



## SECURE, RELIABLE PROTECTION OF FOOD

PROVALIN® – The PVC- and plasticizer-free sealants of ACTEGA DS



THE PVC-FREE ALTERNATIVE

**High performance for food safety**

## No more migration issues

**The PVC- and plasticizer-free sealant PROVALIN® for all metal closures types conforms to current FDA and EU legislations and thanks to new revolutionized migration standards, for food safety and consumer protection.**

Metal closures lined with this compound ensure clean storage of food and makes the already unquestionable glass containers safer because interactions between the packaging and the contents do not take place. PROVALIN® is not only the answer to the 4th amendment of the plastics directive 2007/19/EC which came into effect in April 2009, but also corresponds to the specifications and wishes of the food industry.

### Sustainability in focus

Sustainability is increasingly becoming the priority topic of companies worldwide. Conserving resources in production as well as climate and environmentally friendly trading, the conscious decision for the importance of sustainable packaging continue to elevate in priority and form important purchasing criteria. Therefore environmental hazards accruing from the manufacturing and/or disposal process of packaging can be minimized and will eliminate critical components that may migrate to the food or other filling stuffs which the packaging comes into contact with. Packaging is provided to protect the food, increase shelf life, make the foodstuffs appetizing, make room for information and facilitate transportation. But – despite intense contact with the foodstuffs – there can be no interactions between them allowed.

### Free of PVC and plasticizers

It is well known in the industry that PVC in contact with food is not the long-term solution; therefore ACTEGA DS took the initiative a few decades ago to replace PVC gasket materials which come into contact with foodstuffs. New innovative sealants without PVC were developed and successfully launched more than 30 years ago. The pioneer in the use of these materials was the beverage industry, which by the end of the 1970's issued the first approval for a PVC-free sealant for crown corks. In the early 1980's, ACTEGA DS introduced a TPE resin for crown corks and aluminium closures which is still representing the worldwide industry standard today. Based on this TPE technology know-how, PROVALIN® was successfully developed for wide mouth metal screw caps.





## Migration

Interactions between packaging and foodstuffs are nothing new. In ancient times, many wealthy Romans suffered from chronic lead poisoning because the acidic wine dissolved the toxic heavy metal from the glazing of wine amphorae.

Packaging today should not be as dangerous as it used to be. So far PVC-based sealing compounds contain phthalates or other plasticizers that are added to the formulation to increase elasticity and workability and optimize from nature based inherently hard and brittle materials. The downside: These soft making additions are not included in the plastic and are easily removed by grease or liquids. This is how they migrate from the packaging into the filled goods. The EU identified this migration issue at an early stage and included article three of the framework regulation 1935 / 2004 which specifies that materials and articles in contact with foodstuffs are not allowed to induce health hazard, any unacceptable change in the composition of the foodstuffs and any deterioration in the organoleptic characteristics. This directive can only be achieved with PVC-free materials.

# THE PVC-FREE

## 4th amendment of the plastics directive 2007/19/EC

With this directive there is a ban for the use of certain phthalates as plasticizers in gaskets of closures with food contact. Other plasticizers have strict limitations of the amount that can migrate from the packaging into the filled goods. Regardless the limitation of total migration from the packaging was reduced from 300 mg per kilogram foodstuffs to 60 mg per kilogram. Since April 2009, packaging which do not meet these specifications are banned for trade.



## Thermoplastic Elastomers in daily life

TPE (thermoplastic elastomers) have been in the market since the 80's. They are found in many areas of everyday life, including consumer products, medical technologies as well as in the field of electronics.

Since its initial application for tooth brushes and razor grip handles, TPE has revolutionized the **personal care** market. Since then there has been a significant increase in demand for products with soft grip handles. This also applies to **office supplies**.

TPE have also a long tradition and increasing growth rates in the **sports and leisure sector**, such as swimming goggle seals, straps, fins, snorkels, seat and shoe inserts, as well as grip handles for various applications.

Child-safe solutions including physiological safety in accordance with FDA and other regulations are challenged in the **toys sector** and are met through the use of TPE's. They are used for tires of toy cars, throwing rings and discs, rubber balls, dolls parts etc.



# ALTERNATIVE



In the field of **baby products** there is an even higher importance to the PVC-free alternatives. You will find thermoplastic elastomers in baby bottle teats, pacifiers, cutlery and handles of cups and mugs.

TPE's satisfy requirements in the area of hot water resistance, seal strength in low and high temperatures, maintaining a long service life and in look and feel within the **household appliances sector**. Seals, pipes, lever and handles, buttons and knobs, parts for ice cube dispensers, sealing washers for pumps, etc. are made from TPE's.

TPE's are also used for **furniture, medical technology** and **food packaging**, such as **closures** and **caps**. The latter in closure sealants for hot fill applications, dispenser hoses for dairy products, dosing valves for fluids, appropriate microwave container lids etc.

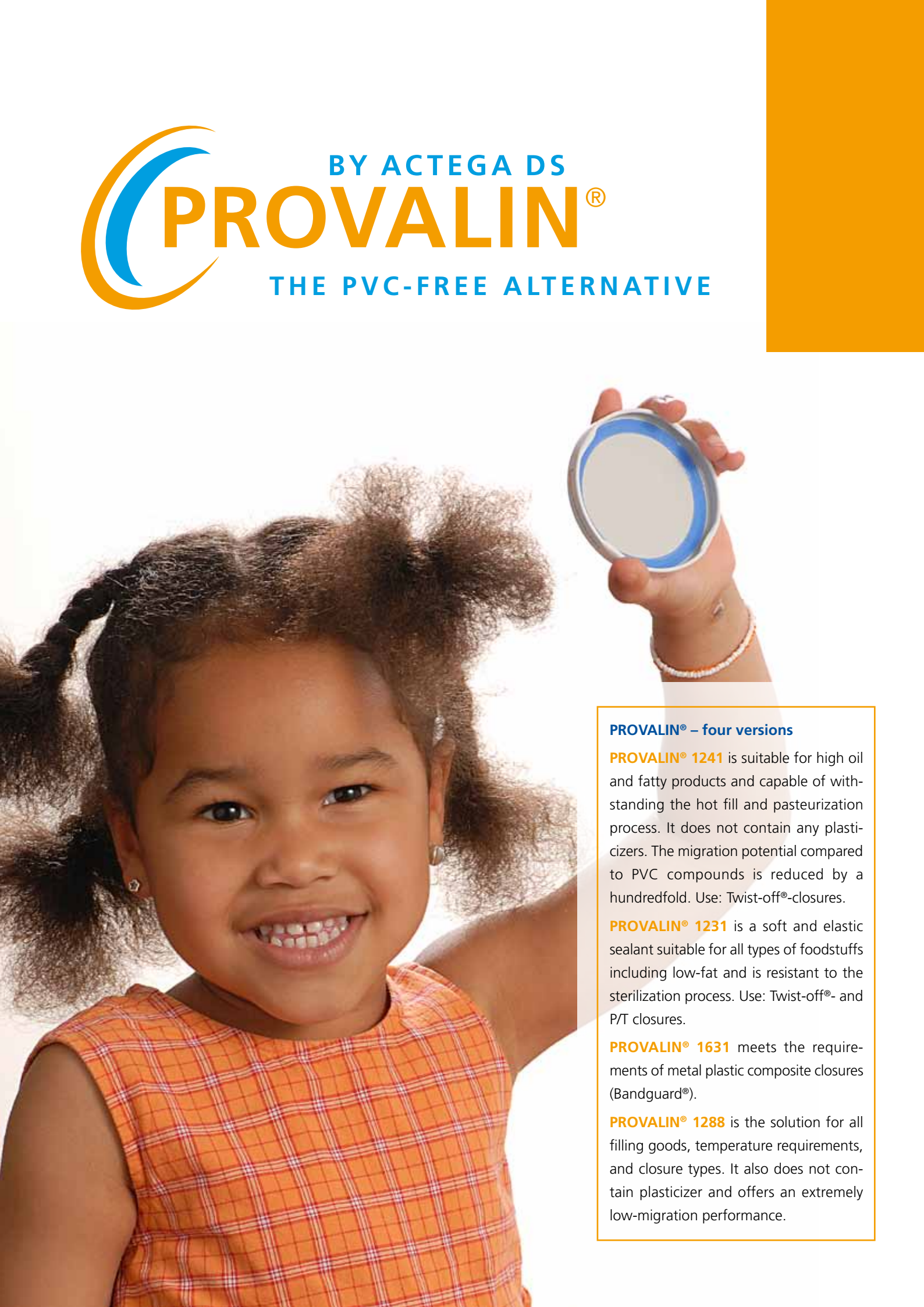
Thermoplastic elastomers are the proven and safe alternative to PVC-based applications and processing.

## The TPE technology

Different to the earlier technology, where liquid PVC compounds were injected into the caps which then required high temperatures for curing, TPE technology is supplied in granulate form and is liquefied using extrusion and applied directly into the closure. It only requires formation after application and does not require curing. This saves energy, reduces CO<sub>2</sub> emissions and reduces production costs effectively. The energy required to process PVC plastisols is higher than manufacturing TPE granulates. Working with granulate is a lot cleaner, and generates less waste. Therefore implementing this procedure meets the requirements of sustainable production and resource conservation highly.

Due to the fact that there is no liquid plasticizer for flexibility/elasticity being used, the TPE granulates minimize the potential risks for migration of undesirable substances. When there is nothing in it, there can be no extractions and therefore no migrations into the filled goods. Thus the demands for pure foods, safety and consumer protection can be realized.

With the use of TPE technology in the field of lug and Twist-off® metal closures not only meets the stringent new specifications for all filling goods, but once again underlines the competence of ACTEGA DS in offering innovative solutions to the closure industry.



BY ACTEGA DS  
**PROVALIN**<sup>®</sup>  
THE PVC-FREE ALTERNATIVE

**PROVALIN<sup>®</sup> – four versions**

**PROVALIN<sup>®</sup> 1241** is suitable for high oil and fatty products and capable of withstanding the hot fill and pasteurization process. It does not contain any plasticizers. The migration potential compared to PVC compounds is reduced by a hundredfold. Use: Twist-off<sup>®</sup>-closures.

**PROVALIN<sup>®</sup> 1231** is a soft and elastic sealant suitable for all types of foodstuffs including low-fat and is resistant to the sterilization process. Use: Twist-off<sup>®</sup>- and P/T closures.

**PROVALIN<sup>®</sup> 1631** meets the requirements of metal plastic composite closures (Bandguard<sup>®</sup>).

**PROVALIN<sup>®</sup> 1288** is the solution for all filling goods, temperature requirements, and closure types. It also does not contain plasticizer and offers an extremely low-migration performance.

# Competence in PVC-free closure technologies



## About ACTEGA DS

**ACTEGA DS specializes in innovative sealants for the closure and the packaging industry and is part of the division of ACTEGA COATINGS AND SEALANTS of ALTANA AG. For more than three decades the company has been successfully supplying worldwide the closure industry and has continually developed strategies and technologies for PVC-free alternatives.**

Seen as the leading manufacturer of sealants for plastic and metal closures, ACTEGA DS is paving the way for new ideas and solutions for the entire industry. These are created at the site of the company in Bremen with 110 employees and a number of strategic partnerships and synergies. Installed in the plant are automated modern production machines with a capacity for the production of compounds for 150 billion closures per year which are delivered to over 100 countries worldwide. There is continuous investment in modern machine technology and in Research and Development, to introduce new patented technologies such as PROVALIN® which has been registered for various patents and protection rights.

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