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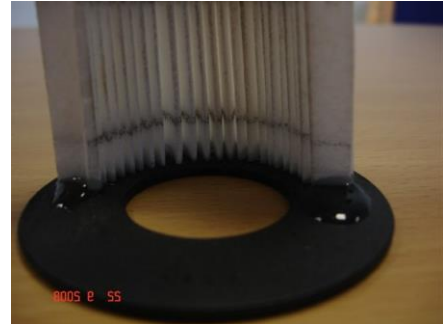
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How to Select a Filter Bonding Adhesive

There are a number of applications where adhesives are used in filters such as end cap potting and casting, side seaming, O ring fixing, can sealing, seal formation, sensor potting and thread locking. There are many obstacles to overcome when selecting the right adhesive including approval requirements (such as FDA/WRAS) and materials that may be difficult to bond, such as polypropylene, polyethylene and stainless steel. Permabond offers adhesive solutions, which overcome all these obstacles, and more.

End Cap Potting

Epoxy or polyurethane adhesives are often used for potting filter end caps. Potting involves partially filling an end cap or mould to produce a cast filter end with the adhesive (typically with good flow properties) and then inserting the filter media into it. The adhesive cures to a solid into which the filter media are bonded. Permabond ET5313 is a low viscosity epoxy which can be mixed and cast. It has a controlled reaction so does not generate excessive heat during curing in large volumes.



Filter media are often pleated fibrous materials or metal meshes.

It is important to consider the materials you are bonding, their absorbency and the level of flow the adhesive needs to create the optimal bond. An adhesive with too high a viscosity may not flow properly around pleats or fine mesh. A product which is too fluid may wick too far up the filter media (by capillary action) and reduce the function of the filter. Other considerations include desired cure speed, quantity of adhesive per filter end cap (this is important because mixing large amounts of quick curing adhesive can cause an exotherm), and also the operating conditions the adhesive need to withstand, such as temperature and nature of the filtrate.

Seam or Crimp Sealing



Rolled or crimped seams are commonly found in oil, fuel and air filters. Typically the metal lip at the bottom of the filter is sealed with an **anaerobic** or a rubber-based solvent adhesive and then the “can” is rotated whilst a stationary set of rollers crimps the metal lip. The benefit of using an **anaerobic sealant** over a solvent based adhesive is most importantly health and safety in the workplace as solvent vapours are not pleasant for factory staff and require good ventilation. Also on average 66% of the solvent based product is lost to the atmosphere, requiring a higher consumption of adhesive.

Permabond has helped filter producers reduce their adhesive consumption, costs and also helped to improve workplace comfort with its solvent-free anaerobic formulations.

Gasket bonding



Filters commonly have a rubber gasket fitted to the end, to form a seal to ensure that when fitted to equipment, machinery, engines, fuel or air lines, there is no leakage around the join. At the same time the filter needs to be easily removed for servicing, so a rubber gasket is the ideal component.

Permabond offers flexible, toughened **cianoacrylates** with excellent durability against automotive fluids and high temperatures. They bond rubber in seconds to form a high strength bond making them ideal for use on a high-speed production line.

Permabond's experienced technical team is on hand to help you with any filter queries you may have – we would be more than happy to help.

FDA/WRAS approval requirements

Some filter manufacturers need products which comply to certain regulatory requirements such as FDA or drinking water authorities – another important consideration when selecting an adhesive product. Permabond ET514X range of **epoxy adhesives** are formulated to comply with FDA requirements and are suitable for bonding a wide variety of materials. Permabond ET5365 has WRAS approval for potable water.

Polyolefin filters

For difficult to bond materials such as polypropylene and polyethylene, Permabond has developed a new range of polyolefin bonding **structural acrylic adhesives**. Permabond TA4605 and TA4610 form high strength bonds on **untreated** polyolefin materials – avoiding the need for costly surface pre-treatment. LINK TO TA46XX Promotional video: https://youtu.be/SB-F_8paews

Stainless Steel bonding

Stainless steel surfaces can also be quite difficult to bond so Permabond has come up with a new range of stainless steel bonding epoxy adhesives. Our ET539X range of adhesives offers high shear and peel strength performance as well as the ability to bond dissimilar materials. They offer an easy and effective way of joining stainless steel to itself and to other materials, provide a 100% seal and do not tarnish the stainless steel surface (unlike welding which leaves unsightly tarnishing as well as pin prick holes).

Permabond's filter bonding experts can help guide you through the selection process and can either recommend existing filter bonding adhesives or assist with the development of a bespoke product – a service which is free from Permabond.

To receive Permabond's Filter brochure, please e-mail help.europe@permabond.com or telephone +44 1962 711661