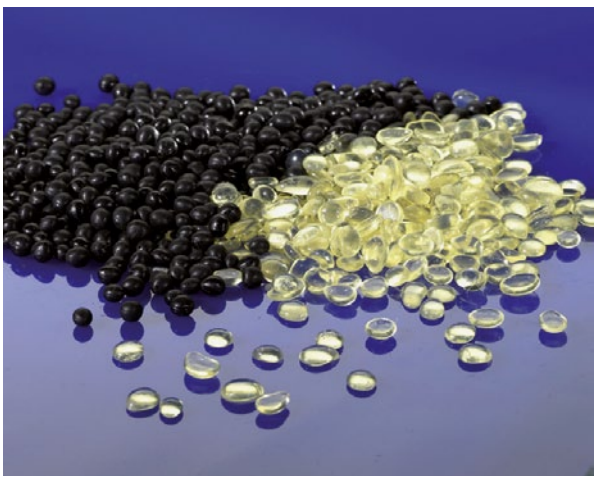
High-performance hotmelt adhesives for electronic components

Henkel recently presented hotmelt adhesives that are especially suitable for the sealing and traction relief of cables when plugs and sockets are encapsulated. These hotmelts of the Macromelt 6 Series cover a broader temperature window than the hotmelt adhesives used up to now and are therefore especially suitable for applications in which the encapsulation also takes over certain functions of a housing – for example in the case of assembled PCBs that have to be protected from humidity, mechanical stress or aggressive substances such as acid or oil. These hotmelt adhesives adhere very well to polar plastics such as PA, PBT and PVC. They are manufactured on the basis of sustainable raw materials and are thus completely biodegradable.



For more information, please visit: www.henkel.de

New adhesives for film lamination, packaging and structural bonding

Planatol Adhesive GmbH presented a number of new adhesives at the ICE Europe (International Converting Exhibition), which takes place in Munich from 8 - 10 November.For example, the company is presenting a new crosslinker for its water-based adhesives for the lamination of glossy films that allows the quantity of crosslinker required to be reduced from the usual 5 % to 2 %.

In the packaging field, Planatol is also presenting a new hotmelt pressure-sensitive adhesive whose special feature is that it combines aggressive tack with very short stringing at the nozzle.

Another product worth mentioning is a new water-based dispersion adhesive which is used for gluing heavy paper sacks and excels in adhesive strength and clean processability.

In addition, the company is presenting new moisture-curing PUR hotmelts. These are suitable for uses such as the lamination of wooden veneers or laminate, for bonding plastic components and for flat lamination.

For more information, please contact: info@planatol.de, Tel: +49 8031-720-0, www.planatol-adhesive.de

Gentle homogenization

Uni tec is the brand name of a new general-purpose mixer developed by MTI Mischtechnik which is suitable for manual or fully automatically controlled preparation of bulk materials in the chemical and plastics processing industries and other sectors. Depending on the configuration, the uses of the new mixer unit range from application as a mixing system for homogenizing bulk materials with a wide range of raw material characteristics to performing complex processing cycles aimed at providing specific product properties.

According to the manufacturer, the geometrical design of the mixing vessel, mixing tool and optional chopper systems is variable over a very wide range. As a result, the unit can be optimally adapted to specific application requirements, from gentle homogenization of even the most sensitive starting materials to the pre-dispersion of cohesive pigments, etc. Further options such as

spraying systems for fluids, a double jacket for temperature-controlled process management and a vacuum-proof or pressure shock-resistant design of the mixing vessel are also available for handling coating and granulating tasks with high repeatability.

For more information, please contact:
MTI Mischtechnik International GmbH,
D-32758 Detmold, Tel.: +49(0) 52 31/9 14-0,
info@mti-mixer.de, www.mti.mixer.de

Rapid development of multilayer adhesive films

Collano Adhesives is offering its customers a new platform for the rapid development of multilayer adhesive films using a new computer-controlled pilot system. This system is equipped with five single-screw extruders and allows high-value adhesive films with up to five layers and a width of 200 to 600 mm to be built up according to customer requirements on a laboratory scale. Thanks to the wide range of technical possibilities, membrane and adhesive films with a PP or PE substrate can be produced as well as films with O2 and H2O barrier layers or films with a high-melting intermediate layer. If necessary, it is also possible to combine different adhesives with barrier layers, and the problem-free production of protective films and adhesive films with sensitive raw materials is also possible.

For more information, please contact: Collano Adhesives AG, CH-6203 Sempach Station, collano@collano.com, www.collano.com

Cost-effective printing of structured TCO coatings

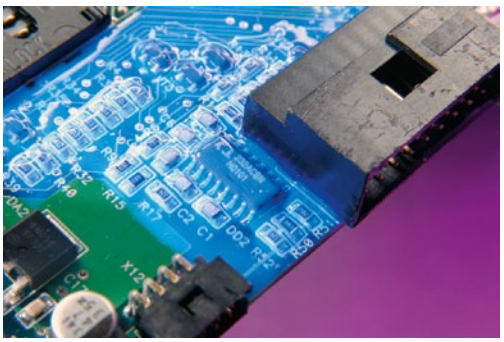
Transparent conducting coatings made of TCOs (transparent conducting oxides) are used as transparent electrodes in displays, touch-screen panels and flat screens. Researchers at the INM (Leibniz Institute for New Materials) have now succeeded in using transparent conducting oxides to make special nanoparticles that can be directly applied to the film via printing techniques using a printing plate by adding a solvent and a special binder. This method has several advantages: it allows structured TCO coatings to be printed cost-effectively using a single process step. UV curing at low temperatures of less than 150 °C also allows thin plastic films to be coated. The binder has several functions here: it not only allows good adhesion of the TCO nanoparticles to the substrate but also increases the flexibility of the TCO coatings. As a result of this good fixing, the conductivity remains unchanged even if the films are bent – this is an advantage compared to usual high vacuum techniques such as sputtering. The binder also increases the conductivity of the oxides used, although it is in itself not conductive up to now. If the researchers also succeed in making the binder conductive, the overall conductivity would rise and the sheet resistance would decrease further.

Coating on flexible film substrates makes it possible to apply coatings using the classical roll-to-roll technique. The first experiments conducted at the INM on this subject are promising.

For more information, please visit: www.inm-gmbh.de

UV-curing protective coatings are cost savers

Protective coatings that cure under UV light offer numerous advantages compared to traditional methods such as thermal hardening and room-temperature drying. As they cure in seconds, long processing and storage times are no longer necessary. What is more, the size of the production area required is reduced as there is no need for drying ovens, long conveyor lines or shelves for curing or drying. This helps to reduce energy consumption, so the use of UV-curing protective coatings allows great cost savings to be made.



UV-curing protective coatings from Dymax contain no volatile organic compounds, which means that complicated ventilation systems and expensive insurances can be dispensed with. Their function is to increase the resistance of PCBs to humid environments and reduce the growth of tin whiskers.

Further details on cost savings made possible by the use of UV-curing protective coatings: www.dymax.de/conformal

New high-performance dispersion adhesive

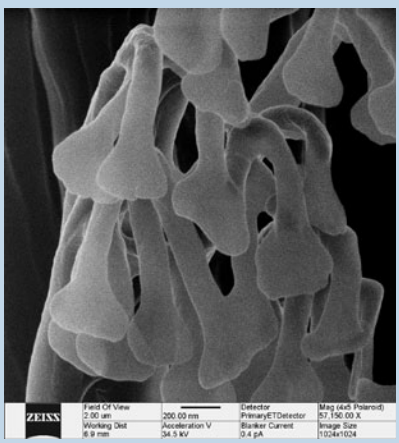
With its adhesive HW 730, Planatol Adhesive is presenting an aqueous dispersion free of solvents and plasticizers which is not subject to labelling.

This adhesive allows a large number of materials (wood, metal, plastics, foamed materials) to be bonded according to the contact method. Some examples of applications are the manufacture of upholstered furniture, the automotive and caravan sector and the field of film lamination. The dispersion is also suitable for one-sided adhesive application. It is absolutely odourless, can be handled manually and mechanically and has a very high tack.

For more information, please contact:
Planatol Adhesive GmbH,
Tel: +49 8031-720-0,
info@planatol.de, www.planatol-adhesive.de

High-resolution images with a high scientific content

Researchers in the US have discovered the secret of the fascinating climbing ability of spiders and geckos. The Orion helium ion microscope from Carl Zeiss allowed extremely sharp and detailed high-resolution images to be made showing extremely fine structures on the feet of these creatures. The images show how the masterly climbing abilities of these creatures are due to adhesive forces, i.e. molecular forces of attraction. The secret lies in the fine structure of tiny hairs covering the undersides of the feet. The spatula-shaped ends of the tiny hairs allow the creatures to make contact to the climbing surface at millions of different points. In this way, the elementary adhesive force which can be observed between all objects which are in mutual contact allows geckos or spiders to bear several times their own body weight while positioned head first. It has been very difficult up to now to create images of these extremely delicate little hairs.

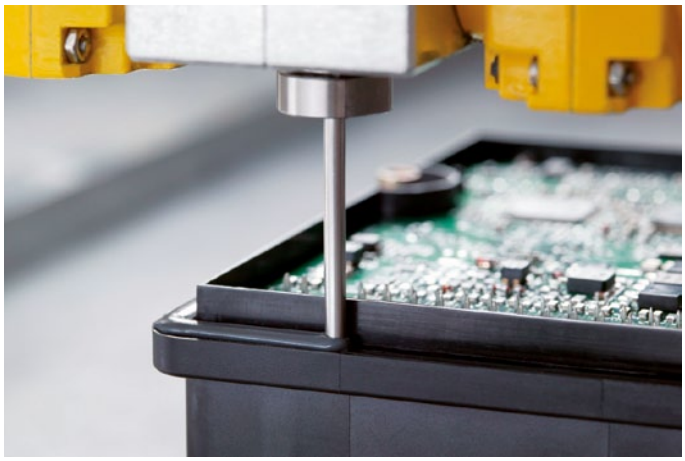


Electron microscopes give rise to an electrostatic charge on the surface of virtually all biological samples, causing the image quality to deteriorate. For this reason, researchers often cover biological samples with a thin layer of gold when preparing them. This layer of gold in turn partly obscures the fine structures of the tiny hairs of geckos and spiders. Helium ion microscopy provides a simple but effective solution here: static charges are neutralized easily and the sample can be shown in its natural state. The resulting images are extremely sharp and have a high scientific content as well as displaying great abstract beauty.

The samples were provided by the research group around Dr. S. Gorb. The studies with the helium ion microscope were conducted at the Joint School of Nanoscience and Nanoengineering (JSNN), UNC at Greensboro and NC A&T State University.

For more information, please visit: www.zeiss.de

Tin-free silicone opens up new processing possibilities



As an alternative to conventional RTV-1 silicone grades, Wacker has developed a tin-free general-purpose adhesive and sealant that opens up new processing possibilities for the automotive, electronics and household appliances sectors. The new sealing adhesive, which is available under the brand name Elastosil N 9111, is what is known as an alkoxy-curing RTV-1 system. It is formulated with a tin-free catalyst and is therefore interesting for applications in which organotin compounds act as inhibitors and are therefore undesirable.

For example, the system makes the dam-and-fill encapsulation of electronic modules faster and easier than was previously the case. In this process, a bead of non-sag silicone is applied to the module to create a dam around the encapsulation area, which is then filled with a low-viscosity encapsulant, for example a platinum-catalysed silicone gel. If the RTV-1 silicone used for the bead contains a tin catalyst, the silicone must be fully cured before encapsulation, as the tin will otherwise inhibit the curing of the platinum-catalysed encapsulant. As a result, using tin-based RTV-1 silicones for such procedures is always time-consuming and cost-intensive.

Unlike conventional RTV-1 grades, the new tin-free silicone adhesive and sealant is also compatible with platinum-catalysed silicone products even in an uncured state. Electronic devices can therefore be encapsulated in silicone gel as soon as the bead has been applied. There is no longer any interference with the vulcanisation of the platinum-catalysed encapsulant.

This new material offers considerable time savings and processing advantages for manufacturers of electronic components for the automotive and other sectors. For instance, junction boxes for solar panels can be mounted faster and therefore more cost-effectively. They can be encapsulated with platinum-catalysed silicone grades directly after the fixing step if they have been mounted with the aid of the new silicone adhesive. Waiting for a certain length of time in order to minimize the risk of inhibition of the platinum-catalysed encapsulants by tin-based RTV-1 silicones, as was previously the case, is no longer required.

Further applications for the new general-purpose adhesive include demanding bonding applications in the household appliances sector, such as bonding of ceramic hobs, screens and control panels in electric cookers.

The new adhesive and sealant also enables reliable mounting and bonding of the front windows of microwave ovens.

For more information, please contact:
www.wacker.com

New sealant uses capillary effect

Photo: Hernon

For sealing ammunition, Hernon has developed various sealant materials that use capillary action during processing. Sealing only takes place when the case and the bullet are put together. The waiting time required for drying conventional seals made of bitumen before joining can take place is no longer required.

For manoeuvre ammunition (blank cartridges), a sealant with medium viscosity is used. After application, the material is dried and cured using UV light. For sealing live ammunition of different calibres, from pistols to rifles, a one-component and solvent-free sealant for sealing the case mouth is available, which has two curing mechanisms: UV light and anaerobic, in other words with the exclusion of oxygen. Hernon has also developed a new type of sealant for sealing igniter cases. It has a low viscosity, also consists of one component and can be cured either under UV light or anaerobically. As it uses the capillary effect, it is particularly well suited for components that have already been joined and ensures greater durability for the seal. The sealant can be used in temperatures of up to 204 °C and is resistant to most solvents.

For more information, please contact:
twitt@4advancedtechnologies.de

Tilting table for contact angle measuring systems

Whenever it is necessary to determine whether a drop sticks to a surface or rolls off, one solution is to use the PA4240/PA3240 tilting table from Krüss, which was designed for use with the DSA30 and DSA100 contact angle measuring systems.

The arrangement allows measurement of the roll-off angle for a drop on a surface as well as the dynamic contact angle (advancing and receding angles) of a sliding drop. The latter provide information about the homogeneity and roughness of the solid surface.

The roll-off angle and dynamic contact angle are measured precisely and reproducibly with the high-precision angle drive of 0.1° and a large dynamic table movement range. The software is used to define the starting and finishing points of the tilting movement and coordinate them with the measurement. The drop can be deposited on a level sample or on a tilted one. The sample can be tilted until it reaches a vertical position.

The tilted table can be used with sample sizes of up to 75 × 100 × 45 mm (L × W × H). For larger samples, or for a combination with horizontal axes, wafer tables and further accessories, a tilting frame is available for the DSA100 measuring system.

For more information, please contact:
Krüss GmbH, D-22453 Hamburg,
info@kruss.de, www.kruss.de

Extracting harmful substances and gases

The company TBH has developed a new downdraught table that is specially designed for laboratories in the chemical and pharmaceutical industries, where it is used mainly to extract explosive dusts and gases or for transfilling harmful substances. It is also suitable for use in workshops, for example in spray-painting work (such as spot repairs) and gluing processes (solvents). In order to comply with workplace requirements for these sectors, the table was developed in accordance with ATEX guidelines. It is suitable for zones 22 (dust) and 2 (gas), which means that it complies with ATEX category EX II 3GD.

Other special features include integrated height adjustment, which allows the working height to be infinitely adjusted within a range of 850 to 950 mm. The protective screen, which is height-adjustable in 50 mm stages, additionally allows an application-oriented configuration of the workstation. As an optional extra, it is available with a factory-fitted foot switch to improve user-friendliness even further. To enable the operator to monitor the saturation filters, the unit has a differential pressure indicator positioned on the front side.

For more information, please contact:
TBH GmbH, D-75334 Straubenhardt,
www.tbh.eu, info@tbh.eu

New film reliably protects PVP against oxidation

BASF has developed a new plastic film that gives even better protection to Luvitec high molecular weight powders from penetrating oxygen from the air.

Luvitec (polyvinylpyrrolidone, abbreviation: PVP) is an important component in the manufacture of specialty membranes and specialty adhesives.

The new packaging made of ethylene vinyl alcohol plastics (abbreviation: EVOH) gives the high molecular weight PVP powders reliable protection against oxidation. The EVOH film has optimum sealing properties, excellent chemical resistance and a high tensile strength and is also impermeable to gases and fluids. As a result, all the relevant product properties remain protected – and for years to come. BASF guarantees a shelf life of up to three years for high molecular weight powders.

For more information, please contact:
www.basf.com

doi: 10.1365/s35784-012-0059-z

Keeping lids tightly sealed

Due to its low viscosity, good adhesion, high mechanical strength and compression recovery, the Raku-Pur 33-1024 foam gasket from Rampf Gießharze is particularly suitable for sealing containers and manufacturing filters.

For example, it is used by the company Bayern-Fass for sealing steel drum lids to ensure the safe transportation and storage of materials in a solid or paste form. For the application of this foam gasket, Bayern-Fass integrated a new mixing and dispensing machine from Rampf Dosiertechnik into its production system.

The new dispensing machine applies the foam to the lids of the 200-litre drums before turning them by 180 degrees and stacking them without altering the stripe dimensions. The semi-rigid moulded foam with an integral skin has a water-repellent and abrasion-resistant surface as well as very good chemical and ageing resistance. Due to its short pot life and curing time, the system can usually be processed on-site by two-component mixing and dispensing machines. The manufacturer recommends a curing time of two minutes for the moulded foam. The liquid system begins to react in 30 to 40 seconds, while the tack-free time is two to three minutes.

For more information, please contact: Rampf Gießharze GmbH & Co. KG, D-72661 Grafenberg, info@rampf-giessharze.de, www.rampf-giessharze.de

Very high tensile strength, break elongation and compression recovery are key features of the semi-rigid moulded foam with an integral skin.

The liquid foam gasket is applied to the rim of the drum lid using a low-pressure mixing and dispensing system.

Viscosity measurement for very small sample volumes

The new Lovis 2000 M/ME modular microviscosimeter from Anton Paar makes it possible to determine the viscosity of extremely small sample volumes (400 µL) with an accuracy of up to 0.5 % and a repeatability of up to 0.1 %. In manual operation, all that needs to be done is to select the measuring method, fill the sample and press “Start”. The plug-and-play connection of a sample changer allows automatic measurement of up to 96 samples to be carried out at the push of a button. The temperature is controlled quickly and precisely. Under optimum conditions, the results are available after 30 seconds.

To determine the shear rate dependency of low-viscosity liquids, this microviscosimeter offers the possibility to vary the inclination. It was developed especially for liquids with a low viscosity but can also be used to measure the viscosity of samples with up to 10,000 mPa.s at any temperature between 5 °C and 100 °C.

The system is available for use as a stand-alone viscosimeter or in combination with the DMA M density meter for the simultaneous measurement of density, kinematic viscosity and dynamic viscosity. Combinations with meters for determining other parameters, such as sound velocity, are also possible.

For more information, please contact:
Anton Paar GmbH, A-8054 Graz,
www.anton-paar.com, info@anton-paar.com