

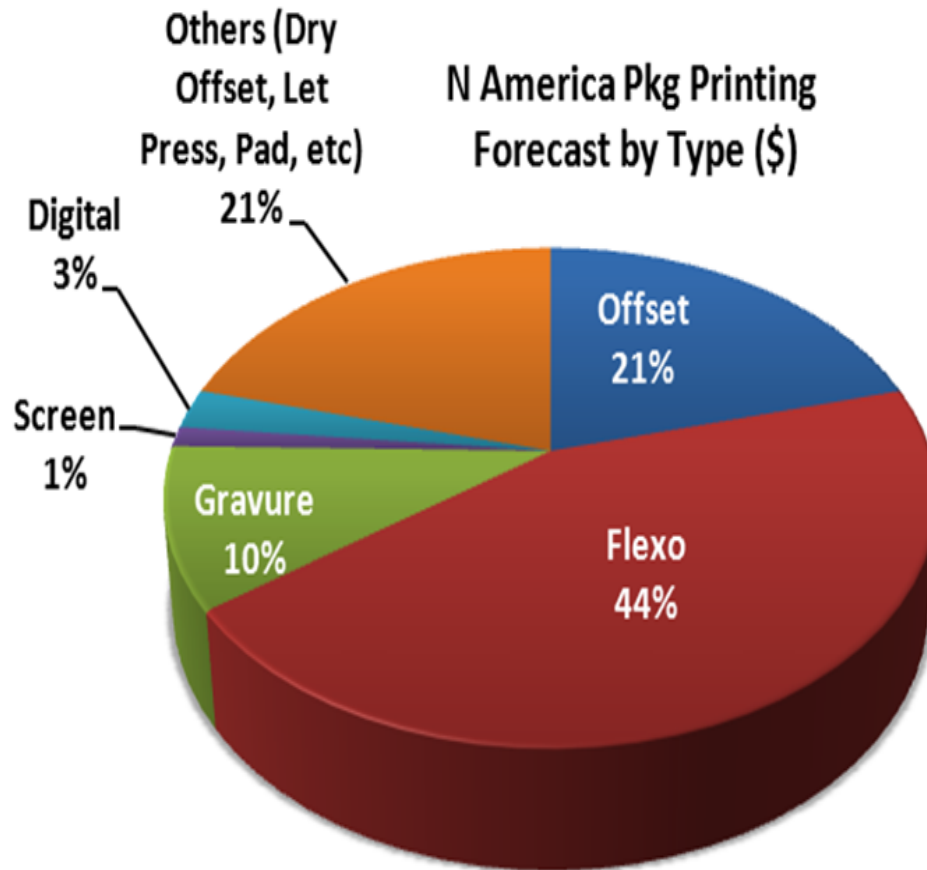
When To Use Gravure



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Folding Carton Packaging Market by Print Type



Sources: PIRA Future of Global Packaging to 2014

Fldg Ctn 5Yr Growth	% Change
Hardware	-6.0
Tobacco	-4.1
Meat Prods	-1.8
Converted Paper	-1.0
Cereals & Crackers	-0.7
Confectionary	-0.3
Recreational	-0.3
Baked Goods	0.5
Soap/Househld Clnrs	0.7
Dairy	0.7
Carry out	0.9
Personal Care	1.0
Misc. Goods	1.8
Beverage	2.5
Frozen	2.8
Dry Foods	3.0
Pharma	3.2

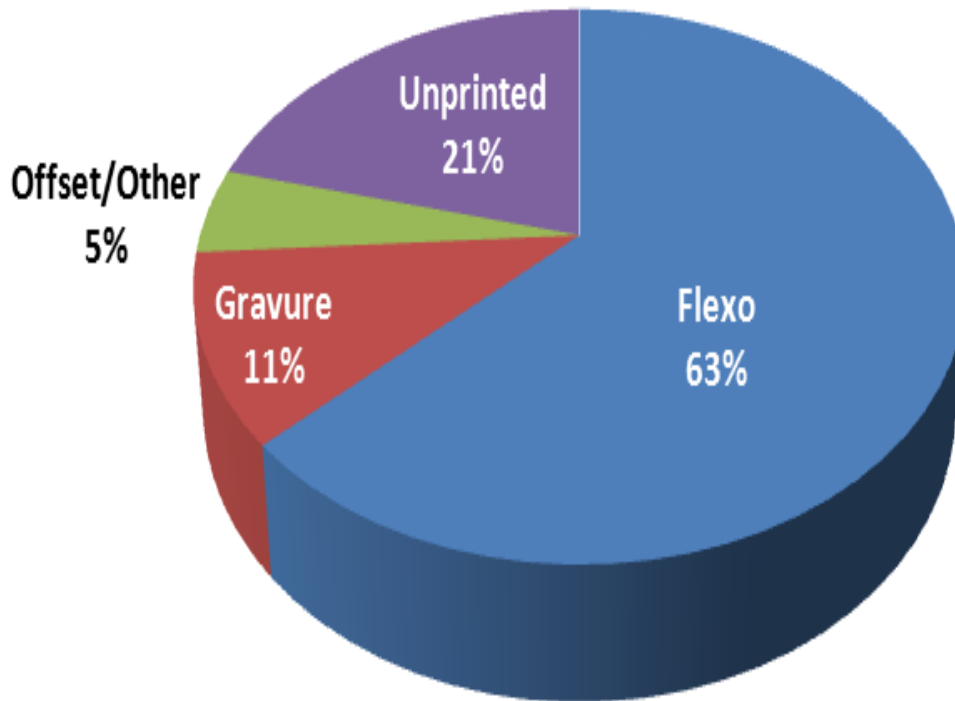


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Flexible Packaging Market by Print Type (USA)

FPA Flexible Packaging
by Print Type



Sources: FPA State of the Industry 2012

Flexible 5yr Growth	% Change
Fruit & Veg	3.0
Meat & Fish	2.5
Frozen Food	1.0
Refrig Food	2.5
Ready Meals	2.5
Dried Food	0.5
Salty Snacks	1.0
Confectionary	1.0
Baked Goods	1.7
Dairy	2.5
Coffee & Tea	2.5
Other Food	2.0
Beverage	2.0
Pet Food	3.0
Personal Care	3.0
Pharma	3.2
Tobacco	-2.0
Other Non food	1.5

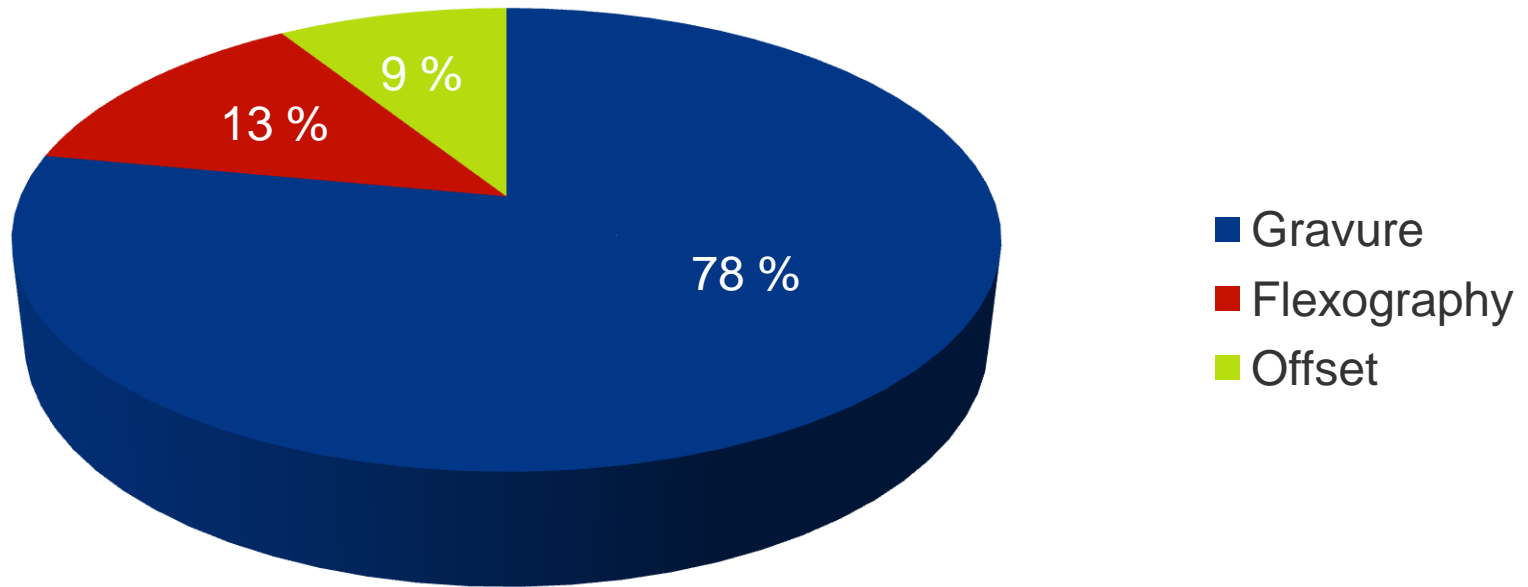


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Altria – Packaging Development by Print Type

Packaging Printing Processes



Typical uses of Print Technologies

■ Gravure

- Primary Cigarette Packaging
 - Hard Packs, Soft Pack Labels & Cartons
- MST Side Labels
- Printed Films
 - Single and multilayer structures

■ Flexography

- Printed films
 - Single and multilayer structures
- MST Side Labels
- Pressure Sensitive Labels

■ Offset

- Tin Lids
- Square Packs
- Cartons
- Promotional items



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Print Sourcing – What We Consider

	Gravure	Flexography	Offset
Print to Print Tolerances (Typical values)	0.050 to 0.015	0.01	0.005
Cost of Image carriers	Prepress and cylinders depends on press size, typically costs are \$1200 to \$1800/color	If flat plate prepress and image carrier costs \$500 - \$800/color. If using "In the Round" print sleeve costs are equal to Gravure	Prepress and image carrier cost are normally \$300 to \$500/color
Number of Print Stations	Typically 10, but have heard of at least one 12 color press	Typically 10 colors, 12 colors are coming on line	Sheetfed - typically 6 colors plus coater(s)
Process Printing	If narrow tonal range - best suited if full tonal range - depends on run length	Not suited for narrow tonal range designs, if full range depends on run length	Handles narrow and full tonal ranges equally well, depends on run length
Large print solid areas	More consistent across design due to engraving processes	Will see some color variation across large areas of print due to plate impression setting	Will see some color variation across large areas of print due to condition of plate and blanket life
Using multiple process colors for create demand colors	More consistent across design due to engraving processes	Will see more variation due to impression setting and anilox rollers selection	Fairly consistent throughout print sheet
Vignettes Letdown	Tends to get a print defect at 65-70% dot area	Need to be more concern with minimal dots	No real concerns
Solvent Retention	Normally uses "GRAS" solvents, solvent retention times calculated to predict when materials can be shipped	Normally uses "GRAS" solvents, solvent retention times calculated to predict when materials can be shipped	No solvent issues, converted to "Low Migration" inks only for paper board. UV for tin lid printing
Metallic Inks	Delivers highest quality, thicker ink laydown - higher brilliance	Constrained - due to anilox and plate transfer	no good options
Raised Textured Finishes	Numerous examples being seen in Europe - UV varnishes	No evidence of this capability	No evidence of this capability

- Thank You