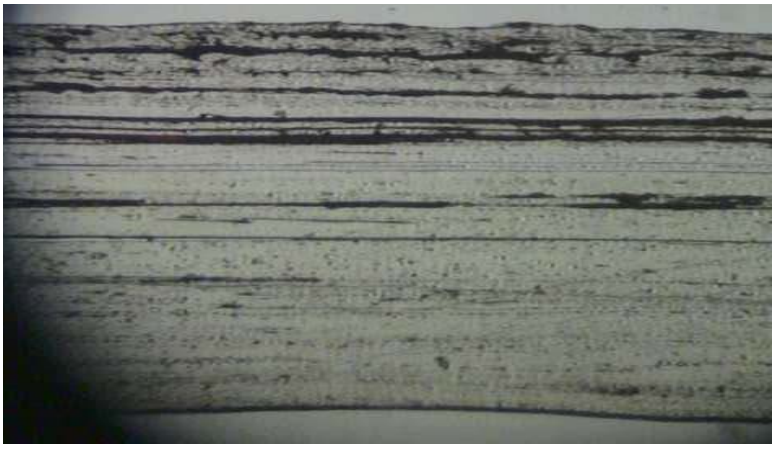
1. High Density Polyethylene (HDPE), Polypropylene (PP) Containers using KORTRAX® Barrier Resin (BR).

The BP Polymers trademark Kortrax® BR covers a range of different barrier resins. BR is the abbreviation for barrier resin which describes the concept of a barrier resin additive introduced via the Master batch in a single-hopper/mixer processing technique. Kortrax® BR is used to create discontinuous barrier layers in either a high density polyethylene (HDPE) or polypropylene (PP) extrusion process, whether in an accumulator or continuous extrusion blow molding machine.

Numerous overlapping layers - or platelets - of polyamide are distributed thru out the entire wall of the container by means of special extruder tooling and careful monitoring of the extrusion process. These overlapping polyamide layers reduce the permeability of the container wall by extending the path taken by any volatile organic compound (VOC) molecule migrating (permeating) through it. The barrier layers formed are mono-structures in that they are integrated within the HDPE, PP wall matrix creating one solid polymer structure. The resultant unified container of HDPE, PP plus Kortrax® BR is trademarked Baritainer®.



Section of a HDPE Container Wall with KORTRAX® Barrier Layers

Kortrax® BR consists of a modified polyamide 6 engineered to work with HDPE, PP. Since it is packaged as a granular material, the concentration of Kortrax® BR can be varied and its barrier properties thus adjusted to meet specific requirements. The finished container, i.e. Baritainer®, retains the excellent physical characteristics of the HDPE, PP base resin with no negative impact on label adhesion, colorants chosen or other mechanical properties.

With favorable processing conditions and the appropriate concentration of Kortrax® BR, barrier properties can be up to 100 times more effective in the containment of hydrocarbons/VOCs than sole HDPE, PP. And, as a secondary benefit, it reduces water vapor and oxygen transmission rates vs. the base resin. Finally, there is no shelf life issue as the Kortrax® BR layer does not degrade.

2. Fields of Application for KORTRAX® BR Packaging.

Baritainer® packaging can safely contain and transport various solvents, VOCs and other industrial chemicals requiring barrier containment in packaging. They can also safely transport flavors and fragrances, adhesives and agro-chemicals.
Baritainers® are thus an economically attractive and environmentally effective alternative to metal, multi-layer and fluorinated HDPE, PP containers. They can also replace other barrier resin containers such PVC that are especially found in the automotive after market. Baritainers® exhibit improved OTR and VTR performance vs. sole HDPE, PP and other barrier technologies. Baritainers® thus offer a human safe alternative for food packaging, cosmetics, pharmaceutical and other ladings requiring reduced oxygen exposure.

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3. Environment/End-of-Life Disposal.

Kortrax® BR is a safe, nontoxic and noncorrosive polymer. It is not only safe for the user but it is also recyclable without any need for special handling in end of life disposal. Kortrax® BR is compatible with food, health and beauty aids, and pharmaceutical products as it is FDA and EU compliant.

HDPE and PP Containers made with KORTRAX® BR are free of PFAS Contaminants found in fluorinated HDPE containers.

1. In March 2022, EPA released a letter directed at "manufacturers, processors, distributors, users and those that dispose of fluorinated polyolefin containers" about the presence of PFAS in fluorinated HDPE containers and "similar plastics."
2. Letter is intended to raise awareness about PFAS in the industry and TSCA requirements when it comes to PFAS and fluorinated polyolefins. www.epa.gov/system/files/documents/2022-03/letter-to-fluorinated-hdpe-industry_03-16-22_signed.pdf
3. The long-chain PFAS that result from the fluorination process "do not meet the requirements of the byproducts exemption at 40 CFR § 721.45(e)5 and are subject to significant new use notice requirements (SNUR)."
4. In March 2023, the EPA issued final rule for public comment to designate PFOS, PFOA as hazardous substances under CERCLA. These substances are found on the surfaces of fluorinated HDPE containers. Final rule expected to be promulgated end of 2023.
5. Many States have chosen to develop their own regulation that targets PFAS in a wide variety of fields and applications; State AG's are bringing their own enforcement actions, e.g., CA, ME, IL, MI.

The following information refers to the status of KORTRAX® under the Food and Drug Administration (FDA) and the Environmental Protection Agency (EPA) Regulations and the United States Pharmacopeia (USP):

1. Kortrax® BR meets the requirements for polyamide resins intended for food packaging applications as described in FDA regulations 21 CFR 177.1500 for polyamide 6.
2. Kortrax® BR may be used in contact with all types of food as defined in Table 1, 21 CFR 176.170(c) at use conditions A-H as defined in Table 2, 21 CFR 176.170(c). Also as defined in 21 CFR 175.300.
3. Kortrax® BR is produced in accordance with ISO 9001:2015, i.e., support development of materials and processes for the plastics industry.
4. Kortrax® BR does not contain added PFAS, PFOS compounds.
5. All components of Kortrax® BR are in compliance with the inventory listing requirements of the U.S. Toxic Substances Control Act (TSCA) Chemical Substance Inventory.
6. Kortrax® BR is included in High Density Polyethylene (HDPE) containers meets USP Regulation 661 for HDPE Containers.
7. Kortrax® BR is compliant with European Union (EU) Regulation No. 10/2011; EU Directive 1895/2005/EC and REACH Regulation EC 1907/2006/168 Substances of Very High Concern (SVHC).

4. Features of KORTRAX® Barrier Resin HDPE, PP Containers.

- Mono–Layer or Multi–Layer Construction
- Can be Recycled – APR Letter of Recognition for RIC #2
- Rugged and Impact Resistant
- ESCR Performance Improved
- Resistant to Solvents and VOC's (see chemical compatibility chart)
- Human Safe (compatible with food, cosmetics & pharma products)
- UV Optical Tracer to indicate presence of Kortrax® BR
- Resistant to High and Low Temperatures
- Stackable as top load strength is positively impacted
- Kortrax® is agnostic with regards to container size, color or shape
- No PFAS, PFOS Exposure
- Kortrax® BR is used in UN Certified Containers
- Kortrax® BR is used by multiple Bottle Manufacturers producing various designs and styles of containers for stock and custom needs
- *BP Polymers recommends that customers at a minimum test Kortrax BR® HDPE, PP packaging according to the 49 CFR Appendix B to Part 173 Testing Protocol as it is incumbent upon the shipper to ensure their lading is compatible with Kortrax® BR HDPE, PP packaging.*

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