MAKING SENSE OF

SMART PACKAGING

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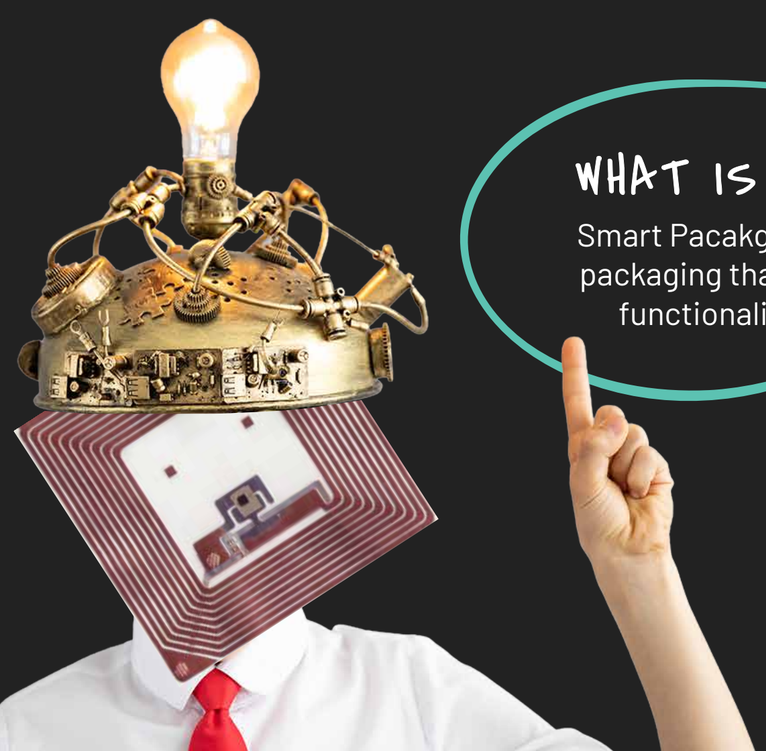
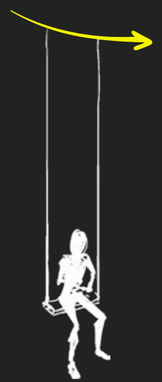
DOES SMART PACKAGING MAKE YOU FEEL DUMB? WE GET IT.

Between the overlapping categories, endless buzzwords, and an alphabet soup of acronyms, wrapping your head around it can feel like trying to fold a fitted sheet.

Here's the secret: "Smart" just means the packaging is doing a job. It has graduated from being a passive container to an active participant. Instead of just sitting on a shelf looking pretty, smart packaging has a specific function.



SO, WHY IS SMART PACKAGING IN THE HEADLINES?



Smart packaging isn't exactly a new idea, but ignoring it is getting harder than opening a clamshell blister pack with your bare hands. Why? Because the heat is on and there are four distinct forces pushing packaging into its "Information Age":

1. INDUSTRY PRESSURE

GS1 Sunrise 2027 is a new standard. Think of it as the Y2K of barcodes. Retail is shifting away from those classic zebra striped barcodes toward 2D barcodes, like QR codes. These new codes carry a boatload of product data while still scanning flawlessly at the checkout lane. The implementation target: December 31, 2027.

2. REGULATORY PRESSURE

Mandates like Packaging and Packaging Waste Regulation (PPWR), Digital Product Passport (DPP), and Food Safety Modernization Act (FSMA) 204 are demanding better traceability, sustainability reporting, and data access. While smart packaging isn't mandated in the exact same way, roads are leading to the same destination: clean product data with packaging that serves as a digital gateway to find it.

3. RETAILER PRESSURE

Major retailers are turning up the heat on RFID and item-level tracking requirements. Take Walmart, for example. Their 2025 RFID push into fresh food categories proves that connected packaging has officially left the apparel and electronics aisles and entered the grocery category.

4. CONSUMER PRESSURE

Thanks to the post-2020 QR code revival, shoppers are trained to scan. That turns your packaging into prime real estate to directly connect with your audience, delivering instant product details, proof of authenticity, and interactive experiences right in the aisle. Without it, you're missing out on a built-in marketing channel.

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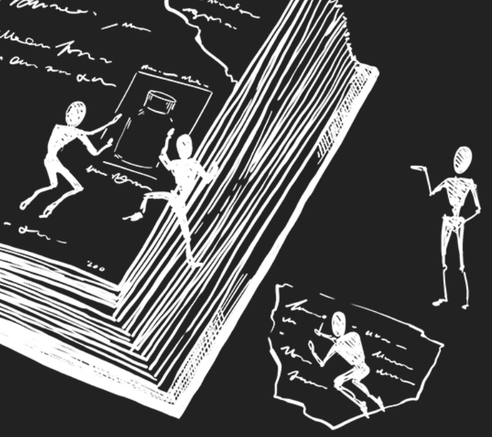

THE THREE CATEGORIES OF SMART PACKAGING

Before getting lost in the tech specs, let's make this simple. Picking the right smart packaging starts with understanding what job you actually need it to do. To keep it straightforward, it breaks down into three core verbs:

INTELLIGENT PACKAGING

SAYS SOMETHING ABOUT
THE PRODUCT

ACTIVE PACKAGING

DOES SOMETHING
TO / FOR THE PRODUCT

CONNECTED PACKAGING

LINKS THE PACKAGE TO
THE DIGITAL WORLD

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INTELLIGENT PACKAGING

SAYS SOMETHING ABOUT THE PRODUCT

Monitors the condition of the product, the package, or the environment around it. It helps answer questions like: Did it get too warm? Was it tilted? Was it exposed to the wrong gas? Is it still fresh?

WHEN TO USE
Products that have unpredictable journeys

MOST COMMON USE
Food and cold chain

GAS INDICATORS

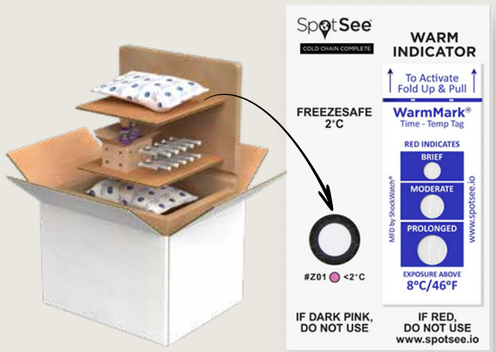
Warning of changes in oxygen, carbon dioxide, or other gases inside the package. These can be useful in modified-atmosphere packaging or sterility-sensitive applications.

SHOCK OR TILT INDICATORS

Show when a product may have been dropped, tipped, or mishandled in transit. Helpful for highly calibrated products.

TEMPERATURE DATA LOGGERS

Hardware-based systems that log temperature conditions over time.



TIME-TEMPERATURE INDICATORS

Signal when a product may have been exposed to risky temperatures and for how long.

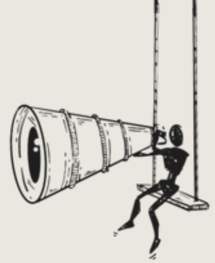
FRESHNESS INDICATORS

Often color-changing labels that respond to package conditions tied to freshness.

ACTIVE PACKAGING

DOES SOMETHING TO / FOR THE PRODUCT

Acting to control the environment around the product. It can absorb, release, or regulate something inside the package to help preserve quality, extend shelf life, improve safety, or protect performance.



WHEN TO USE
Product needs to stay fresh

MOST COMMON USE
Food packaging

OXYGEN SCAVENGERS

Drop in sachets or packaging materials that help reduce the influence of oxygen inside the package.

GAS REGULATORS

Manage gases in the package to help preserve product quality or prevent packaging damage.

ETHYLENE ABSORBERS

Ethylene gas can speed up ripening, making it a troublemaker for fresh produce. Something like an ethylene absorbing sachet helps slow the process.

ODOR ABSORBERS

Neutralize smells from within a package.

MOISTURE ABSORBERS

Desiccant packs, absorbent pads, raised trays, or materials that help manage moisture, condensation, or purge.

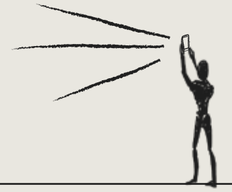
ANTIMICROBIAL PACKAGING

Extend the shelf life of food by hindering microorganism growth.

CONNECTED PACKAGING

LINKS THE PACKAGE TO THE DIGITAL WORLD

Unlocks more information about the product than a package could ever hold. Consumers get easy access to educational information, storytelling experiences, and promotional activities. Retailers get more transparency about manufacturing, packaging, and shipping.



WHEN TO USE
Products that have unpredictable journeys

MOST COMMON USE
Food packaging or sensitive devices

2D BARCODES

Compact, geometric pattern code printed on packaging used to store more product information than a traditional 1D barcode. QR codes are the most common type.

DIGITAL WATERMARKS

Scannable marks embedded into the package artwork, often in ways that are hard for consumers to see. They can support sorting, authentication, traceability, or digital experiences like Augmented Reality.

NFC TAGS

NFC (Near Field Communication) are tap-to-connect tags that use short-range radio signals to communicate. It is the same general idea from tap-to-pay.

RFID LABELS

RFID (Radio Frequency Identification) are labels with an embedded antenna and chip that can be read without direct line of sight. Useful for inventory, tracking, and item-level visibility.

AUGMENTED REALITY

The effect of layering computer rendered graphics/animations over live camera input, creating the appearance of those images existing in the real world. This is done by software (an app) downloaded to a device and activated by scanning an image on the packaging.

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SMART PACKAGING REFERENCE GUIDE

	TYPE	HOW ITS USED/ACCESSED	COMMON PACKAGING USE
ACTIVE PACKAGING	**Oxygen Scavengers**	Drop in sachets or packaging materials that help reduce the influence of oxygen inside the package.	Snack pouches, nuts, jerky, baked goods, coffee, supplements, pharma bottles.
	Moisture Absorbers	Desiccant packs, absorbent pads, raised trays, or materials that help manage moisture, condensation, or purge.	Produce, meat trays, electronics, supplements and powdered products.
	Ethylene Absorbers	Ethylene gas can speed up ripening, making it a troublemaker for fresh produce. Something like an ethylene absorbing sachet helps slow the process.	Produce bags, liners, pads, sachets, bulk produce shipping.
	Antimicrobial Packaging	Extend the shelf life of food by hindering microorganism growth.	Food packaging, medical-adjacent packaging, specialty films and coatings.
	Odor Absorbers	Neutralize smells from within a package.	Protein, produce, footwear, pet products, odor absorbing plastics (food containers)
	Gas Regulators	Manage gases in the package to help preserve product quality or prevent packaging damage.	Emitters: sachets, specialized packets for baked goods Absorbers: produce pads, meat and snack packets, hydrogels
INTELLIGENT PACKAGING	**Time-Temperature Indicator**	Signal when a product may have been exposed to risky temperatures and for how long.	Cold chain food, pharma, biologics
	Freshness Indicators	Often color-changing labels that respond to package conditions tied to freshness.	Meat, seafood, produce
	Gas Indicators	Warning of changes in oxygen, carbon dioxide, or other gases inside the package. These can be useful in modified-atmosphere packaging or sterility-sensitive applications.	Produce bags, liners, pads, sachets, bulk produce shipping.
	Shock Or Tilt Indicators	Show when a product may have been dropped, tipped, or mishandled in transit. Really necessary for highly calibrated products.	Meat, pharma
	Temperature Data Loggers	Hardware-based systems that log temperature conditions over time.	Electronics, glass, medical devices, industrial goods. Transit packaging, secondary or tertiary packaging
CONNECTED PACKAGING	**2D Barcodes**	Compact, geometric pattern code printed on packaging used to store more product information than a traditional 1D barcode. QR codes are the most common type.	Cold chain food, pharma, biologics
	NFC Tags (Near Field Communication)	Tap-to-connect tags that use short-range radio signals to communicate. It is the same general idea from tap-to-pay.	Meat, seafood, produce
	RFID Labels (Radio Frequency Identification)	Labels with an embedded antenna and chip that can be read without direct line of sight. Useful for inventory, tracking, and item-level visibility	Produce bags, liners, pads, sachets, bulk produce shipping.
	Digital Watermarks	Scannable marks embedded into the package artwork, often in ways that are hard for consumers to see. They can support sorting, authentication, traceability, or digital experiences like Augmented Reality.	Meat, pharma

SO... WHERE DOES YOUR PACKAGING GO FROM HERE?

Navigating the shift to smart packaging isn't just about picking cool tech. Whatever you add still has to meet brand goals, protect your margins, and actually work on the line.

Knowing the difference between active, intelligent, and connected packaging is the easy part. Taking the next step is where a good partner comes in—someone to bounce ideas off of, run sanity checks with, or figure out what these changes mean for your manufacturing process.

CONSIDER US YOUR EXTRA SET OF HANDS.

Whether you're stuck on a structural challenge, trying to decipher new regulatory mandates, or just wondering if connected packaging makes sense for you, we're here to help you figure out the next right step.

Let's talk packaging!

CLICK HERE TO VISIT OUR SITE!

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