based stabilisers
- Liquid mixed metal stabilisers
- Contribution to VinylPlus
- Conclusions

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- Pan-European trade association representing more than 95% of the PVC stabiliser industry across Europe
 - Affiliated to [Cefic](#) - the European Chemical Industry Council
 - Co-founding member of [VinylPlus](#) (www.vinylplus.eu)
 - Represents three chemistries of stabilisers, represented by 3 sub-associations:
 - [ECOSA](#) – [Calcium-based stabilisers](#) (including Ca-Zn and organic) for food contact & medical applications, plus all lead replacement systems
 - [ETINSA](#) – [Tin-based stabilisers](#) used primarily in rigid applications including food contact use
 - [ELISA](#) – [Liquid stabilisers](#) used in a wide range of flexible PVC, calendered sheets, flooring
 - [ESPA](#) supports the recycling of PVC articles that were once manufactured with lead-based stabilisers by the members of the sub-association [ELSA](#), now discontinued

ESPA 2017: 10 Members



**Akdeniz
Kimya**

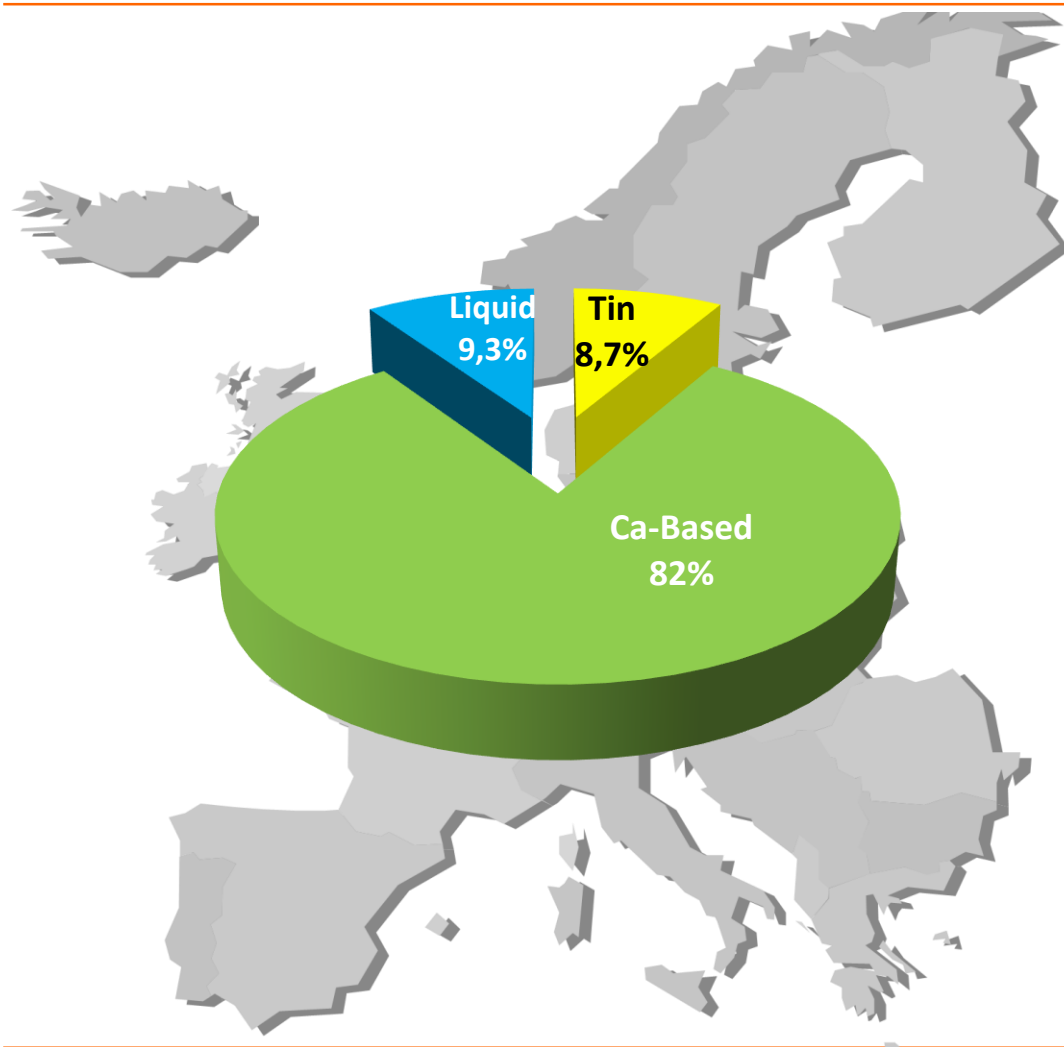


IKA

pmc organometallix™



2016 consumption by stabiliser category



EU-28

Type	kt/annum
■ Calcium based	105
■ Liquid Mixed Metals	12*
■ Tin	11
Lead	0**
TOTAL	128***

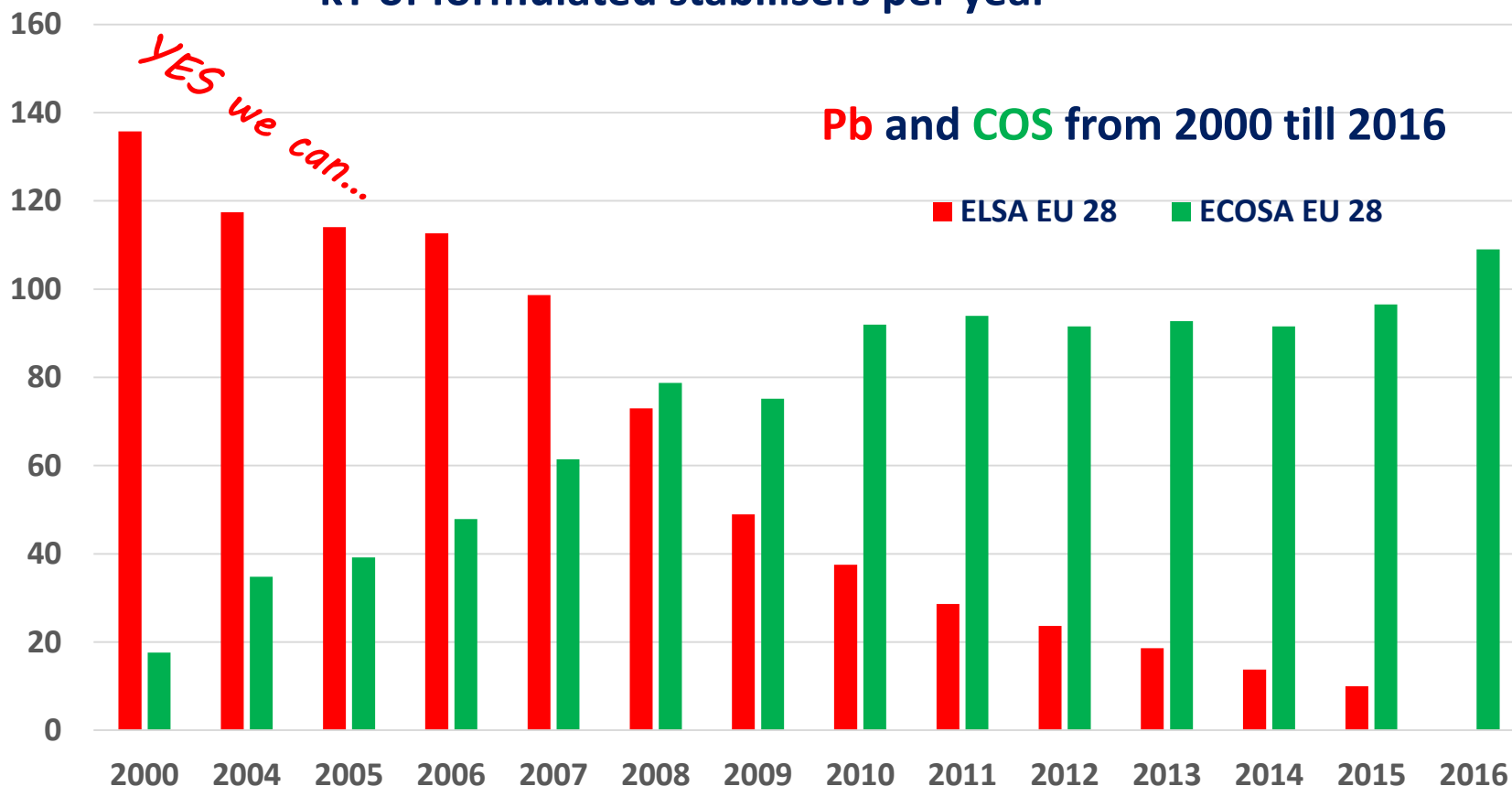
* Volume 2015

** There are no more consumption of lead-based stabilisers in EU-28 as from 1 January 2016

*** as formulated stabilisers

ESPA members completed the replacement of lead-based stabilisers by end 2015 in EU-28, as part of the VinylPlus Voluntary Commitment

kT of formulated stabilisers per year



Source ESPA

ELSA – European Lead Stabilisers Association ECOSA – European Calcium Organic Stabilisers Association

... and we did it!

This is a success example of the European PVC industry voluntary commitment



We can proudly say that we have achieved our goal to “replace lead-based stabilisers in PVC applications in the EU-28, by the end of 2015”.

REACH

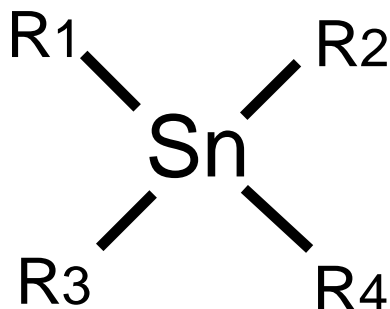
- Proposed Restriction of the use of lead stabilisers open for public consultation until 22 Sept. 2017. The lead-based stabilisers having been fully replaced in the EU, the proposed restriction aims at preventing imports whilst allowing the recycling of articles like window frames and pipes containing legacy lead
- Restriction of lead in consumer articles (Reg. EU 2015/628)
Scope: articles available to consumers and which could be placed in the mouth by children if contain more than 0,05% weight of lead
Relevance for PVC: No issue with articles made from virgin PVC , which should not contain lead-based stabilisers anymore as from 1st Jan. 2016

- 568,696 tones of PVC were recycled in 2016 in the EU and the VinylPlus programme gives a strong support to PVC recycling
- EU Circular Economy package encourages recycling instead of landfill/incineration, with the following targets:
 - 80% recycling for packaging (glass, paper, metal & **plastic**) by 2030
 - Ban on landfilling of all recyclable & biodegradable waste by 2025
- ESPA and VinylPlus commissioned a study on the migration of legacy* lead from the PVC matrix into running water. From the results it can be concluded that:
 - the migration, in particular from rigid PVC, is very low (the concentration of lead in the leaching water remains below the Env. Quality Standard for surface water)
 - There is no indication of a risk when using articles made thereof in line with the restrictions in place

* Legacy additives: substances whose use in PVC products has been discontinued but that may still be present in recycled PVC.

- Calcium-based stabilisers (Ca-Zn and Ca-organic) are principally used for:
 - food contact & medical applications
 - replacement of all previous lead-based systems
- There are no known REACH registration issues for the main system components of this family of stabilisers

Tin-based stabilisers: families



Similar structures based on the following combinations of 4 organic groups (R1 to R4) attached to a central tin atom by a C-Sn bond:

- one [two] alkyls (methyl , butyl or octyl) with
- three [two] esters (eg a thioglycolate)

→ 3 main families of tin stabilisers:

Methyltins

Butyltins

Octyltins

Each family is split in *mono-alkyl* and *di-alkyl*, with reference to the major constituent (the commercial substances may contain both in variable proportions)

Tin-based stabilisers: CMR classifications.

Stabiliser	CMR classifications (CLP)	Remark
MMTE	Reprotoxic cat. 2	No restrictions
DMTE	Reprotoxic cat. 2	No restrictions
MBTE	None	No restrictions
DBTE	Reprotoxic cat. 1B	Severe restrictions in REACH Annex XVII for dibutyltins
MOTE	None	No restrictions
DOTe	Reprotoxic cat. 1B	A request for reclassification with lower reprotoxicity was submitted, based on recently developed data

M and D as first letters = Mono & Di ; E = Ester (see previous slide “tin stabilisers families”)

Tin stabilisers and Reach

All components used in commercially relevant tin stabilisers have been REACH registered

Process	Short name	EC number	CAS number	Inclusion Date	ETINSA comment
CoRAP	MMTE	260-828-5	57583-34-3	2015	Additional toxicological information provided ; no classification change or restrictions expected
PACT	DMTE	260-829-0	57583-35-4	Sept. 2014	Additional information provided; no classification change or restrictions expected

- used principally for flexible PVC, calendered sheets and flooring
- have been almost totally reformulated over the last years owing to REACH and re-classification of some components
- the Liquid Mixed Metal Consortium has completed the REACH registrations due in 2013 and is finalising the dossiers for the remaining registrations due in June 2018

United PVC Value Chain



Resins

Stabilisers

Plasticisers

Converters

200 companies



The Natural Step **NGO**



153 Recycler partners



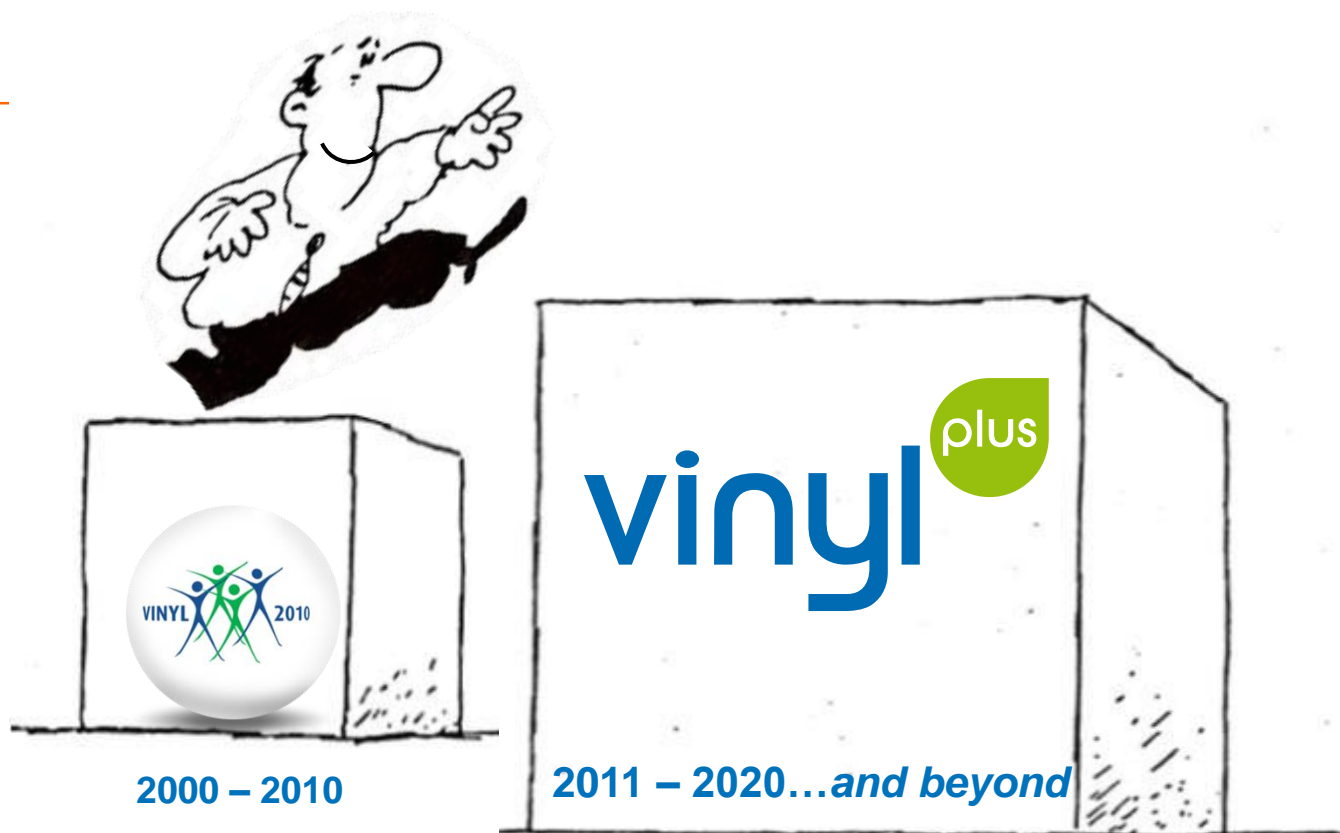
The Natural Step Framework: Internationally recognised method for sustainability planning (www.thenaturalstep.org)

The VinylPlus Programme

- **VinylPlus**: the Voluntary Commitment of the European PVC industry (www.vinylplus.eu)
- VinylPlus continues and expands the successful Vinyl 2010 programme founded in 2000 by **ESPA** and other actors in the PVC supply chain.
- Derived from the framework set-up by **TNS***
- It is built around 4 + 1 challenges →



***TNS: The Natural Step** – a non profit organisation founded in 1989 - www.naturalstep.org



2016 total expenditure: 5.55 million EUR

entirely funded by the members of the 4 founding associations

ECVM, ESPA, European Plasticisers and EuPC

VinylPlus and the *Sustainable use of additives*

- **The TNS* criteria** provide a sound overarching framework to address the global aspect of sustainability
- **ESPA** is particularly active in the **VinylPlus Additives Task Force** which is developing the *ASF* scheme (Additives Sustainability Footprint)
- The *ASF* builds on the classical Life Cycle Analysis/EPD/PEF with the additional aspects covered by The Natural Step holistic framework
- ESPA has completed a LCA for 2 of its main family of calcium-based stabilisers and is working on an additional one for liquid mixed-metals stabilisers.

*The Natural Step – www.naturalstep.org

- PVC stabilisers are present in a PVC compound at a low percentage only ; however they are crucial to produce and maintain the articles properties throughout their entire life cycle
- ESPA members are devoting important resources to R&D to continue to supply performing solutions to the PVC chain, whilst addressing the new regulatory constraints
- ESPA has contributed in a decisive way to address the challenge of sustainability of PVC through the Voluntary substitution of lead-based stabilisers.
- ESPA continues to participate actively to the VinylPlus Task Forces and is committed to progress further on the sustainability scale

More info on stabilisers: www.stabilisers.eu



STABILISERS

Stabilisers are added to PVC to allow its processing and to improve its resistance especially in outdoor applications, weathering and heat ageing and have an important influence on the physical properties of PVC finished articles. Factors such as process technology involved, technical requirements of PVC end product, regulatory requirements and cost, influence the choice of the stabiliser used.

[READ MORE](#)

HIGHLIGHTS

Stabilisers – What's New

Pan-European trade association representing more than 95% of the PVC stabiliser...

The Journey to a Lead-Free Stabilisers Industry in Europe

In 2000, the European Stabiliser Producers (ESPA) committed to replace lead-based...

PVC Stabilisers & Sustainability

To allow to meet the needs of the present without compromising...

APPLICATIONS



Thank you for your attention



Contact: Dr. Alain Cavallero, ESPA Secretary General – aca@cefic.be