

Press Release

9/9/2014

Henkel at “Aluminium 2014” in Düsseldorf/Germany

Sustainable Surface Treatment Technologies for Aluminium

As the world’s leading solutions provider for adhesives, sealants and functional coatings, Henkel too will be present at “Aluminium 2014” – the world’s leading B2B platform for the aluminium industry and its most important applications – which takes place in Düsseldorf/Germany from October 7 through October 9 this year. The company offers a wide range of products in the field of aluminium pretreatment to help operators make their production processes more efficient, more cost-effective and more sustainable. Henkel’s electro-ceramic coatings, for example, ensure that aluminium surfaces are effectively protected against wear and corrosion – even when exposed to high temperatures.

Through its brands Loctite and Bonderite, Henkel is able to offer a specific range of electro-ceramic coatings (ECC) for various applications, including engine and exhaust system components. The ECC process is suitable for aluminum, titanium, magnesium and their alloys among others. Thanks to ECC coatings, such light metals can also be used for components that would otherwise have to be made from steel. They reduce friction and offer outstanding corrosion protection. And despite their excellent hardness, electro-ceramic coatings are also characterized by their flexibility.

Compared to other processes, ECC produces exceptional test results even under extreme temperatures of up to 1,100 degrees Celsius. While other coatings exposed to such conditions may spall, flake and peel, the Henkel system offers reliable adhesion and thus effective ongoing protection against wear and corrosion.



LOCTITE BONDERITE TECHNOMELT TEROSON AQUENCE Ceresit

Also in terms of its sustainability credentials, ECC technology offers significant advantages over other processes: both the coating and the wastewater produced by the process are free from heavy metals.

Alternatives to chrome-based pretreatment products

Chrome-free aluminium pretreatment products are among numerous innovations developed by Henkel, a technology leader in the field of surface treatment with a product portfolio under the Bonderite brand that sets benchmarks right across the industry.

In contrast to products that contain chrome (VI), the conversion coating generated in the innovative process based on Bonderite M-NT 2040 R2 is formulated with non-toxic, chrome-free components. Given the many statutory requirements governing environmental protection and occupational safety – such as the RoHS, WEE, REACH and ELV regulations – this technology constitutes a viable alternative to traditional chrome (VI) conversion treatments, with huge potential for the future. It also offers good welding and adhesive bonding properties for uncoated aluminium surfaces, as well as creating an optimal layer on the substrate for subsequent coating.

The innovative Bonderite M-NT 2040 R2 process combines etching and passivation effects. It thus enables the number of process baths to be decreased and the pretreatment line to be reduced in length. Hence old green chromating lines can be converted to this new and innovative process without major modification to the active baths.

Simplified, more cost-efficient processes

According to the EU's REACH regulation, from September 2017 the use of chrome (VI) will no longer be allowed in these processes. A further benefit of this innovation from Henkel is that Bonderite M-NT 2040 R2 can be used at room temperature (around 25 degrees Celsius), leading to energy cost reductions. With the absence of chrome (VI), wastewater treatment is also significantly simplified and less expensive. And cost-driving water consumption in the production process is likewise substantially reduced.

Any switch from chrome (VI) to chrome (III) or chrome-free conversion materials such as the innovative Bonderite M-NT 2040 R2 product requires complete and thorough cleaning of the plant. Needless to say, Henkel's field sales representatives are available to offer customers the advice and recommendations they need for this cleaning process and the products required.

An innovation in anodizing – cold sealing, but nickel-free

The last step in the anodizing process is the sealing of the aluminium surfaces. For this, there is a choice between various cold and hot sealing processes. Today, only Henkel offers a cold sealing process that avoids the use of nickel. Nickel can cause allergies and skin irritation. The major advantages of Henkel's cold sealing process, available under the product name Bonderite M-ED 11150/11151, relate to its sustainability approach within the production process and its environmentally sound credentials.

Nickel typically leads to a slight green tint or green discoloration of the aluminium surface. With the nickel-free process, these problems are avoided. The quality of the results achieved with cold sealing is equal to that produced by nickel-based processes. The product is used primarily for aluminium extrusions used for windows, doors and siding/façade applications.

This kind of pretreatment process is usually performed by jobbers.

Bactericide-free lubricants for long bath lifetimes

The lubricants employed in metal machining need to ensure that the amount of wear caused to the tools used in drilling, milling, turning or grinding operations is reduced to a minimum, even under heavy-duty cutting conditions. The aim of any machining shop has to be to extend tool life to an economic maximum. With Bonderite L-MR, Henkel offers an innovative lubricant series that is both odorless and bactericide-free. These lubricoolants also exhibit excellent bath life thanks to their high hard-water stability.

With an innovative combination of ingredients, Henkel has succeeded in developing a range of emulsions which, at standard service concentrations, offer an exceptionally long bath life, even when mixed with hard water. The formulation is bactericide-free and also needs no topping-up of toxic bactericides! The end result of the significantly longer bath lifetimes available with Bonderite L-MR lubricants is reduced environmental impact combined with appreciably lower operating expenses. Cost advantages accrue to customers both because these products are very easy to maintain and because there is less of the usual expense of frequent replenishment and disposal. The Bonderite L-MR series contains a variety of lubricants developed with tailored performance characteristics and ingredients to suit specific application requirements.

Vacuum impregnation of porous materials

Impregnation enables flawed components which, due to the unwanted presence of porosities and cracks, would normally have to be scrapped. Henkel is the world's leading supplier of impregnating services with fully automatic process technologies for sealing structural defects in metal castings and electronic components. The comprehensive portfolio of impregnation resins available under the Loctite brand is characterized by high thermal stability, very good sealing performance and rapid curing in a matter of minutes. The fully automated process is designed to ensure the components being impregnated undergo no damage or distortion. Once impregnated, the metal parts can be used without any post-treatment, free of corrosion and oxidation.

Since the beginning in 1976, Loctite impregnation processes have been the subject of continuous further development, with the focus firmly fixed on sustainability and quality. Thanks to the integral recycling system, for example, the impregnation resin is recovered from the wash water and returned to the impregnation process, with the water also being consistently reused.

Keen to offer customers an optimal service close to their production facilities, Henkel has established a network of impregnation service centers – nine in Germany, one in France and four in Eastern Europe – with further global expansion planned. And in addition to the fully comprehensive impregnation service for cast metal components provided by these external service centers, Henkel also offers tailored integration of a vacuum impregnation facility within the customer's plant.

During "Aluminium 2014" in Düsseldorf/Germany from October 07 through 09, Henkel experts will be available at Stand 13M20 to provide guidance and advice on the wide spectrum of products and system solutions the company has to offer in the field of surface treatment technology.

Bonderite and Loctite are registered trademarks of Henkel in Germany and elsewhere.

Henkel operates worldwide with leading brands and technologies in three business areas: Laundry & Home Care, Beauty Care and Adhesive Technologies. Founded in 1876, Henkel holds globally leading market positions in both the consumer and industrial businesses with well-known brands such as Persil, Schwarzkopf and Loctite. Henkel employs about 47,000 people and reported sales of 16.4 billion euros and adjusted operating profit of 2.5 billion euros in fiscal 2013. Henkel's preferred shares are listed in the German stock index DAX.

Photo material is available at <http://www.henkel.com/press>

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Henkel AG & Co. KGaA

The following material is available:



Henkel offers a specific range of electro-ceramic coatings (ECC) suitable e.g. for the coating of IC engine pistons.



The fully automatic Loctite impregnation process with integral recycling system can be relied upon to seal all porosities encountered in metal components.