# Global and China High Barrier Material (PVDC, EVOH, PEN) Industry Report, 2014-2017

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## STUDY GOAL AND OBJECTIVES

This report provides the industry executives with strategically significant competitor information, analysis, insight and projection on the competitive pattern and key companies in the industry, crucial to the development and implementation of effective business, marketing and R&D programs.

## REPORT OBJECTIVES

- To establish a comprehensive, factual, annually updated and cost-effective information base on market size, competition patterns, market segments, goals and strategies of the leading players in the market, reviews and forecasts.
- To assist potential market entrants in evaluating prospective acquisition and joint venture candidates.
- To complement the organizations' internal competitor information gathering efforts with strategic analysis, data interpretation and insight.
- To suggest for concerned investors in line with the current development of this industry as well as the development tendency.
- To help company to succeed in a competitive market, and

## METHODOLOGY

Both primary and secondary research methodologies were used in preparing this study. Initially, a comprehensive and exhaustive search of the literature on this industry was conducted. These sources included related books and journals, trade literature, marketing literature, other product/promotional literature, annual reports, security analyst reports, and other publications. Subsequently, telephone interviews or email correspondence was conducted with marketing executives etc. Other sources included related magazines, academics, and consulting companies.

## INFORMATION SOURCES

The primary information sources include Company Reports, and National Bureau of Statistics of China etc.

# Abstract

High barrier materials can block the penetration of small molecular gas (such as O2, CO2, N2, water vapor), aroma and other organic solvent vapor prominently. By virtue of better barrier performance, polyvinylidene chloride (PVDC), ethylene / vinyl alcohol copolymer (EVOH) and polyethylene naphthalate (PEN) are mainly used to produce thin films and containers, and utilized in such fields with higher requirements on barrier properties as food, medicine, military products, cosmetics, pesticides, precision instruments and high-grade fine chemicals; additionally, they are also suitable for the production of vacuum insulation panel materials.

In the world, only a small number of companies are capable of producing PVDC, EVOH and PEN which require high-quality raw materials and strict process control, so that the current PVDC, EVOH and PEN markets are dominated by a few oligopolists.

PVDC raw materials exist in the forms of PVDC resins and latexes. Global PVDC resin producers embrace Dow Chemical (USA.), Solvay (Belgium), Kureha (Japan) and Asahi Kasei (Japan). The global PVDC resin capacity reached 228Kt/a in 2013, and will hit 242Kt/a in 2014. New capacity is mainly contributed by Chinese PVDC manufacturers (but the capacity is not fully released).

Market Share of Major Global PVDC Resin Producers by Capacity, 2014


Classification and Applications of PVDC Resin

| Code | Classification | Monomers | Applications |
|---|---|---|---|
| A | Solvent soluble resin | VDC and VC | used as adhesion primers, heat-sealing lacquers and print-ink binder on various substrates |
| B | Conventional extrusion resin | VDC and VC | used for processing casing film, self-adhesive plastic wrap, composite film and food bag |
| C | Multi-layer co-extruded resin | VDC and MA | used for packaging food, medicine, military products, beverages and cosmetics (with retention of aroma and taste 1 time higher than ordinary PVDC-VC resin) |
| D | Fiber resin | VDC and AN | used for making wig, netting twine, flame retardant fabrics, artificial turf, etc. |

Notes:
VC: vinyl chloride
VDC: vinylidene chloride
MA : methyl acrylate
AN : acrylonitrile
Solvay and Asahi Kasei also manufacture PVDC latex.

Source: Global and China High Barrier Material (PVDC, EVOH, PEN) Industry Report, 2014-2017 by ResearchInChina

As of 2014, there has been only two PVDC resin production enterprises in China, namely Zhejiang Juhua and Nantong SKT. Both companies produce PVDC resins used in casing films. In recent years, Juhua has increased investment in PVDC, so that the capacity jumped from 3Kt/a in 2009 to 28Kt/a in 2013 and will further rise to 33Kt/a in 2014. Nantong SKT primarily supplies PVDC resins to Henan Shuanghui(i.e., Shineway Group) for the purpose of casing film production. By the end of 2014, Nantong SKT will add the capacity of 3.6Kt/a PVDC resins, so the total capacity will reach 13.6Kt/a.

Chinese PVDC resin market presents two characteristics
(1) Limited varieties of PVDC resin products with insufficient output and high import dependence (the import dependence ratio of PVDC resin processing equipment is also high). In 2013, China's apparent consumption of PVDC resin amounted to 53.6Kt/a, and the ratio of import dependence was 48.5%, compared with the over 50% before 2013.
(2) PVDC resin application will continue to extend, and the consumption will maintain rapid growth. In 2014, China’s PVDC resin consumption fields are mainly reflected in casing films. As China releases the capacity of plastic wrap PVDC resins and multilayer extrusion PVDC resins as well as enhances the localization rate of PVDC film processing equipment, the future PVDC consumption fields will be enlarged, and the consumption will climb rapidly.

EVOH is suitable for the production of packaging films, gasoline tank, composite bottles and co-extruded plastic sheets. In 2014, the global EVOH resin capacity is recorded at 142Kt, and the market is monopolized by Kuraray (Japan), Nippon Gohsei (Japan) and ChangChun PetroChemical (Taiwan). Due to robust market demand, the former two giants keep expanding capacity. In January 2014, Kuraray’s subsidiary in the United States (Kuraray America, Inc.) raised the EVOH resin capacity by 12Kt/a, so that Kuraray’s global capacity ascended to 81Kt/a. In early 2015, the subsidiary of Nippon Gohsei in the United States (NOLTEX L.L.C.) will obtain the new EVOH resin capacity of 15Kt/a, then the global capacity of Nippon Gohsei is to hit 66Kt/a.

On a global basis, the overwhelming majority of PEN resins gets used to produce PEN films and injection molding products; besides, about 10% of PEN resins are adopted for the production of PEN fibers. Currently, the PEN market is occupied by the joint ventures set up by Teijin (Japan) and DuPont (USA), and SKC (South Korea).

The report highlights the following:

- Overview of high barrier materials (including definition, classification, industry chain, related policies, prospects, etc.);
- Global and Chinese PVDC, EVOH, PEN market (embracing definition, classification, production technology, processing technology, capacity, output, sales volume, import, export, applications and development prospects, etc.);
- Profile, revenue, revenue structure, R & D investment, PVDC, EVOH and PEN business, and business in China of global and Chinese PVDC, EVOH and PEN producers (comprising PVDC companies such as USA Dow and Belgium Solvay, EVOH enterprises such as Japan Kuraray and Nippon Gohsei, as well as PEN manufacturers such as Japan Teijin and USA DuPont).

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