




## Barrier coating resins terms and definitions.

What they mean, why we use them  
and how they fit in our processes.





## Do you know your resins from your dispersions?

Learn more about the processes and terms used in creating our barrier coatings

**The demand for sustainable paper and paperboard packaging has grown dramatically in recent years. Consumers have become increasingly mindful of the effects their buying choices have on the environment.**

This trend has put significant pressure on paper and paperboard packaging producers to eliminate their use of barrier coatings that employ polyethylene, paraffin-based waxes, silicones and fluorochemicals and to switch to using more environmentally-friendly barrier coatings, especially in food and beverage packaging applications.

As a result, there are a lot of words and expressions we all use when talking about barrier coatings. But if you're unsure as to what some of them mean, or you just want to learn a little more about how they all fit together, this guide will help you.

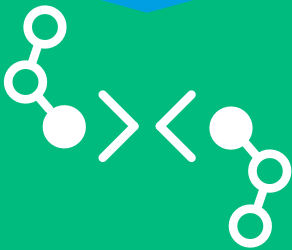
# The stages of creating a barrier coating



We have the capabilities to develop different types of waterborne resin solutions. The polymer can be based on different components and technologies, such as acrylic, polyester and polyurethane. Our acrylic resins are usually made using an emulsion polymerization process using free radical polymerization to co-polymerize acrylic monomers and styrene. If that all sounds a little complicated, this chart shows you what actually happens in the process.

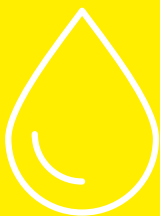
## First we start with a Resin

This is our base product



## Through a process of polymerization

we turn the monomer into a polymer



## ...before using this to make a dispersion or coating formulation

A paper manufacturer, formulator, convertor adds functional additives into the dispersion, to create different properties (such as defoaming or runnability)



## ...which are then delivered in the form of a Coating

# What the terms of our industry actually mean



## Resin

**The base substance we use in the creation of our coatings. This is the starting point for all our barrier coatings.**

- Barrier related resin properties: water resistance and uptake (Cobb), chemical resistance (e.g. oil and grease resistance) and MVTR
- Mechanical-related properties: flexibility, heat sealability, block resistance
- Organoleptic related properties: odor/taint and taste

## Polymer

**Long, chain-like materials created from smaller monomers.**

## Polymerization

**The process of chemically turning small molecules called monomers into larger, linked materials called polymers.**

## Dispersion barrier coating

**A new way of creating barrier coatings using water-based dispersion technology.**

Easy to recycle, and allows most of the fibers of a recyclable host substrate to be recycled. Commonly used in fast food and dry food packaging, as well as other applications. The polymer dispersion is a key part of any coating formulation and can be applied via various techniques. Other components can be added to the dispersion to manage factors such as runnability or viscosity in the final product.

## Additives

**Our customers add these to our dispersions to give the end product certain properties, such as, defoaming or runnability etc.**

## (LD)PE coating

**Polyethylene (low density PE) coatings are most commonly used in packaging but, due to their composition, are very difficult to recycle.**

Often used on single use packaging like paper coffee cups, straws, paper plates and for cold/frozen food.

# The difference between (LD)PE coatings, Fluor chemicals and Dispersion coatings



Many coatings are still derived from harmful (LD)PE (polyethylene) sources, which are difficult to recycle.

	(LD)PE Coatings	Fluor chemicals	Dispersion coatings
Source			
Water based	✗	✓	✓
Easily recyclable	✗	✓	✓
Eco- Toxicity Chemical PFAS* free	✓	✗	✓

## PFAS: Perfluoro and polyfluoro alkyl substances

These contain strong carbon-fluorine bonds, which remain stable under intense heat and are often used as water and grease repellents. Due to concerns of their environmental and human safety impact, their levels of use (particularly in food packaging) is expected to change soon.

Switching to water-based dispersion coatings helps more of the everyday food and beverage items we use every day.



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<sup>1</sup>Please see the "Guidance on Use of Covestro Products in a Medical Application" document.

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