



Technical Data Sheet

Hydropol™ 33104P

Product Information

Hydropol™ is an Aquapak Polymers product based on polyvinyl alcohol, which are water-soluble polymers. The properties of the various grades are mainly governed by the molecular weight and the remaining content of acetyl groups.

Product Description

Hydropol™ 33104P is warm water-soluble polymer which has been specifically formulated for blown film, mono and multi-layer constructions. It has excellent affinity with other hydrophilic polymers such as cellulose and PLA offering enhanced barrier. Hydropol 33104P as a paper/paperboard coating is designed to re-pulp in commercial paper recycling systems at 40°C.

- Non - toxic and all raw materials are listed as approved as direct food additives and food contact by EU and US regulatory listings.
- High resistance to animal, mineral and vegetable oils, aliphatic and aromatic hydrocarbons, ethers, esters, and ketones.
- Excellent barrier to Oxygen (OTR), Carbon Dioxide (COTR) and Nitrogen (N2TR).
- Biodegradation has been observed by at least 20 different genera of bacteria and several yeasts and moulds which occur in activated sludge, compost, facultative ponds, landfills, anaerobic digesters, septic systems and in natural soil and aquatic environments. 20µm film meets the biodegradation requirements of EN13432.
- Sturm (aquatic) biodegradation tests show that the formulations degrade in the presence of activated sewage sludge at a similar rate to cellulose.
- No ecotoxicological effect in marine environments according to ASTM D6691.
- Due to Hydropol™ having a high hydroxyl group content and hygroscopicity they are inherently static dissipative, like cellophane, and cause little frictional static charging. Surface resistivities are in the range of 105–106 ohms/m².

Supplied Form and Storage Recommendations

Hydropol™ 33104P is supplied as round pellets in bulk containers.

Hydropol is recommended to be packaged in metallised packaging with a WVTR <0.1 g.mm/ (m².d. Pa). If metallised packaging is not available, then an alternative is acceptable provided it has a WVTR <0.1 g.mm/ (m².d. Pa).

Storage must not exceed 12 months when stored in cool, dry conditions with controlled humidity. When storing pellets packaging should be resealed after opening to protect against moisture.

Applications

Hydropol™ 33104P has been developed for the conversion to mono blown films, multi-layer film structures, and paper laminations. Typical applications are packaging films, garment bags and compost bags. In view of numerous factors influencing functionality and shelf life of Hydropol™ films and finished products made thereof these parameters must be tested by the converters before utilisation.

Typical Basic Material Properties of Hydropol™ 33104P

Property	Unit	Test Method	Hydropol 33104P
Particle size	mm	ISO 2591	4-5
Bulk Density	kg/m ³		680-780
Solid Density	kg/m ³		1100-1250
Melting Temperature (peak)	°C	DSC	201
Melt Flow Rate (MFR) 230°C, 10kg	g /10mins	ISO 1133	3-7

Typical properties of Hydropol™ 33104P blown film, 25 µm*

Property	Unit	Test Method	Hydropol 33104P
Transparency	%		92.5
Tear strength MD	mN	ISO 6383-2 Elmendorf	>4000
Tear strength CD	mN	ISO 6383-2 Elmendorf	>7000
Tensile strength @ Max Load MD	N	ISO 527-1	50-80
Tensile strength @ Max Load CD	N	ISO 527-1	50-80
Elongation MD	%	ISO 527-1	50-70
Elongation CD	%	ISO 527-1	50-75
Dart	g	ASTM 1709	-
Permeation rates **			
Oxygen (23°C 0 % R.H) 35 µm film	cc/m ² /24 hr	ISO 15105	0.058
KIT	1-12	Tappi T559	12

MD = Machine Direction

CD = Cross Direction

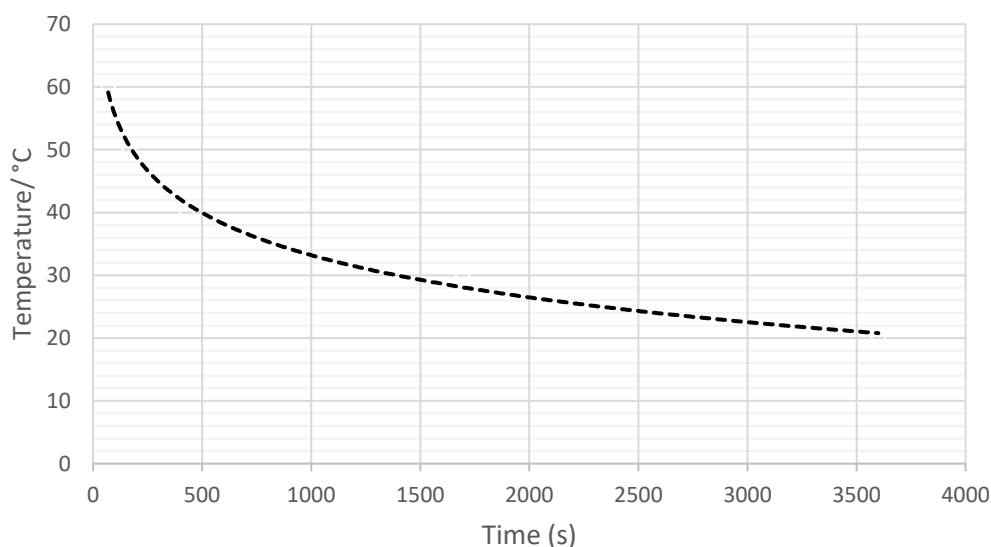
*Indicative results only and can vary with storage conditions of film. These all tested at 23°C 50% R.H.

**Indicative results based on 33100P. Aquapak do not believe to be any significant differences.

Solubility of Hydropol™ 33104P film, 25µm

Property	Unit	Test Method	Hydropol 33104P
60°C, tap water	seconds	AQU QALAB SOP 4	< 70
40°C, tap water	minutes		<10
20°C, tap water	minutes		> 60

33104P Average Solubility of Time vs Temperature



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Since these factors are uniquely within the user's knowledge or control; it is essential that the user evaluate the Aquapak product to determine whether it is fit for a particular purpose and suitable for the user's method of application.

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* TM = Hydropol is a registered trademark of Aquapak Polymers Ltd

Provisional

