



Keep-It-Fresh

# KEEP-IT-FRESH

Shelf Life Extension of Fresh Fruits, Vegetables & Flowers

# AGENDA



**Keep-It-Fresh**

- Introduction To Keep It Fresh
- Technology
- Products
- Trials
- FDA Status

# Introduction



**Keep-It-Fresh**

Keep-It-Fresh Products are designed for the Shelf Life Extension of Fresh Fruits, Vegetables & Flowers. The range of products utilise different technologies for different product applications such as Ethylene Adsorption, Modified Atmosphere Packaging, Anti Microbial packaging, SO<sub>2</sub> gas release, & Oxygen absorption.

- ▶ Keep-It-Fresh products are available world wide through its own manufacturing and partner plants
  - ▶ Keep-It-Fresh India
  - ▶ Keep-It-Fresh USA
  - ▶ Keep-It-Fresh South Africa
  - ▶ Keep-It-Fresh China
  - ▶ Keep-It-Fresh Italy

Keep It Fresh utilises several technologies in combination



Anti-Microbials  
Ethylene Adsorbers  
Moisture Adsorbers  
Oxygen Adsorbers  
Modified Atmosphere Packaging  
Sulfur Dioxide Release Packaging  
Filtration

# ETHYLENE PROBLEM



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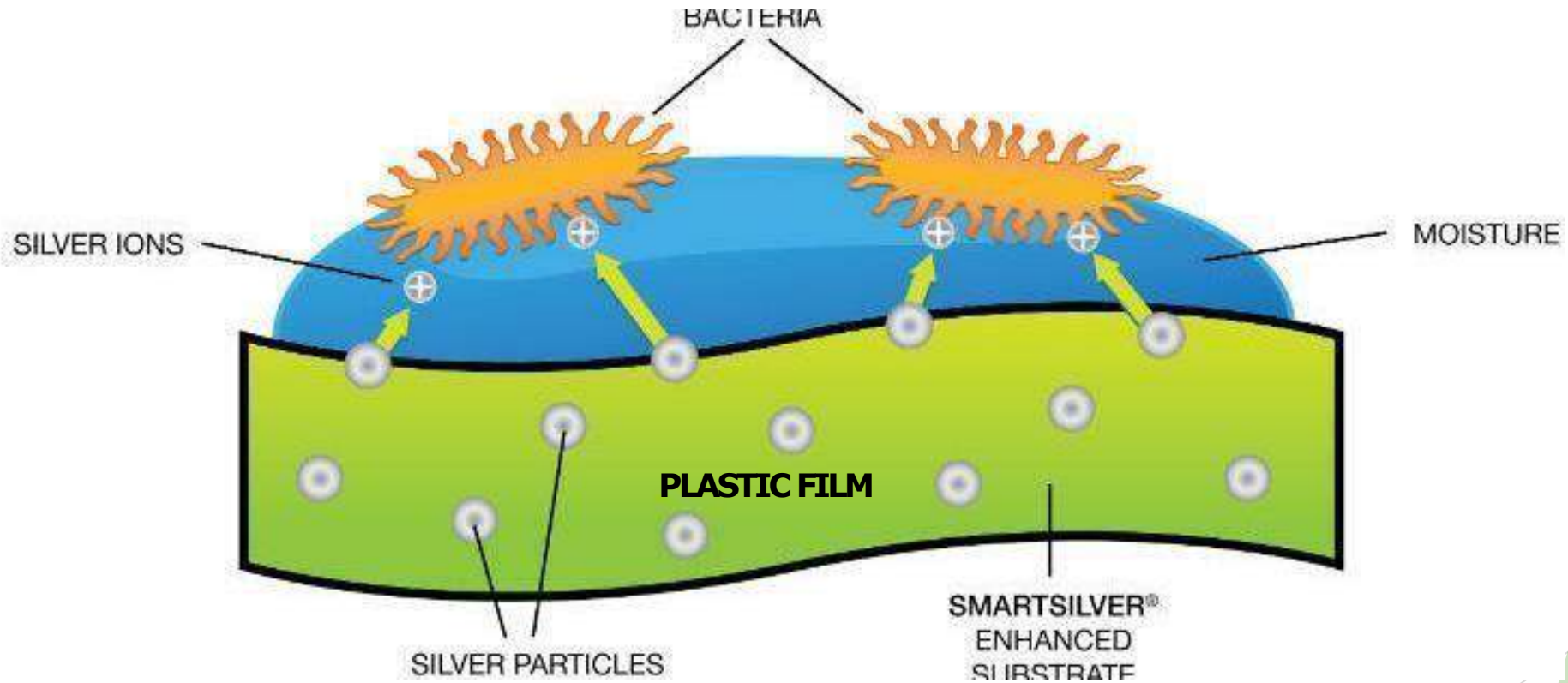
- ❑ Ethylene is a gas naturally produced by fruit as it ripens. Ethylene works as an accelerator to the ripening process. Ethylene increases ripening exponentially.
- ❑ Ethylene adsorbers reduce the ripening rate by adsorbing the ethylene molecules.
- ❑ Ethylene molecules form a bond with the keep-it-fresh additives and are trapped.



# Anti Microbials



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# Product Range

- ❑ KIF Paper as wrap or interleaving
- ❑ KIF Filter Paper Strips
- ❑ KIF Absorber Sachets
- ❑ KIF Absorber Masterbatch 3131
- ❑ KIF Plastic Bags
- ❑ Oxygen absorber Sachets
- ❑ KIF Filter Curtains
- ❑ KIF Filter Tubes
- ❑ KIF Grape Pads
- ❑ Kif Berry Pas



Kif Paper



Grape Pad



KIF bags



KIF Carton Lining Bags



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KIF Sachets



KIF Sachets



KIF Paper Strips

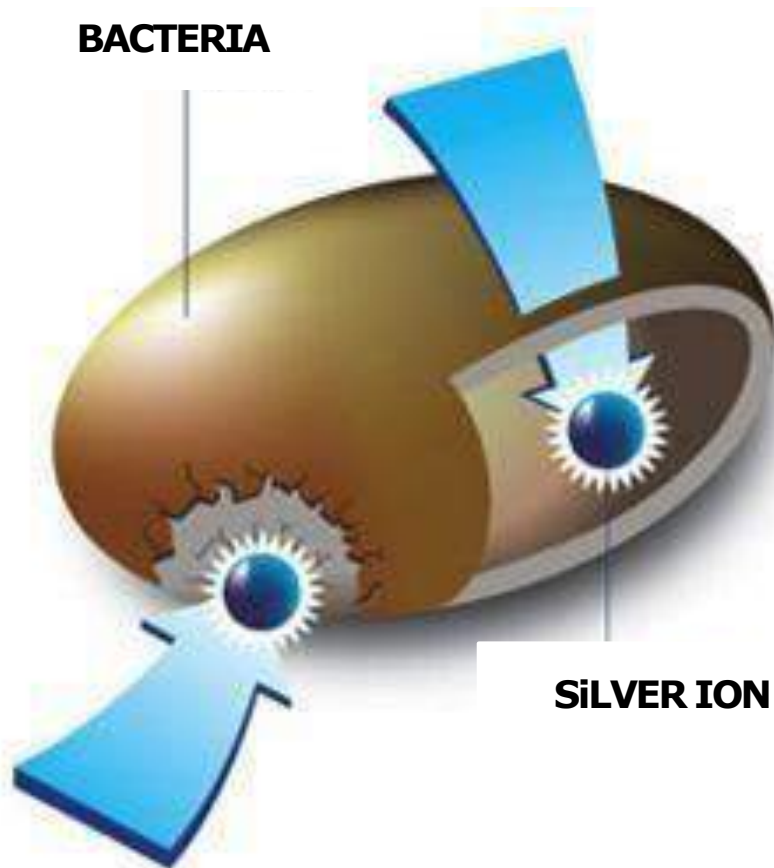


KIF Cassettes



KIF Curtains

# How Silver Ions Work?



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1. Cell Membrane is de-stabilized
2. Respiration is prohibited
3. Food nutrition intake is impeded
4. Cell Division is inhibited



# ETHYLENE PROBLEM



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## ETHYLENE PRODUCTION FROM DIFFERENT FRUITS & VEGETABLES

LOW <1.0 ml/kg/hr	MODERATE 1-10 ml/kg/hr	HIGH 10-100 ml/kg/hr	VERY HIGH >100 ml/kg/hr
Pineapple, artichoke, cauliflower, broccoli, date, orange, spinach, beet root, green asparagus, celery, lemon	Banana, mango, plum, tomato	Apricot, nectarine, pear, peach	Apple, Avocado, cherimoya, passion fruit

# Keep It FreshBags

- ❑ Made from food grade Polyethylene resins. Leave no harmful residues and are human safe.
- ❑ Preserve the freshness of perishables
  - ❑ at room temperature as well as in refrigerator
- ❑ Certified and approved for food contact applications USFDA Tested by SGS Labs
- ❑ Recyclable



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# USFDA Testing from SGS



**TEST REPORT**

Report No. : MAN:HL:7480003070      DATE : 18<sup>th</sup> February, 2016

HI TECH INTERNATIONAL  
 PLOT NO-B 31, BEANT COLONY JAMALPUR  
 LUDHIANA-141010  
 INDIA  
 CONTACT PERSON : MR. SIDHARTH SAREEN

THE FOLLOWING SAMPLE(S) WAS/WERE SUBMITTED AND IDENTIFIED BY/ON BEHALF OF THE CUSTOMER AS :

SAMPLE DESCRIPTION      ROT NOT BAG  
 COLOUR                      GREEN  
 BUYER                         HI TECH INTERNATIONAL  
 COUNTRY OF ORIGIN      INDIA  
 SAMPLE RECD ON          08/02/2016  
 TEST PERFORMING DATE   09/02/2016 TO 18/02/2016

TEST REQUESTED            PLS. REFER TO SUMMARY

TEST METHOD & RESULT(S)   PLEASE REFER TO NEXT PAGE(S)

**SUMMARY OF TEST RESULTS:**

TEST REQUESTED	CONCLUSION
US FDA 21 CFR 177.1520 (Olefin Polymers) Maximum Extractable fraction Maximum Soluble fraction	Pass

Per Pro SGS India Pvt Ltd.

Ashish  
 Sr. Executive  
 Email your Test Report Related Enquiries at Feedback.HLT@sgs.com



**TEST REPORT**

Report No. : MAN:HL:7480003069      DATE : 17<sup>th</sup> February, 2016

HI TECH INTERNATIONAL  
 PLOT NO-B 31, BEANT COLONY JAMALPUR  
 LUDHIANA-141010  
 INDIA  
 CONTACT PERSON : MR. SIDHARTH SAREEN

THE FOLLOWING SAMPLE(S) WAS/WERE SUBMITTED AND IDENTIFIED BY/ON BEHALF OF THE CUSTOMER AS :

SAMPLE DESCRIPTION      ROT NOT MASTERBATCH 3131  
 COLOUR                      WHITE GRANULES  
 BUYER                         HI TECH INTERNATIONAL  
 COUNTRY OF DESTINATION   NOT PROVIDED  
 COUNTRY OF ORIGIN      INDIA  
 SAMPLE RECD ON          08/02/2016  
 TEST PERFORMING DATE   09/02/2016 TO 17/02/2016

TEST REQUESTED            PLS. REFER TO SUMMARY

TEST METHOD & RESULT(S)   PLEASE REFER TO NEXT PAGE(S)

**SUMMARY OF TEST RESULTS:**

TEST REQUESTED	CONCLUSION
US FDA 21 CFR 177.1520 (Olefin Polymers) Maximum Extractable fraction Maximum Soluble fraction	Pass

Per Pro SGS India Pvt Ltd.

Ashish  
 Sr. Executive  
 Email your Test Report Related Enquiries at Feedback.HLT@sgs.com

# USFDA Testing from SGS



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SGS

TEST REPORT

Report No. : MAN:HL:1048000742

DATE :06<sup>th</sup> February, 2019



KEEP IT FRESH LLP  
B-31,OPP.POWER HOUSE(JAMALPUR),CHANDIGARH ROAD  
LUDHIYANA-141120  
INDIA  
CONTACT PERSON : MR. SIDHARTH SAREEN

THE FOLLOWING SAMPLE(S) WAS/WERE SUBMITTED AND IDENTIFIED BY/ON BEHALF OF THE CUSTOMER AS :

SAMPLE DESCRIPTION	KEEP-IT-FRESH SACHET (PP PART)
COLOUR	WHITE & GREEN
BUYER	KEEP IT FRESH LLP
COUNTRY OF DESTINATION	USA
COUNTRY OF ORIGIN	INDIA
SAMPLE RECD ON	29/01/2019
TEST PERFORMING DATE	30/01/2019 TO 04/02/2019

SUMMARY OF TEST RESULTS:

TEST REQUESTED	CONCLUSION
US FDA 21 CFR 177.1520 (Olefin Polymers)	--
a) Maximum extractable fraction	Pass
b) Maximum soluble fraction	Pass

TEST(S) RESULT & METHOD: PLEASE REFER TO NEXT PAGE(S)

Per Pro SGS India Pvt. Ltd.

SANDIP BHUSHAN(Asst. Manager)  
Email your Test Report Related Enquiries at Feedback.HLT@sgs.com

SGS

TEST REPORT

Report No. : MAN:HL:9480007693

DATE :05<sup>th</sup> December, 2018



KEEP IT FRESH LLP  
B-31, OPP. POWER HOUSE (JAMALPUR)  
CHANDIGARH ROAD, LUDHIANA-141120  
INDIA  
CONTACT PERSON : MR. SIDHARTH SAREEN

THE FOLLOWING SAMPLE(S) WAS/WERE SUBMITTED AND IDENTIFIED BY/ON BEHALF OF THE CUSTOMER AS :

SAMPLE DESCRIPTION	KEEP-IT-FRESH PAPER
COLOUR	WHITE & GREEN
BUYER	KEEP IT FRESH LLP
COUNTRY OF DESTINATION	USA
COUNTRY OF ORIGIN	INDIA
SAMPLE RECD ON	21/11/2018
TEST PERFORMING DATE	22/11/2018 TO 04/12/2018

SUMMARY OF TEST RESULTS:

TEST REQUESTED	CONCLUSION
US FDA 21 CFR 177.1520 Polypropylene	--
Maximum extractable fraction	Pass
Maximum soluble fraction	Pass

TEST(S) RESULT & METHOD: PLEASE REFER TO NEXT PAGE(S)

Per Pro SGS India Pvt. Ltd.

SANDIP BHUSHAN(Asst. Manager)  
Email your Test Report Related Enquiries at Feedback.HLT@sgs.com



# Keep It Fresh



# Bags

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# Chillies in KIF & OPEN





# Chillies in KIF Bags



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# Chillies in KIF Bags



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# POMEGRANATES



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POMEGRANATE QUALITY AFTER 45  
DAYS AT CLIENT'S PORT

POMEGRANATE EXPORT IN KIF BAGS

# OKRA in KIF & OPEN



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# Bananas in KIF & OPEN



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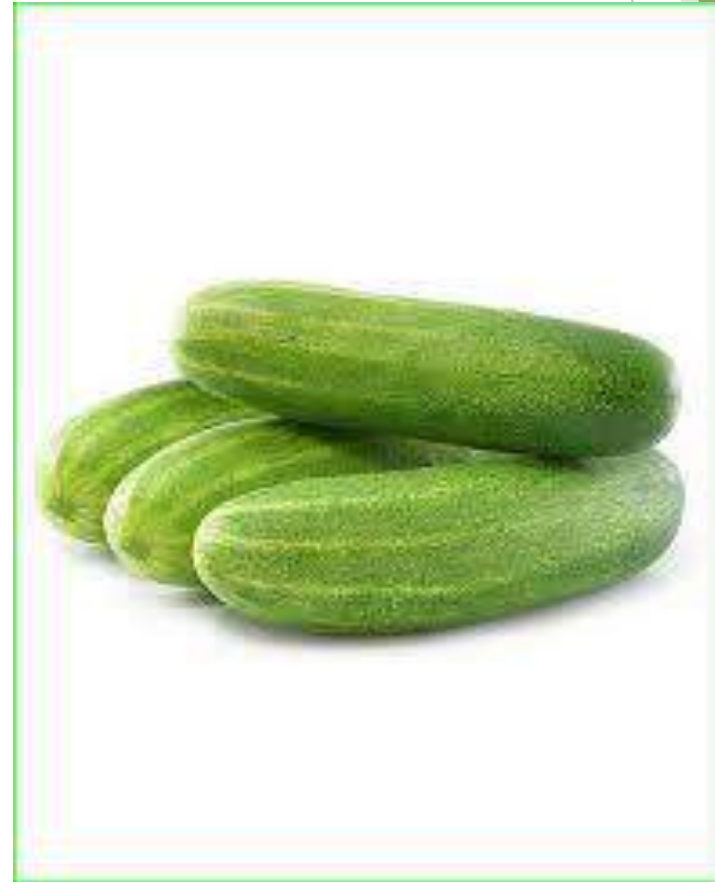
# CUCUMBER



Keep-It-Fresh



CUCUMBER KIF RETAIL PACKS



QUALITY AFTER 14 DAYS



# Weight Loss overtime

NO.	FOOD PRODUCT	Percentage Weight Loss (%) At Room Temperature		STORAGE DAYS At Room Temperature In Keep It Fresh
		Control	Keep It Fresh	
		bag	bag	
1.	Strawberry (Sweet Charley)	10.04	6.19	5
2.	Green grapes (Thompson seedless)	12.05	2.57	13
3.	Black grapes (Sharad seedless)	10.38	2.26	15
4.	Pomegranate (Bhagawa)	29.04	6.82	65
5.	Guava (Sardar)	10.50	5.12	8
6.	Lime (Kagzi)	21.02	10.99	13
7.	Bottle gourd	4.44	3.85	11
8.	Fenugreek	64.69	26.54	5
9.	Spinach	30.87	7.17	3
10	Coriander leaves	40.85	9.45	3
11.	Curry leaves	39.24	23.40	5

# Weight Loss overtime



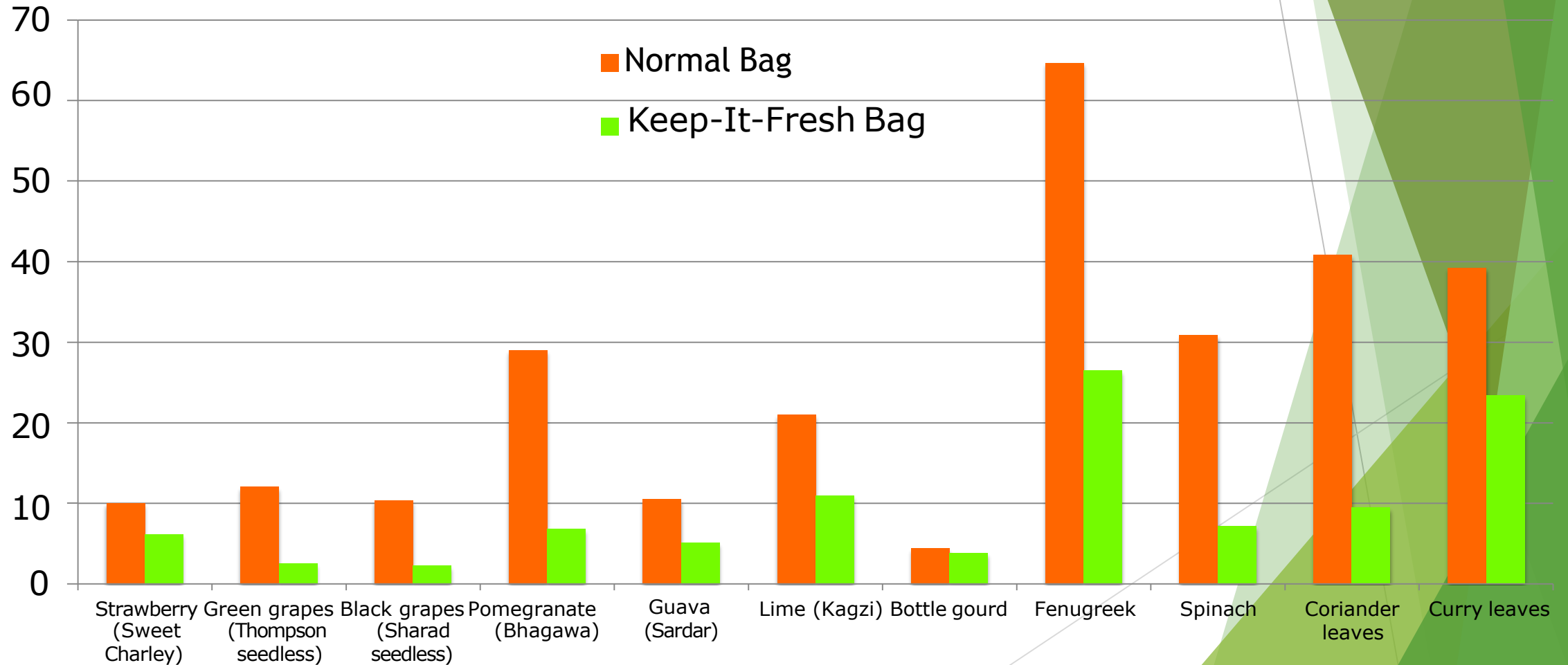
**Keep-It-Fresh**

NO.	FOOD PRODUCT	Percentage Weight Loss (%) At Room Temperature		STORAGE DAYS At Room Temperature In Keep It Fresh
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1.	Strawberry (Sweet Charley)	10.04	6.19	5
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7.	Bottle gourd	4.44	3.85	11
8.	Fenugreek	64.69	26.54	5
9.	Spinach	30.87	7.17	3
10	Coriander leaves	40.85	9.45	3
11.	Curry leaves	39.24	23.40	5

Weight Loss % of different fruits and vegetables in Normal bag compared to Keep-It-Fresh Bag



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# KIF PAPER SHEETS WRAPPING TRIALS





# KIF Paper Sheets as interleaving



Keep-It-Fresh



KIF PAPER IN APPLE EXPORT  
BOXES



KIF PAPER IN SINGLE UNIT



APPLE QUALITY AT CLIENT  
PORT

# KIF Paper Sheets as interleaving



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# KIF Paper Sheets as interleaving



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KIF Paper in strawberry carton box



KIF Paper in strawberry Punnet box



Strawberry quality after 12 days of storage

# TOMATOES



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# Oranges without & with KIF Strips



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# Capsicum with & without KIF Paper





# Mangoes without & with KIF Paper





**Keep-It-Fresh**

# Ethylene Filter Strips

3X3 inch strips to be placed with fruits & Vegetables





# MANGOES without & with KIF Strips



# Bananas without & with KIF Strips



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KIF EA CHIPS IN BANANA EXPORT SHIPMENT



QUALITY OF BANANA AT CLIENT POST



# KIF FILTER STRIPS IN LEMON EXPORT CONTAINERS TO MIDDLE EAST



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# Keep It FreshSachets

- Can be placed with the fresh fruit and vegetables
- Natural Clay Desiccant
- Natural Ethylene adsorbers
- 5 grams per cubic feet
- Packed in Tyvek by Dupont



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# KIF SACHETS IN BANANA BOXES DURING EXPORT TO MIDDLE EAST & UK



Keep-It-Fresh





# KIF SACHETS IN KIWI BOXES, EXPORT TO MIDDLE EAST & UK



Keep-It-Fresh





# KIF SACHETS IN APPLE BOXES, EXPORT TO US & EUROPE



**Keep-It-Fresh**



# KIF SACHETS IN MANGO BOXES, EXPORT TO MIDDLE EAST & UK



**Keep-It-Fresh**





# KIF SACHETS IN MANGO BOXES, EXPORT TO US & EUROPE



**Keep-It-Fresh**





# Keep It Fresh Grape Pads

SO<sub>2</sub> Releasing Grape Pads

Single Release

Dual Release





# Grape Pads



Keep-It-Fresh

- ▶ Releases SO2 Gas
- ▶ Dual Release
- ▶ Single Release Laminated
- ▶ Non Woven Laminated for moisture Absorption
- ▶ Moisture Activated
- ▶ Bigger Pocket Size for better performance



# Grape Pads



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# ETHYLENE FILTER CURTAIN



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Can be placed in front of the suction area of ventilation system of a cold room

Causes negligible pressure drop as the air passes through the filter

Reduces Ethylene Content



# KIF CURTAIN AT APPLE COLD STORAGE IN NEPAL



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# KIF CURTAIN INSTALLED





# KIF CURTAIN AT “FERNS & PETAL”



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# Keep-It-Fresh Capsules

- Plastic Capsules for 10 cubic feet
- Can be placed in household refrigerators or stuck onto the wall of refrigerator with the double tape behind the capsule
- Also available with adhesive backing



# KEEP IT FRESH SCRUBBER MACHINE



Keep-It-Fresh

- Keep It Fresh Scrubber Machine
- Oxidises Ethylene Gas
- Economical to use with only ½ HP blower
- Replace Scrubber Granules every month



# Keep It Fresh Transport Filters



Keep-It-Fresh

- Keep It Fresh Transport Filter Tubes
- Oxidises Ethylene Gas
- Cleans Air







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# Thanks!

SHELF LIFE EXTENSION FROM KEEP-IT-FRESH