

ACMOS CHEMIE KG

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Release Agents – Challenge For Release And Adhesion At Once

Practice-related Cases With Adhesives And Lacquers

INTRODUCTION

For more than 50 years, our company has been developing barrier layer products for the plastics-processing industries (among others). 1,500 tailor-made release agent formulations are daily applied by trained application engineers all over the world in addition to approx. 300 new developments per year. In 2007 our Bremen plant produced 10,000 tons of release agents and cleaners in 12,000 batches. 600 permanently stocked up raw materials are processed in batch sizes of 1 kg up to 6,000 kg.

In lectures given on release agents they were quite often referred to as “the unloved child” of the moulded part manufacturers all over world, but actually we are anxious to solve existing problems instead of causing new ones!

SUBJECT

A release agent is far more than a mere demoulding aid: for decades grip, appearance, gloss level and post-workability of the finished parts' surfaces have been ultimately demanded “adjustment criteria” not only by the much-cited automobile industry.

Various options can be chosen to make a „release agent-contaminated“ part surface bondable, lacquerable, capable of being laminated or printable:

- 1) SANDING: manually or with electrical or pneumatic devices
- 2) CLEANING, CHEMICAL: with alcohol, benzines, acetone or NEP etc.
- 3) ACTIVATING: by means of low-pressure plasma
- 4) BLASTING: cryogenic or with different blasting substances (glass, sand, nut shells etc.)
- 5) WASHING: in multi-stage power wash stations if need be

The disadvantages of the afore-said methods are obvious:

- An extra working cycle is always necessary
- Separate work places with an appropriate equipment/airing are required
- additional solvent emission
- disposal of removed residues
- availability of/need for investment with plasma or power wash stations

Naturally the high art is to enable the customer to post-treat the moulded part without intermediary working cycles. Therefore we try to adjust a product from release-active and surface-effective substances in combination with a suitable carrier medium which precisely corresponds to the defined production requirements.

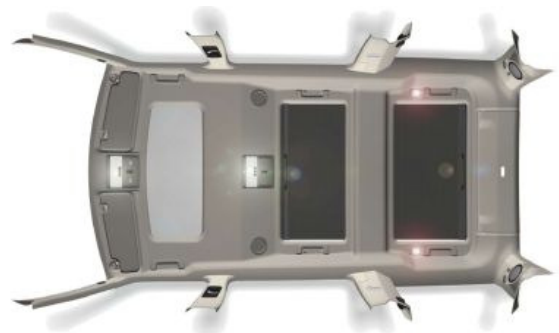
EXAMPLES FROM PRACTICE

We have chosen the following current examples for our presentation of today:

- 1) STEERING WHEEL PRODUCTION / automobile: a PUR sheathed steering wheel produced with ACMOS HIGH SOLIDS or a water-based ACMOS release agent is covered with leather and bonded after a minimal preparation. The active substance combination contains significant silicone oil shares. Merely extremely small radii and sharp edges are pre-treated with chemical cleaners and abrasive tools (see also our sample on display).



- 2) ROOF LINER PRODUCTION / automobile: an automobile roof liner released with a water-based ACMOS release agent and bonded e.g. with PUR is laminated with a foam-backed textile **without further pre-treatment**. In this case extreme press temperatures of over 130° C require a pure combination of different silicone oils as active substance basis. A release agent application normally allows 4 demouldings. 120 g of bonding agent are applied per m² moulded-part surface and pressed for 35 seconds. You can convince yourselves of the good adhesion by means of our samples.



- 3) PRODUCTION OF SAFETY SHOES / clothing: outsoles (TPU / PUR / rubber) released with silicone-free ACMOS HIGH SOLIDS allow a perfect adhesion **without intermediate degreasing** of the contact surface after one machine cycle during direct injection of the comfort sole. The purchasers in the automobile industry and their suppliers ultimately demand an absolutely silicone-free release agent. The



predefined adhesion value of at least 4 N is achieved without problems At an extreme material testing the two PUR soles foamed together cannot be pulled apart with two tongs without being damaged.

- 4) INSULATING HALF-SHELLS FOR FUEL LINES / aerospace industry: by means of a solvent-based ACMOS release agent (approx. 5 % wax blend) insulating half-shells for fuel lines meant for the ARIANE 5 carrier rocket are produced. These rigid foam half-shells are laminated with aluminium adhesive tapes **without intermediate cleaning** since the lines in operation must steadily carry cryogenic fuel at a temperature of approx. -200°C , at least in the case of liquid oxygen.



- 5) STRUCTURAL COMPONENTS FOR DRONES / military technology: a likewise solvent-based ACMOS HIGH SOLID release agent (approx. 10 % wax blend) serves to easily demould shell-like components which are made ready for use by means of putty knife, filler and lacquering after having been slightly sanded.



- 6) DASHBOARD CARRIER / automobile: Here a wax-based ACMOS HIGH SOLID also is applied, however, the active substance content amounts to approx. 12 %. As the dashboard later is completely foamed over with a semi-rigid PUR system the surface must be activated with a low pressure plasma oven installed at the production plant in order to guarantee most extreme requirements (adhesion / weathering influences).



RESULT

Ever since there were release agents for the production of moulded parts and as long as they are still necessary the question of a trouble-free post-treatment has been of immediate interest. Apart from the afore-said methods of surface neutralization and activation we also offer tailor-made solutions in many cases where a preparatory treatment prior to the bonding / flocking / foaming or injecting is not necessary at all. The enumeration of practice-related cases could be continued almost endlessly, but this would definitely go beyond the scope of this meeting. Please contact us, we will be glad to take care of your demands.

ABSTRACT

ACMOS has been doing tailor-made release agents for more than 50 years. Our customership requires by far more than only the release: touch, gloss and further processability are essential.

Apart from surface preparation by physical or chemical methods ACMOS also supplies a broad range of release agents for a trouble-free post-treatment without the necessity of a preliminary surface cleaning.

Your wish is our command: please contact us to find the solution to your task.

BIOGRAPHY

Peter Bekusch, born on 23 September 1965, has been employed at the sales department of ACMOS CHEMIE KG since 1986 and changed to the sales management in 2004. Numerous trials run at domestic and foreign customers formed his comprehensive background of experience. Since 2001 Peter Bekusch has drawn up various lectures mostly with a technical focus which he gave in front of the most different panels.

