

Flexible PVC Matters

Vinyl Institute of Canada
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PVC demand is driven by the rigid product market (i.e., pipe, windows, siding, etc). While acknowledging this point it would be foolish to overlook the importance of the flexible PVC (i.e., fPVC) market which consumes about 30% of PVC resin.¹

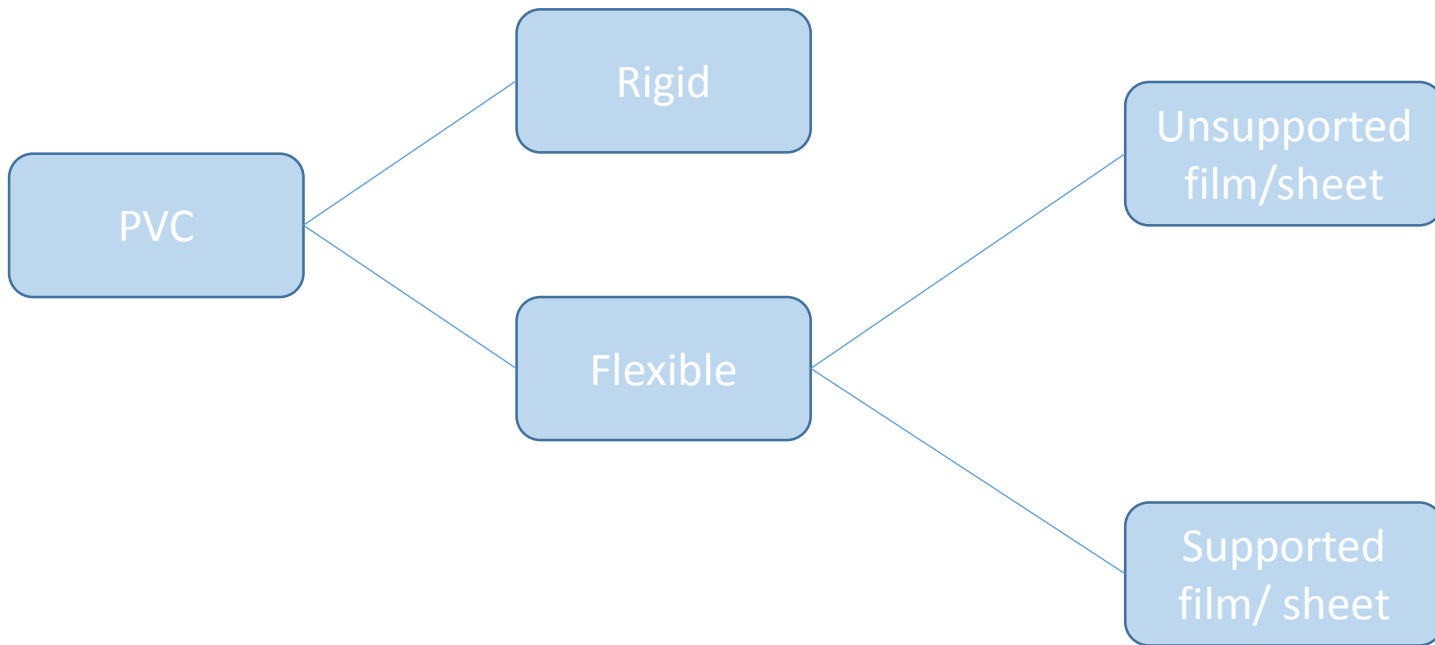
Flexible PVC Matters – Market Size

- Significant impact on the domestic economy with an estimated annual value that exceeds \$20B for the North American manufacturing and retail sectors¹
- fPVC related operations within the supply chain (excludes raw material producers) include¹:
 - ✓ More than 1000 manufacturing sites in 47 US states
 - ✓ Estimated employment of 275,000 people
- fPVC is part of the larger domestic plastics industry which employs over 900,000 American workers

Notes: ¹ Data obtained from, and used with the permission of, the Flexible Vinyl Alliance .

The worlds of rigid and flexible PVC vary considerably. The primary difference is the use of phthalates which softens PVC enabling it to be formed into a flexible film/sheet. In addition, formulation and processing/manufacturing choices can vary greatly however end product characteristics of safety, durability and value are common to all PVC products.

Flexible PVC Matters – What is Flexible PVC



A variety of fPVC manufacturing technologies exist. Calendar and blown films are typically used to create unsupported PVC whereas knife over roll, lamination and extrusion are often utilized to create supported flexible PVC products.

Flexible PVC Matters – Manufacturing Technology Snapshot

Method	Image	Method	Image
Calendar		Knife over Roll	
Blown Film		Lamination	
Extrusion- wire		Extrusion	

Flexible PVC products are ubiquitous. They surround us daily and contribute significantly to our quality of life. Having said that they are often invisible to the end user, simply a component of a finished 'branded' product . Thus many flexible PVC companies have minimal end-user brand recognition.

Flexible PVC Matters – End Markets

Market	Description	Image	
Transportation	Autos, buses, trucks, trains, heavy equipment - upholstery, dashboards, flooring, headliner, tonneau, mud flaps, etc	 	
Medical	Hospitals, clinics, LTC, dentist/veterinary offices, - IV bags, BP cuffs, VT sleeves, incontinence products, body bags, mattress/gurney covers, wallpaper, flooring, upholstery, pharmaceutical package/labels, etc	 	
Construction	Commercial, Industrial, Athletic Stadiums - Upholstery, flooring, wire/cable, roofing, dock seal, cured-in-place pipe, HVAC, storage tents, geotextiles, gymnasium flooring/padding/dividers, military tents, etc	 	
Residential	Exterior and Interior - Pool liners, awnings, wallcoverings, flooring, wire/cable, bedding/pillow covers, garden hoses, etc	 	
And more...	- packaging, book binding, apparel, industrial curtains, etc	 	

... Flexible PVC in all applications provides safe and durable products at great value... \$20B in NA

Similar to the rigid PVC market, the flexible market has its challenges. Often these challenges are magnified for small and medium sized companies given their lack of expertise and financial resources... reinforcing the need for a strong trade association to represent all PVC industry participants.

Flexible PVC Matters – Challenges

Market	Description
Technology	<ul style="list-style-type: none"> - Social media is fueling a marketplace where misinformation often appears credible and celebrities/peer groups are trusted more than scientists - Nano-technology may alter the flexible PVC market... polymer versus additives - Enhancing test capabilities is fueling more stringent chemical approval thresholds and a mindset based on 'no trace' versus 'no harm'
Global Trade	<ul style="list-style-type: none"> - Free trade agreements, until recently, were proliferating the market and while eliminating import tariffs have caused added compliance complexity - Requirements outside of Rules of Origin do not always require all partners to rise to the most stringent standard amongst the trade partners. This can create unexpected trade barriers when one country can continue to use a raw material that is banned/not approved for use in another country.
Regulatory	<ul style="list-style-type: none"> - Federal, state/provincial, municipal policy and regulations are diverging/duplicating leading to more red tape, more bureaucracy and more domestic/international trade barriers - Governments continue to update and/or introduce new policies... typically raising the cost and complexity of compliance: TSCA, CPA, TRA (Ontario), REACH, Cap and Trade/Carbon Tax, etc.
Deselection/ Public Perception	<ul style="list-style-type: none"> - Prop 65 knows no boundaries... California – 6th largest economy - declared DINP as carcinogen. Any product not label regardless of source can be sued – thousands of law suits to date - Well funded NGO's gain access to global corporations and governments to deselect vinyl based upon dated/false information, junk science and rhetoric - Younger generations don't trust corporations or trade associations assuming they always take profit over safety
Recyclability	<ul style="list-style-type: none"> - Contrary to popular belief, unsupported flexible PVC has no recycling challenge... it is recycled. - Supported flexible PVC is often combined with a textile which is typically a non-PVC polymer (i.e., PET) thus creating a co-polymer waste stream. Co-polymer waste recycling is more complex and expensive.

Despite these challenges the flexible PVC industry has many opportunities... most require us to re-sell or re-educate the benefits of fPVC to government, industry and the public...

Flexible PVC Matters – Opportunities

Market	Description
Value	<ul style="list-style-type: none">- Flexible PVC remains the most versatile lowest cost polymer
Education	<ul style="list-style-type: none">- Science based- Credible education to corporates/governments/public- Chemical presence does not mean human health hazard!
Recycling	<ul style="list-style-type: none">- Infrastructure investment... too big for SMEs
Durability	<ul style="list-style-type: none">- Growth of global population and its demands on resources will introduce need for durable, reusable, recyclable products versus single-use products