



Environmentally responsible solvent cleaning with trichloroethylene

## Clean solution for the Swiss Army Knife

The Swiss Army Knife's secret of success has been uncompromising quality for more than 125 years. This also includes cleaning the numerous elements making up the world famous red Swiss Army Knives. VICTORINOX AG uses trichloroethylene with the best available technology (BAT) to do this and as a result facilitates using the solvent in a way that is environmentally responsible and process-safe.

At its location in Ibach VICTORINOX produces about 28,000 Swiss Army Knives in 100 versions daily. Besides that the legendary Swiss Army Knife is included by New York's Museum of Modern Art and the State Museum for Applied Art in Munich in the collection "Good Design", 32,000 other pocket tools and about 60,000 knives for household and work use are produced daily. The highest quality and environmental protection standards apply here or as company head Carl Elsener puts it, "Our recipe for success is very simple: we pay attention to every detail."

### High demands on component cleaning

This also applies to cleaning the knife blades and other functional elements made out of special high alloy stainless steel. The first cleaning step occurs after the punching. VICTORINOX launched the quality cleaning project together with Dow and SAFECHEM Europe back in 1993 to achieve reliable cleaning of the various punching oils. Various cleaning media were tested during a comprehensive evaluation phase. This revealed that efficient cleaning of the processing residues from the many different components could only be achieved with the solvent trichloroethylene (TRI).

When an investment in a new cleaning system was due 15 years later, the biggest knife factory in Europe again conducted experiments with aqueous cleaners and other solvents. And again, TRI proved to be the medium that best met the high cleaning requirements.

### Environmentally responsible solvent use thanks to state-of-the-art technology

Consequently, VICTORINOX decided to continue cleaning with NEU-TRI™ E, a highly stabilised trichloroethylene grade, which was especially developed for demanding cleaning tasks in the metal-working industry. The stabiliser prevents harmful reactions with metal particles or other impurities introduced by the metal processing. In addition, it protects against decomposition reactions caused by oxygen, moisture and high temperatures. An acid acceptor neutralises the acid decomposition products that occur in industrial cleaning processes and can then lead to corrosion of the equipment.

NEU-TRI™ E is used in a closed cleaning machine. This is designed to ensure that almost no solvent vapour reaches the environment and all requirements of the Swiss Clean Air Ordinance (LRV) are complied with. An integrated distillation system help to ensure that the oil introduced is reliably separated from the solvent and NEU-TRI™ E can be used with consistently high cleaning performance for a long time.



The SAFE-TAINER™ system for the supply and take-back of the solvent developed by SAFECEM also makes an important contribution to the almost emission-free operation. This system, which defines the technological state-of-the-art, permits almost completely closed recycling. It consists of two differently equipped safety containers. One container is specially intended for the supply of fresh material while the second deals solely with taking back the used solvent and waste material. When filling or emptying the cleaning machine, a no-drip quick-release system and the special coupling connector with vapour recovery prevent practically all emissions and leaking of the solvent.

#### Solvent management included

Thanks to the closed-loop system, VICTORINOX is able to realise an efficient, safe and environmentally responsible cleaning process. Furthermore, the company benefits from additional services of SAFECEM Europe. These include customised advice and CHEMAWARE™ solvent trainings. In addition, the MAXICHECK™ test kits allow a quick and easy solvent check on the spot and if necessary, the ability to re-stabilise it with the MAXISTAB™ stabiliser concentrate. “We decided on SAFECEM as partner again because we have come to know the company as a reliable expert, which always focuses on high quality, the environment and the safety of our employees,” Carl Elsener reported. Environmental protection and work safety are not just a priority with regard to component cleaning at VICTORINOX. For example, heat recovery ensures heating of the factory and the 130 surrounding flats. In addition, the company has arranged for the development of a system for recycling 500 tons of grinding shavings annually.



You can find out which SAFECEM solution would be best for you at:

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