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**SMART DEGRADABLE**

| [sales@smartdeg.com](mailto:sales@smartdeg.com) | p: 1.403.452.4573

# SMART DEGRADABLE

MARKET LEADERS IN POST HARVEST TECHNOLOGY

MANUFACTURING



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# SMARTDEGRADABLE

MIP FRESH 'N' SMART TECHNOLOGY

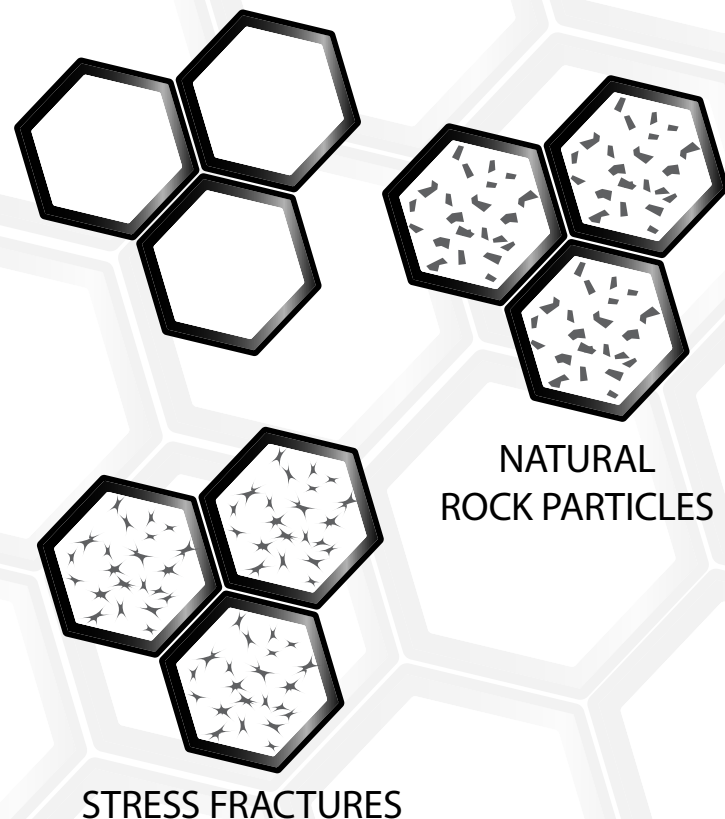
HOW IT WORKS

## HONEYCOMB

DURING THE BLOWING OF THE BUBBLE, THE NATURAL ACTIVATED EARTH CONCENTRATE (**volcanic rock**) CREATES A HONEYCOMB EFFECT WITHIN THE FILM.

WITHIN THE HONEYCOMB ARE PARTICLES OF THE NATURAL CONCENTRATE.

THESE PARTICLES CREATE MINUTE STRESS FRACTURES BIG ENOUGH FOR OXYGEN, GASEOUS WATER VAPOR AND CARBON DIOXIDE MOVEMENT, BUT TOO SMALL FOR MOISTURE DROPLETS TO ESCAPE, PREVENTING DEHYDRATION.



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# SMART DEGRADABLE

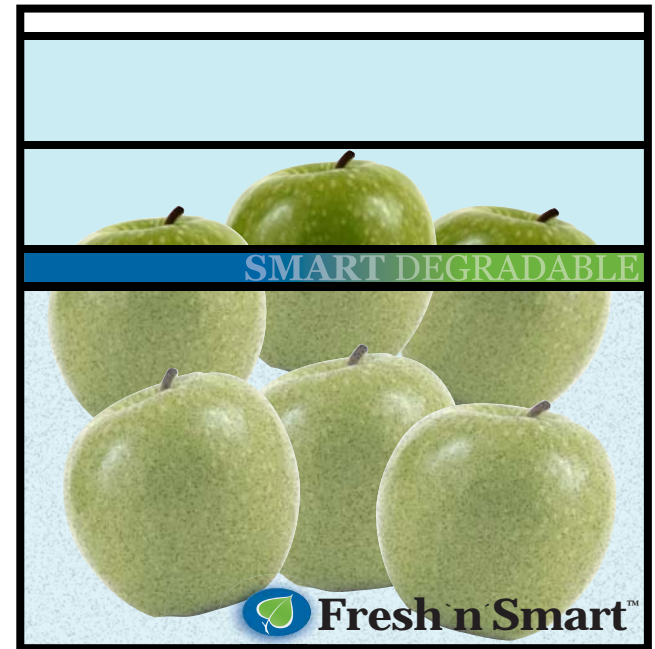
MIP FRESH 'N' SMART TECHNOLOGY

HOW IT WORKS

WHEN THE PRODUCT IS PLACED INTO FRESH 'N' SMART TECHNOLOGY PACKAGING, THE FRACTURES ALLOW THE PRODUCT TO CREATE AN ATMOSPHERE IT'S MOST HAPPY WITH. THE PRODUCTS' BIOFEEDBACK MECHANISM ALLOWS THE PRODUCT TO "GO TO SLEEP".

THE EASIEST WAY TO EXPLAIN HOW THE PRODUCT "GOES TO SLEEP" IS:

"IMAGING GETTING HOME FROM A HARD DAY'S WORK. YOU SIT IN YOUR FAVORITE CHAIR, TAKE A DEEP BREATH, CLOSE YOUR EYES, SLOW YOUR BREATHING, FEEL YOUR HEARTBEAT SLOW DOWN, AND YOU DRIFT OFF TO SLEEP. YOU JUST CREATED YOUR OWN PREFERRED ATMOSPHERE."



"UNIQUE" PRODUCTS' ATMOSPHERE

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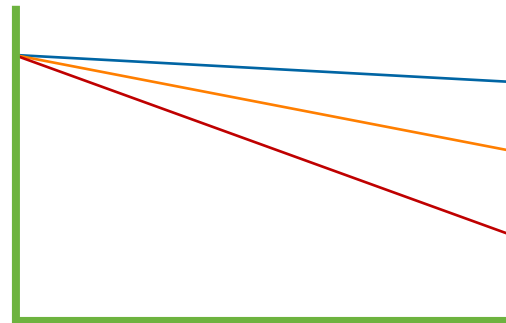
SHELF LIFE

## MIP VS. MAP AND STANDARD PACKAGING

MIP HAS A REDUCED RATE OF SHELF LIFE DETERIORATION COMPARED TO MAP AND STANDARD PACKAGING. THIS IS DUE TO THE BIOFEEDBACK MECHANISM ALLOWING THE PRODUCT TO CREATE ITS OWN DESIRED ATMOSPHERE PLACING IT INTO A RELAXED STATE OF DORMANCY.

PROTOCOLS ARE EASILY BROKEN WITH MAP AND STANDARD PACKAGING METHODS, RESULTING IN RAPID DETERIORATION OF PRODUCT SHELF LIFE.

WHEN PROTOCOLS ARE BROKEN AND PUT BACK IN PLACE WITH MIP TECHNOLOGY, THE PRODUCT "WAKES UP", RE-SETS ITS OWN ATMOSPHERE AND THEN GOES BACK "TO SLEEP". EACH TIME A PROTOCOL IS BROKEN, THE MIP RE-SETTING CYCLE REPEATS ENSURING MAXIMUM SHELF LIFE PERFORMANCE.

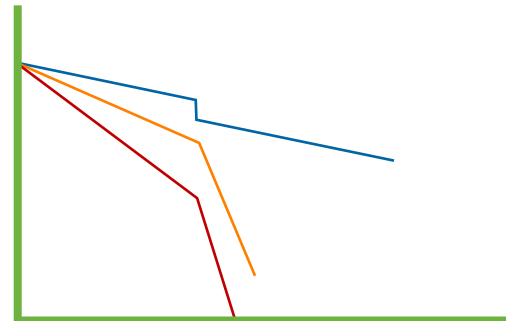


PERFORMANCE WITH STANDARD PROTOCOLS

MIP TECHNOLOGY

MAP TECHNOLOGY

STANDARD PACKAGING



PERFORMANCE WITH BROKEN PROTOCOL - TEMP.

MIP TECHNOLOGY

MAP TECHNOLOGY

STANDARD PACKAGING

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# SMART DEGRADABLE

## SUCCESSFUL PRODUCE TRIALS

COUNTRY OF ORIGIN	PRODUCE PACKED	COUNTRY RECEIVED	BOX TYPE (DRY / BOX WAX / RPC)	TOTAL DAYS HARVEST TO CUSTOMER W/ LINER	COMMENT TESTS DRIVEN BY GROWER / PACKER / RETAILER
China	Apples (Fuji)	UK	Carton	35 days	Pressure loss reduced dramatically, zero dehydration, color held
South Africa	Apples (Golden Del.)	UK	Carton	30 days	Pressure loss reduced dramatically, zero dehydration, color held
USA	Apples (Empire)	UK	Carton	30 days	Pressure loss reduced dramatically, zero dehydration, color held
Holland	Apples (Conference)	UK	Carton	30 days	Pressure loss reduced dramatically, zero dehydration, color held
Aus	Banana	UK		40 days	Organic banana, maintained color levels throughout distribution
Turkey	Cherries	UK	Carton	35/40 days	Ferry & Lorry, Smart Degradable Smartbags allows extension of season
USA	Cherries	UK	Carton	35/40 days	Mostly air freighted, Smart Deg. Smartbags allows sea plus extension
South Africa	Cherries	UK	Carton	35/40 days	Mostly air freighted, Smart Deg. Smartbags allows sea plus extension
Turkey	Figs	UK/Ger		60 days	Maintained freshness, taste, and appearance
Greece	Grapes	UK	Carton	70 days	To compete with airfreighted Californian - better price obtained
Brazil	Grapes	Germany	Carton	110 days	Organic grape without SO2 pads
GP/USA	Mango	USA		DW	
Brazil	Melons	UK	Carton	30 days	Weight loss eliminated, and no wax required on melon
South Africa	Melons	UK	Carton	30 days	Weight loss eliminated, and no wax required on melon
Chile	Peaches	USA	Carton	32 days	All arrived in excellent shape, and firmness maintained
Greece	Peaches / Nectarines	UK	Carton	80 days	Improvement to show firmness, better appearance
Greece	Plums	UK	Carton	70 days	Extended season for commercial profits
Chile	Plums/Nects/Peaches	UK	Carton	32 days	All arrived in excellent shape, and firmness maintained
South Africa	Plums/Nects/Peaches	UK	Carton	32 days	10 weeks for plums, season ext. Peach/Nect firmness/greater maturity
Italy	Ripe Peaches/Nect.	UK	Carton	12/14 days	Eliminates shrivel, softness, and dullness. Brighter and firmer
South Africa	Satsumas	UK	Carton	30 days	Prone to dehydration, Smart Degradable bags can maintain weight

... MORE

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Holland	Baby Carrots	UK		20 days	Kept this expensive item fresh without silvering
Morocco	Beans	UK	Carton	10/15 days	Improved by ferry/sea, than air with airport temp abuse in plane
UK	Broccoli	UK	Carton	28 days	Zero dehydration, no ice, eliminates weather problems, balance peaks
USA	Broccoli	USA	Carton	38 days	Zero dehydration, good color, crisp snap, excellent flavor
Aus	Carrots/All Root Crops	Ger/UK		120 days	Maintained freshness, taste, great appearance
UK	Iceberg Lettuce	UK	Carton	11 days	Ambient, zero dehydration, major reduction to sell by sell off
UK	Iceberg Lettuce	UK	Carton	28 days	Chilled, zero dehydration, major reduction to sell by sell off
Poland	Painted Cabbage	Poland	Carton	100 days	Std 80% Yellow, Smart Degradable 95% Fresh Green, Heads Firm
Egypt	Spring Green	UK		4/5 weeks	Stopped internal growth, improved taste and appearance
USA	Spring Onions	USA	Carton	40 days	Zero dehydration, good color, crisp, shiney, excellent flavor
UK/RSA/Aus	Sprout			20/30 days	Full nutrient value, taste, kept butts white

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# SMART DEGRADABLE

## TREE RIPENED FRUIT

PACK AT SOURCE SUSPENDING ANY FURTHER RIPENING POST HARVEST BY PLACING THE FRUIT INTO FRESH 'N' SMART TECHNOLOGY. THE BAGS/LINERS WOULD THEN BE OPENED AT EITHER DEPOT OR STORE LEVEL AND RIPENING WOULD CONTINUE NATURALLY.

OUR RESULTS HAVE SHOWN THE FRESH 'N' SMART BAGGED NECTARINES HAVE AN EXTENDED LIFE AFTER THE BAG IS OPENED COMPARED TO THE FRUIT PACKED BY STANDARD METHODS. BY DAY 2 OR 3, THE FRUIT NOT PACKED IN FRESH 'N' SMART TECHNOLOGY SHOWS HEAVY SHRIVEL AND DULLNESS WHEREAS THE FRUIT IN THE MIP TECHNOLOGY IS BRIGHTER, FIRMER AND FRESHER.



FRESH 'N' SMART



STANDARD PACKAGING



STANDARD PACKAGING SHRIVEL



FRESH 'N' SMART LINER



STANDARD PACKAGING SHRIVEL

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LETTUCE TRIALS - JUNE 03



**AMBIENT 8 DAYS AT 18 TO 20 DEGREES COS LETTUCE**



**REFRIGERATION 15 DAYS AT 4 DEGREES COS LETTUCE**



**AMBIENT 8 DAYS AT 18 TO 20 DEGREES CREST LETTUCE**



**AMBIENT 8 DAYS AT 18 TO 20 DEGREES ROMAINE LETTUCE**

# SMART DEGRADABLE

PRODUCT RANGE

**LINERS**

**PALLET HOODS**

**RETAIL SOLUTIONS**

**FRESH 'N' SMART BAG**

**FRESH 'N' SMART DUOBAG**

**FRESH 'N' SMART PUNNETS/TRAYS**

**FRESH 'N' SMART SACHETS**

**FRESH 'N' SMART CLAMSHELLS**

**COMPOST-READY™ PACKAGING**

**DEVELOPMENT**

**FLOWPACK VERTICAL - HORIZONTAL**

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# SMART DEGRADABLE COMPOST-READY™ — WHAT IS IT?

COMPOST-READY™ PRODUCTS ARE BLENDS OF CO-POLYESTER AND PLA (GM FREE) WHICH, DEPENDING ON THE PARTICULAR GRADE, CAN CONTAIN UP TO 100 % NATURAL RESOURCE MATERIAL. COMPOST-READY™ DOES NOT CONTAIN ANY STARCH OR STARCH DERIVATIVES.

BIOPLASTICS GENERALLY REPLACE CONVENTIONAL MATERIALS SUCH AS LDPE, HDPE, PS AND PP. FOR PACKAGING APPLICATIONS MATERIALS NEED TO BE CONVERTED INTO FILM WHICH IS AS THIN AS POSSIBLE WHILE MAINTAINING HIGH TENSILE STRENGTH.

DEPENDING ON THE SPECIFIC APPLICATION, PACKAGING FILMS HAVE TO PROVIDE A HIGH BARRIER AGAINST HUMIDITY, OXYGEN AND AROMAS OR ALTERNATIVELY PROVIDE ADEQUATE PERMEABILITY ("BREATHABILITY").

ALL OF THESE REQUIREMENTS ARE MET WITH THE VARIOUS COMPOST-READY™ GRADES.



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# SMART DEGRADABLE

COMPOST-READY™ — HOW DOES IT COMPARE?

- **COMPOST-READY™** FILM'S ARE BASED ON A HIGH PERCENTAGE OF RENEWABLE RESOURCES
- **COMPOST-READY™** FILM'S DO NOT CONTAIN HARMFUL ADDITIVES, BIOPLASTICS ARE PLACED ON THE MARKET IN CONFORMITY WITH RELEVANT LAWS E.G. COUNCIL DIRECTIVE: 67/548/EEC
- **COMPOST-READY™** FILMS GUARANTEE TO BE FREE OF GMO
- **COMPOST-READY™** FILMS ARE ALL FOOD CONTACT APPROVED
- EACH **COMPOST-READY™** FILM HAS INDIVIDUALLY BEEN GRANTED CERTIFICATION BY DIN CERTCO EN13432, ALSO AIB-VINCOTTE AND OK COMPOST CERTIFIED
- **COMPOST-READY™** FILMS ARE PRINTABLE
- **COMPOST-READY™** FILMS ARE ALSO AVAILABLE FOR DEEP FREEZING PACKAGING



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# SMART DEGRADABLE

## COMPOST-READY™ — PRODUCT RANGE

FILM REFERENCE	STRAPLINE	% RENEWABLE	EN13432 COMPLIANT	FOOD CONTACT
COMPOST-READY™ 5154F	"FLEXIBILITY & STRENGTH PRINTABLE"	70%	YES	YES
COMPOST-READY™ 1294S	"CLARITY & STRENGTH PRINTABLE"	90%	YES	YES
COMPOST-READY™ 4120LE	"CLARITY & PERMEABILTY PRINTABLE"	95%	YES	YES
COMPOST-READY™ 424 CO - EX	"SUPER STRENGTH & CLARITY PRINTABLE"	80%	YES	YES

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Head Office: #214, 1215 - 13th St. S.E., Calgary, Alberta T2G 3J4

UK Office: Steetley House, St Nicholas Road, Littlestone, Kent TN28 8QA

USA Office: 101 Mainberry Dr, Madera, CA 93637

Tel: 1.403.452.4573

[www.smartdeg.com](http://www.smartdeg.com)

