A·I·S·E

International Association for Soaps,
Detergents and Maintenance Products

PRESERVATIVES: KEY BIOCIDAL INGREDIENTS TO PRESERVE LIQUID DETERGENTS

A call to secure their future availability

A.I.S.E. Fact sheet • October 2018

Preservatives are key ingredients for the detergents industry: they are added to water-based products in very small quantities to ensure that there will be no proliferation of bacteria or mould. Thanks to these, products can thus remain adequately 'preserved' during the manufacturing and transportation, but also while products are stored in shops and at home and stay 'fit for use' for a sufficient period of time. **The availability of preservatives is currently threatened under the Biocidal Products Regulation (BPR), as a downstream consequence of the Regulation on Classification, Labelling and Packaging of substances and mixtures (CLP).**

This fact sheet – based on two recent surveys conducted in the sector – summarises **why the availability of preservatives is so crucial for the detergents industry, and why innovation is challenging**. A.I.S.E. and its members are keen to engage in an open and constructive dialogue between suppliers, downstream-users, researchers, authorities and ultimately consumers in order to **reach sound and reliable solutions for the short, mid and long term**.

PRESERVATIVES
(Biocidal Active Substances)
=
KEY INGREDIENTS for liquid detergents **TO PREVENT CONTAMINATION**

50% of the total A.I.S.E. PRODUCT PORTFOLIO DEPENDENT
on these ingredients
=
€18,3bn turnover

ONLY A HANDFUL 6
can actually be used by the sector

Future
AVAILABILITY THREATENED
under BPR

INNOVATION EXTREMELY CHALLENGING:
• Short term alternatives not suitable technically
• Mid/long term alternatives not available
€215 mn R&D costs
at minimum

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PRESERVATIVES

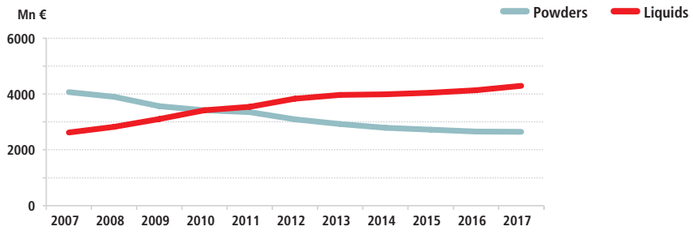
KEY INGREDIENTS FOR LIQUID DETERGENTS

- Water-based liquid detergents need a **method of preservation**; without this, they would be contaminated by the proliferation of micro-organisms.
- **Preservatives are biocides** ("Product Type 6" – PT6) under Biocidal Products Regulation (BPR) which play a fundamental role to prevent product contamination and thus:
  - avoid that products are damaged between manufacturing and final use, ensuring **no product loss**
  - secure that products have **durable shelf and storage** life
  - keep products **fit for use** by consumers
  - and eventually, **support sustainability** by optimising use of resources.

After some time, liquid detergents with no preservatives start to degrade.

>50% OF A.I.S.E.'S TURNOVER **DEPENDENT**

- The current market trend – in line with consumer choices – shows an **increasing preference for liquid formats**; these also enable compaction and sustainability savings as liquid formats can be produced in a less energy intensive way.



In 10 years, the household liquid laundry detergent market (used here as example) has taken over sales vs powders. (source Euromonitor - EU 28 - Retail Sales Prices)

- **Product portfolio concerned:** Water-based liquid detergents in the household care business and for professional cleaning and hygiene usages.
  =>50% of the total A.I.S.E product portfolio affected

About 60% of the total household market
(laundry detergents, laundry aids, fabric conditioners, surfaces cleaners, hand dishwashing, insecticides, air fresheners etc).

And about 13% of the professional cleaning sector

Eftec study (2017) ran with:
- 59 companies (household and professional sector), totalling together about 71% EU market share

ALMOST 90% OF PRESERVATIVES **CANNOT** BE USED BY THE DETERGENTS INDUSTRY

The vast majority of the current list of Active Substances available under PT6 can actually not be used by the detergent industry for various reasons as explained below.

TOTAL ACTIVE SUBSTANCES 50

44 CANNOT BE USED

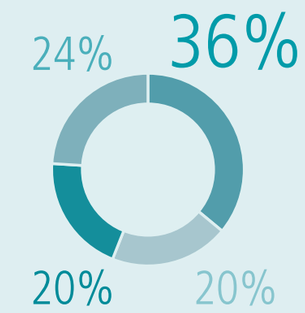
25 TECHNICAL LIMITATIONS

Instability/short shelf life

Preservatives need to be stable in the formulation and need to guarantee a reasonable shelf life (estimated on average at 2 years).

Limited spectrum/efficacy

Preservatives need to be able to control the various micro-organisms – i.e. multiple types of bacteria, fungi and yeasts – that can develop in water-based formulations.



Surfactant incompatibility

Many preservatives are not technically compatible with surfactants which are the core functional ingredients for detergency; this thus renders their use impossible for detergents.

Limited pH range

Those are preservatives which can only be used in acidic formulations, hence, for a limited product range (fabric softeners, acidic cleaners). They cannot be used to preserve other categories (bigger in volume) such as laundry/dish detergents, all purpose cleaners (neutral or alkaline pH).

16 TOXICOLOGICAL RESTRICTIONS

These are Active Substances whose toxicological profile (carcinogenic, toxic for reproduction, respiratory sensitiser...) prevents industry from using them.

A.I.S.E Survey 2016 on the use of in-can preservatives:
- 88 respondents (household and professional sector)
- Representing around 60% of the EU turnover based on Euromonitor data

3 NEW SUBSTANCES

These new ones are additional Active Substances which have recently been added by EU Authorities for PT6 uses but for which there is no experience yet nor confirmation that they can meet the detergents industry's needs.

6 CAN BE USED

6 USED

THE FEW PRESERVATIVES RELEVANT FOR THE DETERGENTS INDUSTRY NOW **THREATENED**

- Out of the 50 different Active Subtances (AS) available, **only a handful** of these are actually technically compatible with detergent and maintenance product formulations.
- Detergent manufacturers already suffer from a **very fragile supply chain** due to the limited number of suppliers.
- **Industry is concerned about the consequences of CLP decisions that may lead to a ban of these substances under BPR.**
- The downstream consequences of hazardous classification drive industry into reformulation **whilst some ingredients can be safely used** in detergents and cleaning products (see graph below).
- *** As a consequence, there is a further risk that this list could even be shortened in the near future** = Recent classification update adopted by EU Authorities as skin sensitiser with too low classification threshold challenges the future use by industry of these specific substances.

BIT
Bronopol
Phenoxyethanol
OIT
CMIT/MIT*
MIT*

The substances most used by the detergents industry are shown in the largest font.

Different 'treatments' for the same substance under CLP and BPR:

(1) But already a precedent with CMIT/MIT – (2) CLP Regulation (EC) No 1272/2008 on classification, labelling and packaging of substances and mixtures
(3) BPR Regulation (EU) No 528/2012 concerning the making available on the market and use of biocidal products

PRESERVATIVES

INNOVATION CHALLENGES

The detergent industry has been seeking to find innovative solutions but with no tangible viable solutions yet for various reasons.

- The development of new substances is a **very challenging and costly** process which is not in the hands of downstream users. In addition, other means to preserve products are **not conceivable nor sustainable** (for example storing liquid detergents in fridges throughout the supply chain and even at home).
- Delivering products and/or services without preservatives may be subject to **long-term innovations but:**
  - › would require **time** as well as major **R&D** investments – challenging for SMEs;
  - › will need **market acceptance** and drastic habit changes… for quasi the entirety of the product portfolio;
  - › will very likely lead to issues due to **more severe classification** of products.

A.I.S.E. and its members are keen to engage in an open and constructive dialogue between all stakeholders in order to **reach sound and reliable solutions for the short, mid and long term**.

Short term alternatives

- Existing substances
- Technical limitations
- Not as effective (contamination risks)
- Inability to reformulate?

Mid term alternatives

- Lead by suppliers
- New substances?
- Availability?
- As effective?
- Classification?

Long term innovations

- Reduced water composition
- Move to super concentrated formats (eg to be diluted in water)
- Safe use?
- Market acceptance?
- Classification?

Estimated R&D costs

of reformulating AWAY FROM the 5 most used preservatives with other existing ones:

+ 3% min. increase cost/formula
+ € 1,8 million/company (production)
Average time to reformulate
= 2 to 4 years (SMEs - Multinationals)

€215 million

› **Away from R&D + Profits**
› **Leading to higher prices for consumers**

Estimated R&D costs

of reformulating WITHOUT ANY preservatives at all:

Higher costs/formula
Average time to reformulate:
5 - 10 years minimum

Higher than €215 million

Eftec study (2017) ran with:

- 59 companies (household and professional sector), totalling together about 71% EU market share
- Focusing on 5 most used preservatives (BIT, MIT, CMIT/MIT, bronopol, phenoxyethanol)

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