

BOHEMI CHEMICALS

high quality customized coatings

HOT END COATING



STARTIN S

Monobutyl trichloride
Longer expiration date due to double stabilization.
Capable of closing the microfractures present in the glass.

COLD END COATING (High Quality)



BOHEMI P4218 D

Polyethylene emulsion.
Recommended for beer and wine bottles.
Avoids the formation of residues in filters, pipes and solenoids.

COLD END COATING (Very High Quality)



BOHEMI P1500

Copolymer and Waxes emulsion.
Suitable for precious bottles as liquor, champagne or returnable containers to be sterilized.

SEALING GLUE



BOHEMI P5010

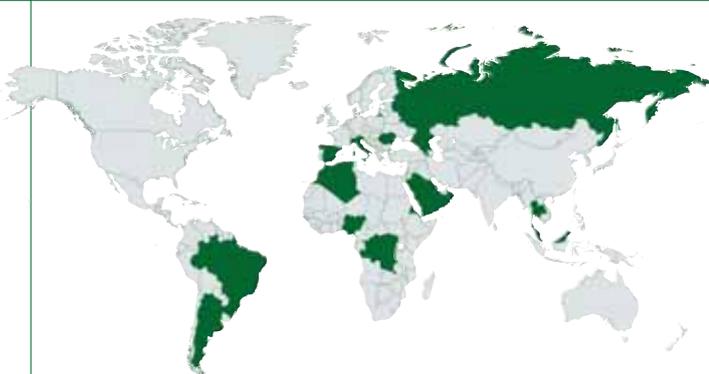
Food and pharmaceuticals approved. It is applied by the glass factory and thermoactivated by the user when the jar is filled and cap is locked.

GLASSPAINT



TEMPVER

Thermoplastic paint available in different colours with a glossy finishing.
Applied by screenprinting.
Heavy metal free.



THE COMPANY

Bohemi Chemicals has been providing high quality coatings for the hollow glass industry since 1998 to almost 100 clients all over the world. Over these 20 years, the company has solved many customers' needs, developing expertise in problem solving regarding the quality of glass bottles in the glassworks area from the hot end right up to the labelling process.

Bohemi Chemicals' philosophy is to focus on a limited range of products that have cutting edge quality and that are capable of providing real added value thanks to being true tailor made solutions that meet customers' needs.

PRODUCTS

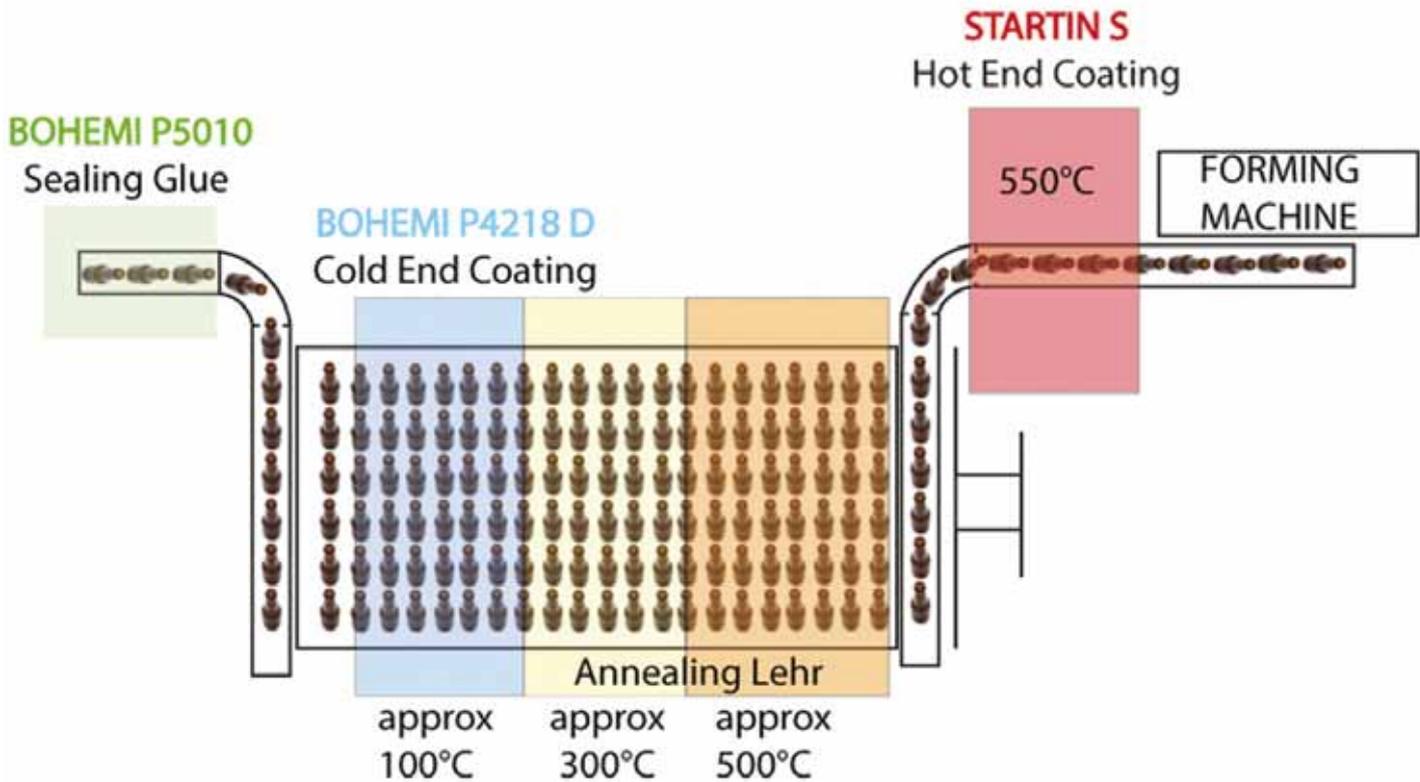
Hot end coating

Startin S is 99 per cent pure MonoButylTinChloride (MBTC3), which is sprayed on the bottle just after

Bohemi Chemicals takes us through the different steps that glassmakers need to follow to be sure of having containers with the correct quality, protection and sealing characteristics. These coatings are not only used in the luxury sector, but also for everyday containers for food and beverages.



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the forming phase at 550-450°C. This high temperature makes all organic components evaporate, laying a homogeneous coat of stannic oxide capable of closing the micro cracks of the glass bottle caused by the rough surface of the mould.

The overall mechanical strength of the bottle is enhanced, furthermore a grip for the successive cold end coating anchorage is provided.

Other than being 99 per cent pure, Startin S also presents a double quantity of stabilizer component making it suitable for more than six months storage.

Cold end coating

After the annealing lehr, the bottle temperature is 150-90°C and it is ready to receive the second and very important coating – the cold end coating, which has a strong impact on the overall result, finishing and lifecycle of the bottle.

Based on Polyethylene Waxes with a 20-25 per cent solid content, once sprayed on the bottle with appropriate and well ori-

ented guns, it forms a protective plastic layer anchored on the hot end coating.

This layer provides protection from mechanical solicitations involving the bottle during its path to the final consumer and avoids the typical white ring on the its shoulder. Furthermore, it gives the bottle an appropriate slippery surface so that it remains perfectly vertical while running on the conveyor belts and during filled with liquid.

Bohemi Chemicals supplies three Cold End Coatings suitable for different types of production requiring different quality specifications: standard bottles, luxury bottles and tableware.

P4218 M is Bohemi's standard quality cold end coating suitable for a generalist production such as for wine, beer or water bottles which do not justify the use of costly treatments.

P1500 is a very high quality coating suitable for luxury bottles such as for cognac, whiskey and champagne bottles. Thanks to its superior strength, it has an ideal application in returnable bottles

which have to face an extended lifecycle and periodical sterilizing processes with caustic soda, which may remove the coating.

P1500 is a very versatile product capable of maintaining its properties in a wider range of application parameters such as concentration percentage, spray angle and temperature, making it suitable for production lines not easily controllable and modifiable.

EN21 is the cold end coating for tableware items which are normally subjected to minor mechanical stresses thanks to the dedicated packaging and direct path to the final consumer. *EN21* is specifically formulated for these types of products to have the best quality/cost ratio.

SEALING

Glass packaging is widely perceived as a high quality choice from consumers, and many food manufacturers base their products' positioning strategy on this characteristic. Nowadays we can find a wide range of glass containers such as for yogurts, choc-



olate creams, jams, perfumes and medicines in supermarkets.

The Food Safety Regulations impose a strictly procedure for the packaging and in many case the container must implement a protective foil film between the content and the external cap.

Bohemi Chemicals offers the adhesive to provide strong fixing between the glass and the foil film.

P 5010 is an aqueous dispersion based on high molecular weight ethylene copolymer thermoplastic having an excellent adhesion on glass. It provides a heat seal film capable of perfectly closing the container with the aluminium or paper sheet.

Differently from other products which have to be applied by food producers when they fill the jars, *P5010* can be applied immediately after the creation of the container, left to dry and be secondly thermally reactivated when the jar is filled and closed by the external cap.

In this way glassmakers can offer a more complete service and food producers can forget about the supplying and application of adhesive.

Furthermore, *P5010* does not leave typical and annoying aluminium or paper residues when the product is opened by the consumer.

GLASS PAINT

TEMPVER is a thermoplastic compound of ceramics and pigments mixed with a wax solidifying at ambient temperature, with a low percentage of cerium and zero quantity of lead content. It is applied by screen printing on a heated mould to allow the melting of the wax, resulting in a glossy finishing.

There are two Tempver specifications with different chemicals resistances suitable for single use or returnable bottles.

Tempver has been recently added to Bohemi's products' range and is currently in the process of certification for the most famous Cola producers.

CERTIFICATIONS

Bohemi Chemicals complies with all the required regulations on food and chemicals materials, and is certified ISO 9001: 2008, as well as TUV NORD CERT for the supply of chemicals and related after-sales services and for use in hot and cold treatment in glass processing.

All company products comply with European Regulation UE 10/2011 (manufacture of materials and articles that come into contact with food).

REACH Certification: Registration, Evaluation, Authorisation and Restriction of Chemicals.

SERVICES

Bohemi Chemicals aim at offering the best possible customized service regarding the supply and shipping of products as well as the relative technical service, which also includes complete reports on the bottle (Bohemi area of competence) suggesting the best solutions.

The expertise of Bohemi Chemicals is enhanced and expanded thanks to numerous collaborations with universities and private glass associations.

FOCUS ON CONTAINER PRODUCTION

Avoiding damage to glass containers during production, filling operations and final transport to the shop or restaurant is fundamental. Clients will not be happy if their expensive bottle of wine arrives with marks or scratches on the external surface. Glass containers also represent a safer and more environmental-friendly packaging that does not modify the taste of the content.

Protection for glass bottles

In glass container manufacture, the treatment process has great importance since bottles without protection would be almost unusable. In almost every glass plant, containers are coated with two substances: one at the hot-end immediately after forming (called hot-end coating - HEC) - Startin S -, and the other at the exit of the annealing lehr



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(called cold-end coating - CEC). The two treatments are strongly connected to each other and thus can be considered part of the same process that can be called 'container protection'.

In recent years, this process has become more and more important, mostly for two facts. The first reason is that containers have become lighter in weight each year and so they lose their typical internal strength caused by the abundance of material. The second is the increased line speed in filling plants where containers are stressed by continuous glass-to-glass contact. These changes have increased the importance of surface treatment.

The main effects — HEC and CEC

The main effects of glass treatments are to protect increasing resistance (HEC) - Startin S - and lubricate and give scratch resistance (CEC) the ware so that it can be moved smoothly, without damage, with high-speed handling equipment from a massed group of bottles on the lehr into single lines for inspection on through packaging.

We call the mentioned effects 'primary', as they improve technical and functional features and have importance for the safety of production lines and operators working on the lines.

The 'secondary' class of treatments effects are really important for marketing and final customers. This means that first of all

they should be invisible so they do not transform products into ugly bottles. The second effect is that the coated bottle must be labelled with a broad range of adhesives so treatment should be as little as possible, especially on the label side.

Container contamination

One more interesting topic about CEC is what is usually called container contamination. During treatment processes the cold end treatment is applied by spraying from above. Plants should reduce the risk of spraying treatments inside the bottles.

Oleic acid is applied by a vapour process in a hood. It can supply the necessary lubricity and abrasion resistance and can be labelled with inexpensive dextrin glues. This coating is not considered permanent, it is easily removed by washing cycles, and loses its lubricious properties in storage.

Many breweries will not accept ware coated with oleic acid because this material can alter the flavour of the beer, and the main applications today are with water-based polyethylene emulsions, which are usually applied using spray bridge systems.

These machines spray the diluted material, which is mixed with approximately 100 to 200 parts of water, after the annealing lehr, from the shoulder of the bottle down. The only countermeasure, at the state-of-the-art, is to use a coating approved by the FDA also called with 'food grade' certification. This means that the components contained in the treatment at the expected solution ratio are not dangerous for end consumers.

It is clear that the coatings should in no way affect the colour or flavour of the product contained within the container.

The CEC products in wide distribution today are water-

based polyethylene emulsions. The recommended amount of coating to be mixed with water has to be respected, as overuse of the concentrate will not enhance performance values. If the mixture is too heavily concentrated, appearance of the ware can be impaired, and the bottles will appear streaked and can also be too slippery, resulting in filling-line pop-out. Too heavy concentration will also affect labelling ability and can lead to label failures. Conversely, too little concentrate will result in bottles without sufficient coverage to prevent surface abrasion.

In a similar way as that for dilution, temperature of application is also another fundamental parameter. It is important that the coating is applied at a minimum of 95°C for maximum labelling success and bottle cleanliness. Since polyethylene emulsion is subject to freezing, proper cover must be provided during transportation to or through a cold climate. Upon reaching the plant in cold weather, the material must be taken to a storage area protected from the cold. ■



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