



FAQ

What are Aquapak materials made from?

Aquapak's **Hydropol** range is based on specialty hydrophilic (water-liking) polyvinyl alcohol.

Is the base polymer derived from bio-based resources?

Aquapak sources its polymers from the major polyvinyl alcohol manufacturers. Their processes currently use petrochemical feedstocks. This enables the polyvinyl alcohol to be available at scale and economically. In the future bio-based versions will become commercially available and allow **Hydropol** to be 100% renewable.

In what form is *Hydropol* available?

Hydropol is available in pellet form allowing it to be used in any thermoplastic process, for example, blown film, coex, melt extrusion coating, thermoforming and injection moulding.

What are the properties of the material?

Clearly it depends on the form. For example, in film form it has exceptional tensile strength (2.5 x PE of the same gauge), excellent puncture and tear resistance. **Hydropol** has notable barrier properties for oils, solvents, fats and gases (Oxygen, Nitrogen, Carbon Dioxide). Naturally electrostatically dissipative and has very good uv resistance. The film has very good clarity and can be printed without surface treatment.

In other forms such as thermoformed sheet, injection moulding etc. the excellent tensile and barrier properties provide opportunities for simplified structures allowing recycling and recovery.

Does *Hydropol* form microplastics?

When in solution **Hydropol** cannot form microplastics. Depending on the environment **Hydropol** in solid form may break down to small particles but without the formation of toxins or the subsequent absorption of toxins. These small particles will not persist in the environment unlike conventional plastics whose long lasting micro particles absorb and concentrate toxins.

Is *Hydropol* food safe?

All raw materials used in the manufacture are approved for direct food contact under FDA and European regulations.

***Hydropol* dissolves in water?**

Water solubility depends on the hydrolysis level of the grade. Aquapak's unique and patented process allows the full range of hydrolysis levels to be processed into pellet form. Hot water soluble will dissolve at temperatures greater than 70°C (158°F), intermediate at greater than 40°C (105°F) and cold water soluble at greater than 5°C (40°F).

What does Aquapak mean by a plastic for the Circular Economy?

The drive towards a Circular Economy means the development of a sustainable materials chain which has all the advantages of modern highly functional materials in their primary and secondary uses but combines it with real end of life options. ***Hydropol*** has excellent primary functionality in combination with a number of end of life options from recycling to controlled biodegradation. It's ready combination with other polymers and paper allows for simplification of layers for easier separation and recycling/recovery.

Can Aquapak's plastics be recycled?

Hydropol can be readily identified by sorting methods such as infra-red and laser sorting and can therefore be separated and reprocessed. In less sophisticated waste handling facilities, the use of a hot water wash enables ***Hydropol*** to be taken into solution. Once in solution the polymer can either be recovered (Aquapak's own technology) or the solution allowed to go to normal waste water treatment or anaerobic digestion.

Are Aquapak's plastics biodegradable?

By its nature the base polymers are inherently biodegradable and there is a large amount of historical work undertaken by academic and other researchers in this area detailing the microorganisms which breakdown the polymer in various conditions.

Aquapak cannot make specific claims regarding the final product but we are working with application partners, third-party test houses and certifiers to ensure compliance claims are verified for the application.

Testing on our own produced film indicated that a 15µ film meets the requirements of EN13432 and up to 30µ are compatible in thermophilic anaerobic digestion systems.

Further work is ongoing with independent test and certification institutes (OWS and TUV) looking at the behaviour of ***Hydropol*** in soil, freshwater and landfill.

Are Aquapak plastics safe in waste water treatment systems?

The base polymer has been used for many years in applications where the disposal route is through the waste water system and there are no reported problems, and this has been confirmed by a historical literature review as well as work conducted at two UK Universities on ***Hydropol*** film. The polymer is entirely compatible with aerobic and anaerobic

treatments. Recent work, as part of our independent testing of **Hydropol** coated board to prove repulpability, also looked at the effluent from dissolving the coating and demonstrated the capability of the waste water system to handle it without problem.

Are Aquapak plastics safe in the ocean?

Aquapak is very much aware of the ocean plastics problem and is in touch with several organisations looking at this problem. Work has already been undertaken with a UK University in toxicology testing using standardised marine fauna and no deleterious effects were found. Clearly the advantage with the material is it is hydrophilic and therefore does not form harmful microplastics. Work is ongoing with researchers and certified testing bodies to determine exactly how Aquapak's polymers behave in the marine environment. **Hydropol** film has been tested at OWS for toxicity screening using the Daphnia test protocol for ASTM D6691 and OK Marine and has been confirmed as harmless.

May 2019