

IMPACT AND MARKET ANALYSIS OF WAX COATING ON AFGHAN POMEGRANATE



NON-COATED

WAX COATED

CHAMP-USAID, Afghanistan



ROOTS OF PEACE

CONTENTS

-
- Background page no. 2
- Technical Report page no. 3
- Summary of Technical Report page no. 15
- Conclusion and Recommendations page no. 16
- Key Suppliers page no. 20
- Lab Reports page no. 21



A study conducted on behalf of CHAMP-USAID/Afghanistan by

Raj Kapoor, Chief Executive, Assocom-India Pvt. Ltd.

#601, 6th Floor, DDA Building District Centre, Plot No. 4, Laxmi Nagar, New Delhi - 110092.
Tel. +91-11-47675218 (Direct), 47675200 (Board - 50 lines), Fax: +91-11-22457230 (Direct),
Cell: +91-9810158318, Skype: kapoor.raj, Website: www.assocom-india.com

Abbreviations:

- **Commercial Horticulture and Agricultural Marketing Project (CHAMP)**
- **U.S. Agency for International Development (USAID)**
- **Total Solids (TS)**
- **Total Soluble Solids (TSS)**
- **Relative Humidity (RH)**
- **Intertek Food Service (IFS-Numeric)**
- **Kilo Calories (kcal)**
- **Room Temperature (RT)**
- **Refrigeration Temperature (RFT)**
- **Corrugated Fiber Board (CFB)**
- **Indian National Rupees (INR)**
- **Potential of Hydrogen" or " Power of Hydrogen (pH)**
- **Biochemical Oxygen Demand (BOD)**
- **Degree Centigrade (°C)**





Background:

Based on recommendations of recently conducted Market Assessment of Pomegranate in India the requirements of most of importing countries was found; that it is very important to have a well defined process for post harvest management including Waxing of pomegranates. This will help in maintaining the quality of fruit harvested from field to end consumer. Most importing countries' decision for fruits is based on following criteria.

- **Fruit texture, structure, colour an weight**
- **Softness of seed, TSS and Freshness of Calyx**

Pomegranate Coating is one of the process which helps to retain fruit texture, structure, colour and weight for long time. Wax coating is an agent based food additives. The product restores the natural protective film removed during the washing and brushing. When applied on the fruits it improves the appearance, delaying the aging process, and increases its resistance to packaging procedures. The coating also controls weight loss and dehydration of fruits, thus increases the shelf life of fruit and vegetables.

It is, therefore, necessary to conduct an impact and market analysis of wax coating on Afghan pomegranate. Since immediate infrastructure cannot be developed in Afghanistan, Assocom-India was asked to conduct an impact and market analysis of wax coating on Afghan Pomegranate.

Technical Report

OBJECTIVE:

To study the performance of wax coating on increasing the shelf life of Afghan Pomegranates; we along with M/s Intertek (Food Services), India conducted the study. Detailed parameters of the study are discussed in this report.

1. APPARATUS & EQUIPMENT REQUIRED :

- BOD incubator (22-240 °C; 52-82% RH)
- Cold storage chamber (80 °C; 90-95%RH)
- Wax
- Weighing balance
- Glassware's (Pipettes, Beaker, Conical flask, burette etc)
- Brush
- pH

2. PROCEDURE :

- Coating:
 - The fruit were wiped with wet squeezed cloth before coating the sample.
 - The pomegranates were allowed to dry for few seconds.
 - Wax coating was done with 1 inch broad dry brush.
 - The coating should be uniform and done in the same direction.
 - The pomegranates were placed on a wire gauze and dried with hair dryer.

- Shelf life studies
 - The Wax Coated and uncoated pomegranates were divided in 14 batches as :
 - (a) Control, Room temperature (22-240 °C; 52-82% RH), Zero day
 - (b) Wax Coated, Room temperature (22-240 °C; 52-82% RH), Zero day
 - (c) Control, Room temperature (22-240 °C; 52-82% RH), 7th day
 - (d) Wax Coated, Room temperature (22-240 °C; 52-82% RH), 7th day
 - (e) Control, Cold Storage (80 °C; 90-95%RH), 7th day
 - (f) Wax Coated, Cold Storage (80 °C; 90-95%RH), 7th day
 - (g) Control, Room temperature (22-240 °C; 52-82% RH), 14th day
 - (h) Wax Coated, Room temperature (22-240 °C; 52-82% RH), 14th day
 - (i) Control, Cold Storage (80 °C; 90-95%RH), 14th day
 - (j) Wax Coated, Cold Storage (80 °C; 90-95%RH), 14th day
 - (k) Control, Room temperature (22-240 °C; 52-82% RH), 21st day

- (l) Wax Coated, Room temperature (22-240 °C; 52-82% RH), 21st day
- (m) Control, Cold Storage (80 °C; 90-95%RH), 21st day
- (n) Wax Coated, Cold Storage (80 °C; 90-95%RH), 21st day

- The initial weight of each batch of pomegranates was taken.
- The pomegranates were packed in retort pouches and stored in appropriate storage condition.
- The samples were analyzed on zero day, and after 7, 14 and 21 days of storage for physiological weight loss, pH, TSS, Titratable acidity, Juice content, reducing sugar and decay percent, Total plate count and yeast and mold count. Both internal and external sensory evaluation was done on a 9-point hedonic scale.
 - 9 – Like extremely
 - 8 – Like very much
 - 7 – Like moderately
 - 6 – Like slightly
 - 5 – Neither like nor dislike
 - 4 – Dislike slightly
 - 3 – Dislike moderately
 - 2 – Dislike very much
 - 1 – Dislike extremely
- Nutritional evaluation was done at zero day and after 21 days of storage for wax coated and control samples stored at room temperature (22-240 °C; 52-82% RH) and cold conditions (80 °C; 90-95%RH).

3. RESULTS :

Control and wax coated pomegranates



Plate 1 : Control and Wax Coated Pomegranates on Zero day

Quality characteristics of pomegranates after 7th day of storage

S.No.	Parameters	0 day		7 th day				14 th day				21 st day			
				Room Temperature (22-24 ^o C; 52-82% RH)		Refrigerated conditions (8 ^o C; 90-95%RH)		Room Temperature (22-24 ^o C; 52-82% RH)		Refrigerated conditions (8 ^o C; 90-95%RH)		Room Temperature (22-24 ^o C; 52-82% RH)		Refrigerated conditions (8 ^o C; 90-95%RH)	
		Control IFS-12120502	Wax Coated IFS-121205010	Control IFS-121212001	Wax Coated IFS-121212002	Control IFS-121212003	Wax Coated IFS-121212004	Control IFS-121219001	Wax Coated IFS-121219002	Control IFS-121219003	Wax Coated IFS-121219004	Control IFS-121226001	Wax Coated IFS-121226002	Control IFS-121226003	Wax Coated IFS-121226004
1.	Average Weight (g)	354.92	229.21	322.99	310.93	371.22	345.67	330.57	382.12	329.55	303.23	255.26	282.13	320.76	262.32
2.	Physiological Weight loss (%)	-	-	8.37	4.37	2.73	0.79	4.87	2.47	2.64	1.27	5.62	3.15	2.98	1.47
3.	Juice content (ml)	72.6	81.6	82.0	71.6	81.7	82.0	85.0	94.0	76.7	62.7	71.6	61.6	81.7	81.7
4.	TS (%)	17.52	17.02	18.20	17.17	16.72	17.80	17.9	17.7	17.4	17.3	18.19	18.02	17.83	17.46
5.	Reducing sugars (%)	16.09	15.62	15.21	17.4	15.43	16.03	15.37	17.62	15.79	16.09	16.39	17.64	16.02	16.36
6.	pH	3.52	3.51	3.66	3.53	3.30	3.48	3.67	3.62	3.57	3.54	3.69	3.62	3.56	3.53
7.	Titrateable acidity (%)	0.76	0.92	0.82	0.92	1.04	0.89	0.62	0.66	0.71	0.73	0.58	0.62	0.68	0.76
8.	Decay %	-	-	33.3	66.7	-	-	75	20	Nil	Nil	100	75	20	20

9.	Sensory evaluation														
(a)	External														
	<i>Visual appearance</i>	8.7	9.0	2.2	2.8	8.6	9.0	4.0	6.6	6.6	6.4	1.0	1.0	6.4	7.0
	<i>Overall acceptability</i>	8.4	8.6	2.0	2.2	8.4	8.6	5.0	6.8	6.8	7.0	1.0	1.0	6.2	6.6
(b)	Internal														
	<i>Appearance/ Colour</i>	8.8	8.6	2.2	2.6	8.8	8.6	4.0	6.2	6.2	6.2	1.2	1.4	6.2	6.0
	<i>Taste</i>	8.6	8.8	2.0	2.2	8.6	8.8	4.0	6.0	6.0	6.4	1.0	1.0	6.2	6.4
	<i>Texture</i>	7.4	7.2	2.0	2.4	7.4	7.6	4.0	6.6	6.6	6.6	1.0	1.0	6.0	6.0
	<i>Overall acceptability</i>	8.0	7.8	2.0	2.6	8.0	8.4	4.8	6.6	6.6	7.0	1.0	1.0	6.0	6.6
10.	Nutritional														
	<i>Energy (kcal/100g)</i>	68.16	65.96	-	-	-	-	-	-	-	-	70.84	70.2	69.28	67.76
	<i>Moisture (%)</i>	82.48	82.98	-	-	-	-	-	-	-	-	81.81	81.98	82.17	82.54
	<i>Protein (%)</i>	<0.5	<0.5	-	-	-	-	-	-	-	-	<0.5	<0.5	<0.5	<0.5
	<i>Fat (%)</i>	<0.5	<0.5	-	-	-	-	-	-	-	-	<0.5	<0.5	<0.5	<0.5
	<i>Carbohydrate (%)</i>	17.04	16.49	-	-	-	-	-	-	-	-	17.71	17.55	17.32	16.94
	<i>Ash (%)</i>	0.48	0.53	-	-	-	-	-	-	-	-	0.48	0.47	0.51	0.52



9.	Sensory evaluation														
(a)	External														
	<i>Visual appearance</i>	8.7	9.0	2.2	2.8	8.6	9.0	4.0	6.6	6.6	6.4	1.0	1.0	6.4	7.0
	<i>Overall acceptability</i>	8.4	8.6	2.0	2.2	8.4	8.6	5.0	6.8	6.8	7.0	1.0	1.0	6.2	6.6
(b)	Internal														
11	Microbiological														
	<i>Total Plate Count (cfu/g)</i>	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected
	<i>Yeast and mould (cfu/g)</i>	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected



Plate 2 : Uncoated and Wax Coated Pomegranates after 7 days of storage at room and refrigerated conditions



IFS-121212001



IFS-121212002



IFS-121212003



IFS-121212004

Plate 3 : Uncoated and Wax Coated Pomegranates after 14 days of storage at room and refrigerated conditions



IFS-121219001



IFS-121219002



IFS-121219003



IFS-121219004

Plate 4 : Uncoated and Wax Coated Pomegranates after 21 days of storage at room and refrigerated conditions



Uncoated, 22-24° C; 52-82% RH

IFS-121226001



Coated, 22-24° C; 52-82% RH

IFS-121226002



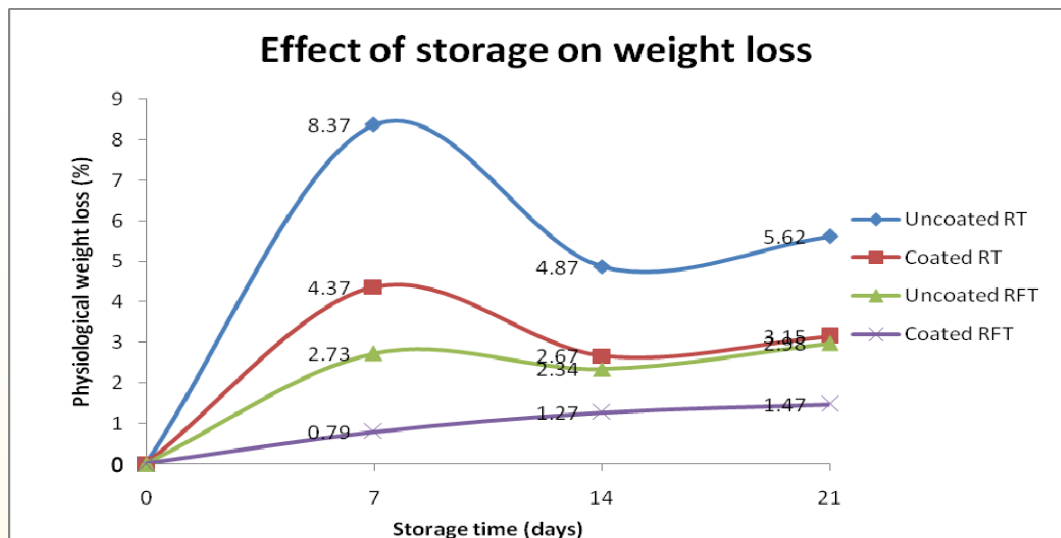
Uncoated, 8° C; 90-95%RH

IFS-121226003

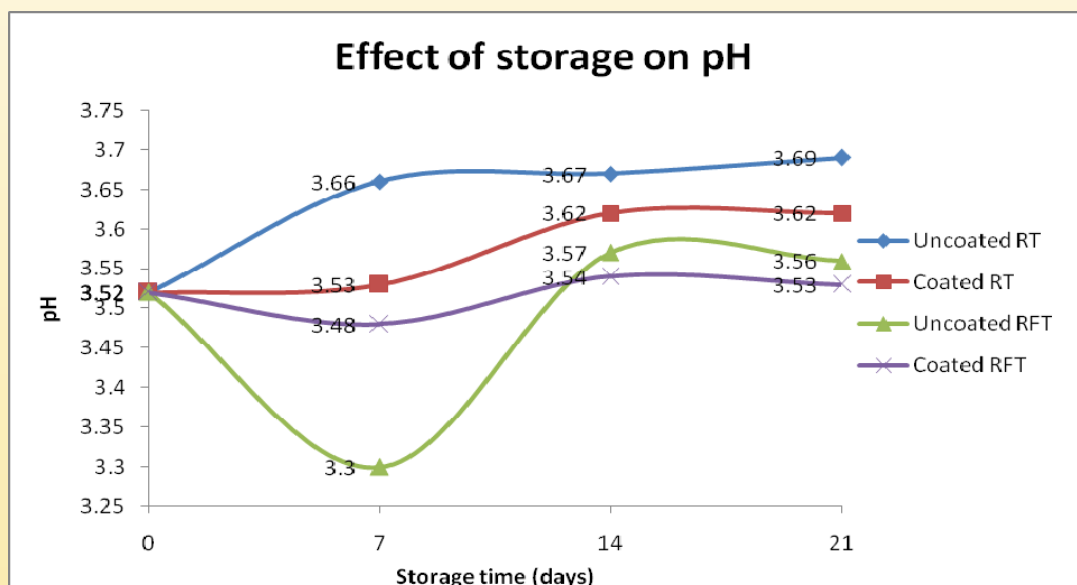


Coated, 8° C; 90-95%RH

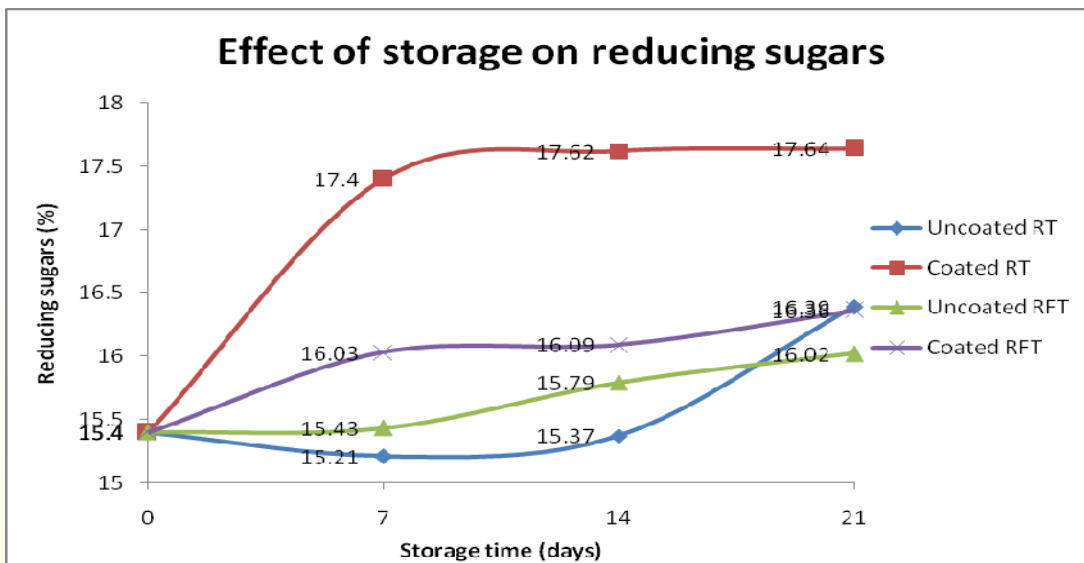
IFS-121226004



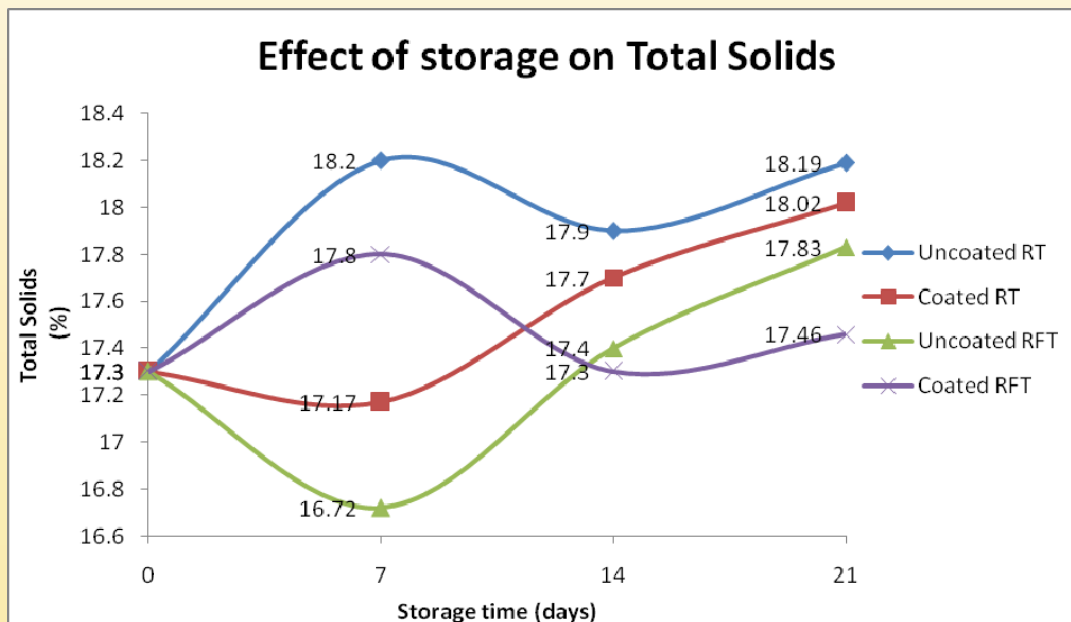
Interpretation : The weight loss increased on storage. Greater weight loss was found to be after 7 days of storage due to higher physical damage on the batch stored for 7 days of storage resulting in greater weight loss. However, it can be seen that the weight loss was less when the samples were coated in both the conditions of room temperature and refrigeration.



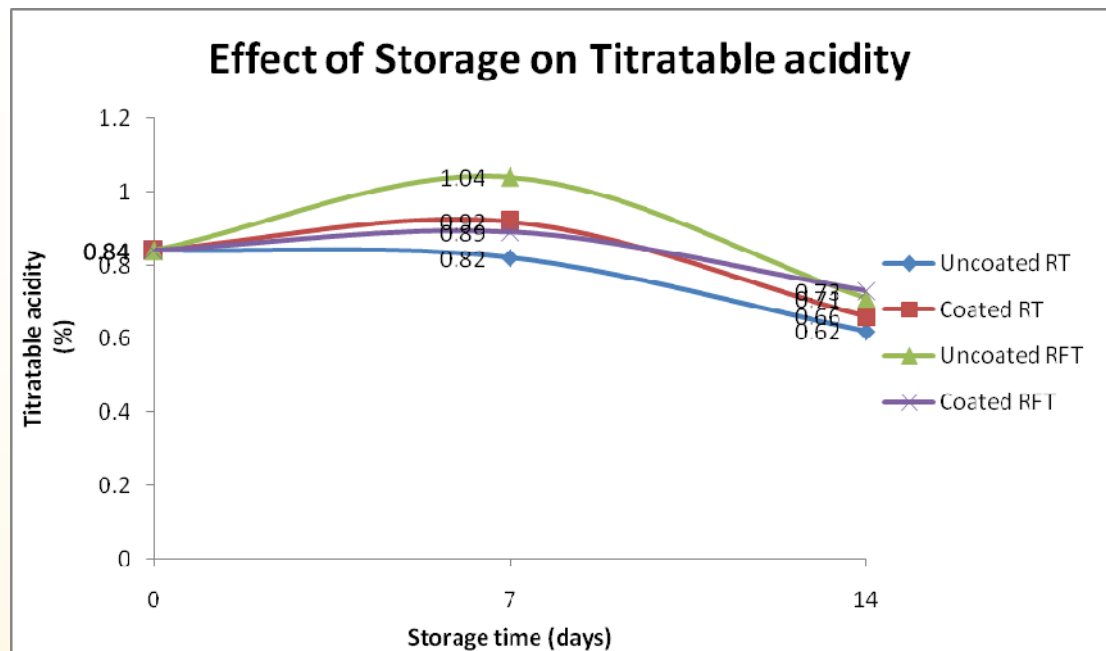
Interpretation : pH increased on storage. pH for the uncoated pomegranates stored at room temperature as well as at refrigeration temperature increased at a faster rate compared to the coated pomegranates. However, the pH increase was at a lesser rate when stored at refrigeration temperature (2 to 8°C) compared to at room temperature (22-24°C).



Interpretation : Reducing sugars increased on storage. For uncoated pomegranates, it increased at a lesser rate compared to coated pomegranates at both the temperatures. At a lower refrigeration temperature, the rate of increase was found to be lower compared to at room temperature.



Interpretation : The total solids increased on storage due to increased moisture loss. For, uncoated pomegranates, the total solids increased at a faster rate compared to coated pomegranates due to greater moisture loss.



Interpretation : Titratable acidity decreased on storage. For uncoated pomegranates, the decrease is more compared to coated pomegranates.

Summary :

The uncoated and coated pomegranates were stored at two different temperatures viz. 8°C and 22-24°C for 3 weeks and analyzed for weight loss, pH, reducing sugar content, total solids, titratable acidity, juice content, decay percent and sensory scores weekly. The nutritional analysis was done at zero day and after 3 weeks. The following observations were made :

Weight loss : Weight loss increased on storage at a greater rate for uncoated pomegranates than coated. There was increased weight loss at a temperature of 22-24°C compared to at 8°C. Also, greater weight loss was observed on 7th day of storage due to physical damage on the pomegranates stored for the analysis. This resulted in greater weight loss and also increased spoilage.

pH : pH for the uncoated pomegranates stored at room temperature as well as at refrigeration temperature increased at a faster rate compared to the coated pomegranates. However, the pH increase was at a lesser rate when stored at refrigeration temperature (8°C) compared to at room temperature (22-240 °C). This may be due to decrease in acidity through the biochemical changes in fruits.

Reducing sugar : Reducing sugars increased on storage. For uncoated pomegranates, it increased at a lesser rate compared to coated pomegranates at both the temperatures. At a lower refrigeration temperature, the rate of increase was found to be lower compared to at room temperature. The gradual increase in reducing sugars might be due to hydrolysis of polysaccharides, dehydration as a result of moisture loss and decrease in acidity by physiological changes during storage.

Total solids : The total solids increased on storage due to increased moisture loss. For, uncoated pomegranates, the total solids increased at a faster rate compared to coated pomegranates due to greater moisture loss.

Titrateable acidity : Titrateable acidity decreased on storage. For uncoated pomegranates, the decrease is more compared to coated pomegranates.

Decay % : The decay % increased on storage. The decay was observed on 7th day of storage due to physical damage on the pomegranates stored which resulted in greater spoilage.

Nutritional studies : No significant changes were observed in nutritional value of the product.

Sensory scores : The sensory scores decreased significantly over the period of storage. The sensory scores of coated pomegranates were above the uncoated pomegranates at room temperature. However, they were lower when stored at a temperature of 22-24°C.

Microbiological studies : The total plate count and yeasts and molds were not detected in pomegranates stored for 3 weeks. This is because the fruit is sterile internally even though mold growth was observed externally during the storage. This may be attributed to the physical damage which enhanced mold growth during storage.

Conclusion and Recommendations:

Conclusion:

1. It can be concluded that the coated pomegranates stored well compared to uncoated ones, slowing down the physiological changes during storage. Moreover, refrigeration temperature acts synergistically with coating treatment further slowing down the changes. The temperature of storage greatly influences the ageing rate. However, the physical damage to the fruit during storage should be prevented which will otherwise leads to spoilage inspite of coating treatment and thereby resulting in greater losses.
2. Based on market survey of wax coated pomegranate at different periods of time (7th day and 21st day); traders are ready procure coated pomegranate at 10% premium price. Though at

non-season time early January 2012, coated pomegranate may fetch 20-30% premium price.

3. The key benefit of post waxing at farm and pack house level are

- No weight loss or shrinking of the fruits during transit to destination.
- Fruits will remain firm and fresh.
- Extended shelf-life, this will help in avoiding distress sale.
- Enhanced cosmetic look will help in faster selling / liquidation of fruits.
- Better price realization – resulting in higher income.
- Wax solution costs around INR 500-500 per kgs which can wax around 1,000 kgs of pomegranate.

Recommendations:

It is recommended that a complete line for round fruits (Pomegranate, Apples, Grapes) be established at farm and pack house level.

The traders and packers face several constraints which come in the way of maintaining the quality of fruits in post harvest period. These constraints are social, administrative, climatic, managerial, agronomic and technical. It is proposed to set up a pack house and train the traders and packers on all the above aspects of post harvest management of pomegranate, with an objective to make Afghan pomegranate a brand in world market



This will facilitate handling of fruits from farm to shipping.

The different steps in the process are:

Selection of Orchard

Factors which are considered in this are

- Last plant protection application
- Health , size and maturity of fruits

Maturity and Maturity Standards

Factors which are considered in this are

- Harvest the fruits at correct maturity standard.
- Tapping sound
- TSS
- Acidity and TSS : ACIDITY ratio

Harvesting of Fruits

Factors which are considered in this are

- Time, harvesting equipments, procedure, handling in orchard

Transportation of Fruits from Field to Packhouse

- Transport the fruits in aseptic condition to avoid abuse to fruits.

Receipt of Fruits at Packhouse

- Unloading, staking to avoid multiple handling

Processing Line Operation

- Sorting of cull cut damaged fruits.
- Washing with specialized disinfectant to remove field derbies.
- Decay control treatment to prevent fruit for spoilage
- Coating of fruits with specialized coating material.
- Drying of coated fruits in drying tunnel.
- Grading of fruits according to size.

Nose Cleaning

- Clean the nose of fruits with specialized product to avoid cross contamination.



Packing and Pre Cooling



Image of the Box for pomegranate

Packed the fruits in the CFB boxes with trays and specially developed liners which will help to maintain the freshness of fruits by providing MAP to fruits.

Pre Dispatch Checking of Quality Parameters (PreDispatch)

- 11 Loading of Fruits in Refer Container
- Loading of Fruit Boxes on Pallet

By this process the quality of fruits can be maintained up to 60 days from the harvest, which will help in getting a price for the fruits.

The technical parameters, training modules and action plan will furnish results, in reducing the post harvest losses there-by increase the income of traders and packers. Consequently resulting in improving the economy of Afghanistan and quality of life of traders, packers and farmers. The overall turnover and activities contemplated in the project directly and indirectly fetch benefit to Afghanistan pomegranate industry.



Cost Equipment (Pack House): Estimated ex factory price of equipment may range from INR 20,00,000 to 25,00,000. In addition, shipping, installation, etc.

Key Suppliers:

Mr. Tarun Arora , Director, IG International (Potentially ready to invest in the project).
Flat no B-14, 2nd Floor, "B wing", Taj Building, Opposite Golden Crown Restaurant,
Grant Road (West), Mumbai- 400 036, Maharashtra
Tel.: +91-22-66272000;
Fax: +91-22-66272084;
Mobile: +91-9819248884
Email: tarunarora@iginternational.net
Website: www.iginternational.net

Mr. M.P.S. Sethi
Vice President(Marketing), Osaw Agro Industries Pvt. Ltd.
P.O. Bag 5, Agrosaw Complex, Jagadhri Road, Ambala Cantt. 133001, Haryana
Tel.: 0171-2699354/2699547
Fax: 0171-2699018, 9416027006
Email: agrosaw@agrosaw.com; mpssethi@agrosaw.com
Youtube: <http://www.youtube.com/watch?v=ZbwCQqBGy-c>

Mr. Dinesh Goswamy, Director
Agritech Equipment & Services Private Limited
No. 114 - A, Somdutt Chambers - 1, Plot No. 5, Bhikaji Cama Place, New Delhi - 110066
Telephone: +91-(11-26195119, +91-11-65020845
Fax: +(91)-(11)-26195119
Mobile: +91-9810510375

There are numerous suppliers (manufacturer) in Mumbai and Punjab Area.

Intertek India Pvt. Ltd. (Food Services)

NABL Accreditation No. T-2052(Chemical) & T- 2053 (Biological) Validity 18.08.13

TEST REPORT

Doc. No. IFS/DOC/003_01

ISSUED TO

Assocom-India Pvt. Ltd.
Flat No. 601, DDA Building District Center,
Plot No. 4, Laxmi Nagar, New Delhi – 110092

LAB REFERENCE No : IFS -121205002
Issue Date : 13/12/2012
Your Ref : Receipt
Dated : 05/12/2012

Kind Attn: Mr. Raj Kapoor

Sample Particulars: Pomegranate (Uncoated)

Page 1 of 1

Sample Registration Date : 05/12/2012	Analysis Completion Date: 13/12/2012
Analysis starting Date : 05/12/2012	
Name of the Product : Pomegranate (Uncoated)	
Quantity received : 88 pieces	
Tests required : Chemical test.	

SAMPLE TESTED AS RECEIVED

Reporting code: FS/CR/JSK;

TEST RESULTS

Sr. No	Test Parameters	Units of Measurement	Result	Method of testing
--------	-----------------	----------------------	--------	-------------------

Chemical Parameter

1.	Average Weight at Zero day	gm	354.92	Physical
2.	Average Juice Content	ml	72.6	Physical
3.	pH	-	3.52	IFS/C/STP/FC/015
4.	Total solids	%	17.52	IS:11623-2008
5.	Titratable acidity	%	0.76	IFS/C/STP/FC/032
6.	Reducing sugar	%	16.09	IFS/C/STP/FC/020
7.	Decay	%	Nil	Visual
8.	External sensory evaluation			
8.1	Colour/ Appearance	-	8.7	Visual
8.2	Overall acceptability	-	8.4	Visual
9.	Internal sensory evaluation			
9.1	Taste	-	8.6	Organoleptic
9.2	Colour/ Appearance	-	8.8	Visual
9.3	Texture	-	7.4	Visual
9.4	Overall acceptability	-	8.0	Visual
10.	Energy	kCal/100gm	68.16	IFS/C/STP/FC/008
11.	Protein	%	Not detected	IS:7219-1973
12.	Fat	%	Not detected	IFS/C/STP/FC/012
13.	Ash	%	0.48	IFS/C/STP/FC/006
14.	Carbohydrates	%	17.04	IFS/C/STP/FC/013

*****END OF TEST REPORT*****



 Aruna Singh
 (Authorized Signatory)



Valued Quality. Delivered.

Intertek India Pvt. Ltd. (Food Services)

NABL Accreditation No. T-2052(Chemical) & T- 2053 (Biological) Validity 18.08.13

No. 68, Udyog Vihar Phase - 1,
Gurgaon - 122016
Haryana, India.
Email : food.gurgaon@intertek.com
Telephone : 0124 - 4840600
Fax : 0124 - 4147881
www.intertek.com

Doc. No. IFS/DOC/003_01

TEST REPORT

ISSUED TO

Assocom-India Pvt. Ltd.
Flat No. 601, DDA Building District Center,
Plot No. 4, Laxmi Nagar, New Delhi – 110092

LAB REFERENCE No : IFS -121205002
Issue Date : 13/12/2012
Your Ref : Receipt
Dated : 05/12/2012

Kind Attn: Mr. Raj Kapoor

Sample Particulars: Pomegranate (Uncoated)

Page 1 of 2

Sample Registration Date : 05/12/2012
Analysis starting Date : 05/12/2012
Name of the Product : Pomegranate (Uncoated)
Quantity received : 88 pieces
Tests required : Chemical and Microbiological test.

Analysis Completion Date: 13/12/2012

SAMPLE TESTED AS RECEIVED


Reporting code: FS/CR/JSK;

TEST RESULTS

Sr. No	Test Parameters	Units of Measurement	Result	Limit of detection	Method of testing
--------	-----------------	----------------------	--------	--------------------	-------------------

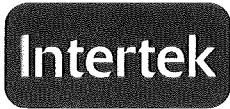
Chemical Parameter

1.	Average Weight at Zero day	gm	354.92	-	Physical
2.	Average Juice Content	ml	72.6	-	Physical
3.	pH	-	3.52	-	IFS/C/STP/FC/015
4.	Total solids	%	17.52	-	IS:11623-2008
5.	Titratable acidity	%	0.76	-	IFS/C/STP/FC/032
6.	Reducing sugar	%	16.09	-	IFS/C/STP/FC/020
7.	Decay	%	Nil	-	Visual
8.	External sensory evaluation				
8.1	Colour/ Appearance	-	8.7	-	Visual
8.2	Overall acceptability	-	8.4	-	Visual
9.	Internal sensory evaluation				
9.1	Taste	-	8.6	-	Organoleptic
9.2	Colour/ Appearance	-	8.8	-	Visual
9.3	Texture	-	7.4	-	Visual
9.4	Overall acceptability	-	8.0	-	Visual
10.	Energy	kCal/100gm	68.16	-	IFS/C/STP/FC/008
11.	Protein	%	Not detected	-	IS:7219-1973
12.	Fat	%	Not detected	-	IFS/C/STP/FC/012
13.	Ash	%	0.48	-	IFS/C/STP/FC/006
14.	Carbohydrates	%	17.04	-	IFS/C/STP/FC/013



Aruna Singh

(Authorized Signatory)



Valued Quality. Delivered.

Intertek India Pvt. Ltd. (Food Services)

NABL Accreditation No. T-2052(Chemical) & T- 2053 (Biological) Validity 18.08.13

No. 68, Udyog Vihar Phase - 1,
Gurgaon - 122016
Haryana, India.
Email : food.gurgaon@intertek.com
Telephone : 0124 - 4840600
Fax : 0124 - 4147881
www.intertek.com

Doc. No. IFS/DOC/003_01

TEST REPORT

ISSUED TO

Assocom-India Pvt. Ltd.
Flat No. 601, DDA Building District Center,
Plot No. 4, Laxmi Nagar, New Delhi – 110092

LAB REFERENCE No : IFS -121205002
Issue Date : 13/12/2012
Your Ref : Receipt
Dated : 05/12/2012

Kind Attn: Mr. Raj Kapoor

Sample Particulars: Pomegranate (Uncoated)

Page 2 of 2

Sample Registration Date : 05/12/2012
Analysis starting Date : 05/12/2012
Analysis Completion Date: 13/12/2012
Name of the Product : Pomegranate (Uncoated)
Quantity received : 88 pieces
Tests required : Chemical and Microbiological test.

SAMPLE TESTED AS RECEIVED

Reporting code: FS/CR/JSK;

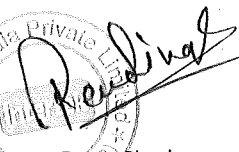
TEST RESULTS

Sr. No	Test Parameters	Units of Measurement	Result	Limit of detection	Method of testing
--------	-----------------	----------------------	--------	--------------------	-------------------

Microbiological Parameter

1.	TPC	cfu/gm	Not detected	10	IS:5402:2002
2.	Yeast & Mould	cfu/gm	Not detected	10	IS:5403:1999

*****END OF TEST REPORT*****



Renu Singh
(Authorized Signatory)



Valued Quality. Delivered.

Intertek India Pvt. Ltd. (Food Services)

NABL Accreditation No. T-2052(Chemical) & T- 2053 (Biological) Validity 18.08.13

No. 68, Udyog Vihar Phase - 1,
Gurgaon - 122016
Haryana, India.
Email : food.gurgaon@intertek.com
Telephone : 0124 - 4840600
Fax : 0124 - 4147881
www.intertek.com

TEST REPORT

Doc. No. IFS/DOC/003_01

ISSUED TO

Assocom-India Pvt. Ltd.
Flat No. 601, DDA Building District Center,
Plot No. 4, Laxmi Nagar, New Delhi – 110092

LAB REFERENCE No : IFS -121205010
Issue Date : 13/12/2012
Your Ref : Receipt
Dated : 05/12/2012

Kind Attn: Mr. Raj Kapoor

Sample Particulars: Pomegranate (Coated)

Page 1 of 1

Sample Registration Date : 05/12/2012
Analysis starting Date : 05/12/2012
Name of the Product : Pomegranate (Coated)
Quantity received : 88 pieces
Tests required : Chemical test.
Analysis Completion Date: 13/12/2012


SAMPLE TESTED AS RECEIVED

Reporting code: FS/CR/JSK;

TEST RESULTS

Sr. No	Test Parameters	Units of Measurement	Result	Method of testing
Chemical Parameter				
1.	Average Weight at Zero day	gm	229.21	Physical
2.	Average Juice Content	ml	81.6	Physical
3.	pH	-	3.51	IFS/C/STP/FC/015
4.	Total solids	%	17.02	IS:11623-2008
5.	Titratable acidity	%	0.92	IFS/C/STP/FC/032
6.	Reducing sugar	%	15.62	IFS/C/STP/FC/020
7.	Decay	%	Nil	Visual
8.	External sensory evaluation			
8.1	Colour/ Appearance	-	9.0	Visual
8.2	Overall acceptability	-	8.6	Visual
9.	Internal sensory evaluation			
9.1	Taste	-	8.8	Organoleptic
9.2	Colour/ Appearance	-	8.6	Visual
9.3	Texture	-	7.2	Visual
9.4	Overall acceptability	-	7.8	Visual
10.	Energy	kCal/100gm	65.96	IFS/C/STP/FC/008
11.	Protein	%	Not detected	IS:7219-1973
12.	Fat	%	Not detected	IFS/C/STP/FC/012
13.	Ash	%	0.53	IFS/C/STP/FC/006
14.	Carbohydrates	%	16.49	IFS/C/STP/FC/013

*****END OF TEST REPORT*****


Aruna Singh
(Authorized Signatory)



Valued Quality. Delivered.

Intertek India Pvt. Ltd. (Food Services)

NABL Accreditation No. T-2052(Chemical) & T- 2053 (Biological) Validity 18.08.13

No. 68, Udyog Vihar Phase - 1,
Gurgaon - 122016
Haryana, India.
Email : food.gurgaon@intertek.com
Telephone : 0124 - 4840600
Fax : 0124 - 4147881
www.intertek.com

TEST REPORT

Doc. No. IFS/DOC/003_01

ISSUED TO

Assocom-India Pvt. Ltd.
Flat No. 601, DDA Building District Center,
Plot No. 4, Laxmi Nagar, New Delhi – 110092

LAB REFERENCE No : IFS -121205010
Issue Date : 13/12/2012
Your Ref : Receipt
Dated : 05/12/2012

Kind Attn: Mr. Raj Kapoor

Sample Particulars: Pomegranate (Coated)

Page 1 of 2

Sample Registration Date : 05/12/2012
Analysis starting Date : 05/12/2012
Analysis Completion Date: 13/12/2012
Name of the Product : Pomegranate (Coated)
Quantity received : 88 pieces
Tests required : Chemical and Microbiological test.

SAMPLE TESTED AS RECEIVED

Reporting code: FS/CR/JSK;

TEST RESULTS

Sr. No	Test Parameters	Units of Measurement	Result	Limit of detection	Method of testing
Chemical Parameter					
1.	Average Weight at Zero day	gm	229.21	-	Physical
2.	Average Juice Content	ml	81.6	-	Physical
3.	pH	-	3.51	-	IFS/C/STP/FC/015
4.	Total solids	%	17.02	-	IS:11623-2008
5.	Titratable acidity	%	0.92	-	IFS/C/STP/FC/032
6.	Reducing sugar	%	15.62	-	IFS/C/STP/FC/020
7.	Decay	%	Nil	-	Visual
8.	External sensory evaluation				
8.1	Colour/ Appearance	-	9.0	-	Visual
8.2	Overall acceptability	-	8.6	-	Visual
9.	Internal sensory evaluation				
9.1	Taste	-	8.8	-	Organoleptic
9.2	Colour/ Appearance	-	8.6	-	Visual
9.3	Texture	-	7.2	-	Visual
9.4	Overall acceptability	-	7.8	-	Visual
10.	Energy	kCal/100gm	65.96	-	IFS/C/STP/FC/008
11.	Protein	%	Not detected	-	IS:7219-1973
12.	Fat	%	Not detected	-	IFS/C/STP/FC/012
13.	Ash	%	0.53	-	IFS/C/STP/FC/006
14.	-Carbohydrates	%	16.49	-	IFS/C/STP/FC/013

Aruna Singh

(Authorized Signatory)



Valued Quality. Delivered.

Intertek India Pvt. Ltd. (Food Services)

NABL Accreditation No. T-2052(Chemical) & T- 2053 (Biological) Validity 18.08.13

No. 68, Udyog Vihar Phase - 1,
Gurgaon - 122016
Haryana, India.
Email : food.gurgaon@intertek.com
Telephone : 0124 - 4840600
Fax : 0124 - 4147881
www.intertek.com

TEST REPORT

Doc. No. IFS/DOC/003_01

ISSUED TO

Assocom-India Pvt. Ltd.
Flat No. 601, DDA Building District Center,
Plot No. 4, Laxmi Nagar, New Delhi – 110092

LAB REFERENCE No : IFS -121205010
Issue Date : 13/12/2012
Your Ref : Receipt
Dated : 05/12/2012

Kind Attn: Mr. Raj Kapoor

Sample Particulars: Pomegranate (Coated)

Page 2 of 2

Sample Registration Date : 05/12/2012
Analysis starting Date : 05/12/2012
Name of the Product : Pomegranate (Coated)
Quantity received : 88 pieces
Tests required : Chemical and Microbiological test.

Analysis Completion Date: 13/12/2012

SAMPLE TESTED AS RECEIVED

Reporting code: FS/CR/JSK;

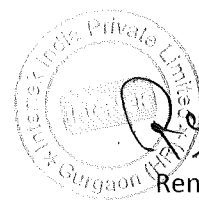
TEST RESULTS

Sr. No	Test Parameters	Units of Measurement	Result	Limit of detection	Method of testing
--------	-----------------	----------------------	--------	--------------------	-------------------

Microbiological Parameter

1.	TPC	cfu/gm	Not detected	10	IS:5402:2002
2.	Yeast & Mould	cfu/gm	Not detected	10	IS:5403:1999

*****END OF TEST REPORT*****



Renu Singh
Renu Singh

(Authorized Signatory)



Valued Quality. Delivered.

Intertek India Pvt. Ltd. (Food Services)

NABL Accreditation No. T-2052(Chemical) & T- 2053 (Biological) Validity 18.08.13

No. 68, Udyog Vihar Phase - 1,
Gurgaon - 122016
Haryana, India.
Email : food.gurgaon@intertek.com
Telephone : 0124 - 4840600
Fax : 0124 - 4147881
www.intertek.com

TEST REPORT

Doc. No. IFS/DOC/003_01

ISSUED TO

Assocom-India Pvt. Ltd.
Flat No. 601, DDA Building District Center,
Plot No. 4, Laxmi Nagar, New Delhi – 110092

LAB REFERENCE No : IFS -121212001
Issue Date : 20/12/2012
Your Ref : Receipt
Dated : 05/12/2012

Kind Attn: Mr. Raj Kapoor


Sample Particulars: Pomegranate (Uncoated)

Page 1 of 2

Sample Registration Date : 12/12/2012	Analysis Completion Date: 18/12/2012
Analysis starting Date : 12/12/2012	
Name of the Product : Pomegranate (Uncoated)	
Quantity received : 06 pieces	
Sample details : 7 th Day (Room Temp)	
Tests required : Chemical and Microbiological test.	
SAMPLE TESTED AS RECEIVED	Reporting code: FS/CR/JSK;

TEST RESULTS

Sr. No	Test Parameters	Units of Measurement	Result	Limit of detection	Method of testing
Chemical Parameter					
1.	Average Weight at 7 th day	gm	322.99	-	Physical
2.	Average Juice Content	ml	82.0	-	Physical
3.	pH	-	3.66	-	IFS/C/STP/FC/015
4.	Total solids	%	18.20	-	IS:11623-2008
5.	Titrateable acidity	%	0.82	-	IFS/C/STP/FC/032
6.	Reducing sugar	%	15.21	-	IFS/C/STP/FC/020
7.	Decay	%	33.3	-	Visual
8.	External sensory evaluation				
8.1	Visual/ Appearance	-	2.2	-	Visual
8.2	Overall acceptability	-	2.0	-	Visual
9.	Internal sensory evaluation				
9.1	Taste	-	2.2	-	Organoleptic
9.2	Colour/ Appearance	-	2.0	-	Visual
9.3	Texture	-	2.0	-	Visual
9.4	Overall acceptability	-	2.0	-	Visual


Aruna Singh
(Authorized Signatory)

Intertek

Valued Quality. Delivered.

Intertek India Pvt. Ltd. (Food Services)

NABL Accreditation No. T-2052(Chemical) & T- 2053 (Biological) Validity 18.08.13

No. 68, Udyog Vihar Phase - 1,
Gurgaon - 122016
Haryana, India.
Email : food.gurgaon@intertek.com
Telephone : 0124 - 4840600
Fax : 0124 - 4147881
www.intertek.com

Doc. No. IFS/DOC/003_01

TEST REPORT**ISSUED TO**

Assocom-India Pvt. Ltd.
Flat No. 601, DDA Building District Center,
Plot No. 4, Laxmi Nagar, New Delhi – 110092

LAB REFERENCE No : IFS -121212001
Issue Date : 20/12/2012
Your Ref : Receipt
Dated : 05/12/2012

Kind Attn: Mr. Raj Kapoor

Sample Particulars: Pomegranate (Uncoated)

Page 2 of 2

Sample Registration Date : 12/12/2012
Analysis starting Date : 12/12/2012
Name of the Product : Pomegranate (Uncoated)
Quantity received : 06 pieces
Sample details : 7th Day (Room Temp)
Tests required : Chemical and Microbiological test.
SAMPLE TESTED AS RECEIVED
Analysis Completion Date: 18/12/2012
Reporting code: FS/CR/JSK;


TEST RESULTS

Sr. No	Test Parameters	Units of Measurement	Result	Limit of detection	Method of testing
--------	-----------------	----------------------	--------	--------------------	-------------------

Microbiological Parameter

1.	TPC	cfu/gm	Not detected	10	IS:5402:2002
2.	Yeast & Mould	cfu/gm	Not detected	10	IS:5403:1999

*****END OF TEST REPORT*****


Renu Singh
(Authorized Signatory)



Valued Quality. Delivered.

Intertek India Pvt. Ltd. (Food Services)

NABL Accreditation No. T-2052(Chemical) & T- 2053 (Biological) Validity 18.08.13

No. 68, Udyog Vihar Phase - 1,
Gurgaon - 122016
Haryana, India.
Email : food.gurgaon@intertek.com
Telephone : 0124 - 4840600
Fax : 0124 - 4147881
www.intertek.com

TEST REPORT

Doc. No. IFS/DOC/003_01

ISSUED TO

Assocom-India Pvt. Ltd.
Flat No. 601, DDA Building District Center,
Plot No. 4, Laxmi Nagar, New Delhi – 110092

LAB REFERENCE No : IFS -121212002
Issue Date : 20/12/2012
Your Ref : Receipt
Dated : 05/12/2012

Kind Attn: Mr. Raj Kapoor


Sample Particulars: Pomegranate (Coated)

Page 1 of 2

Sample Registration Date : 12/12/2012
Analysis starting Date : 12/12/2012
Name of the Product : Pomegranate (Coated)
Quantity received : 06 pieces
Sample details : 7th Day (Room Temp)
Tests required : Chemical and Microbiological test.
SAMPLE TESTED AS RECEIVED
Analysis Completion Date: 18/12/2012
Reporting code: FS/CR/JSK;

TEST RESULTS

Sr. No	Test Parameters	Units of Measurement	Result	Limit of detection	Method of testing
Chemical Parameter					
1.	Average Weight at 7 th day	gm	310.93	-	Physical
2.	Average Juice Content	ml	71.6	-	Physical
3.	pH	-	3.53	-	IFS/C/STP/FC/015
4.	Total solids	%	17.17	-	IS:11623-2008
5.	Titrateable acidity	%	0.92	-	IFS/C/STP/FC/032
6.	Reducing sugar	%	17.41	-	IFS/C/STP/FC/020
7.	Decay	%	66.7	-	Visual
8.	External sensory evaluation				
8.1	Visual/ Appearance	-	2.8	-	Visual
8.2	Overall acceptability	-	2.2	-	Visual
9.	Internal sensory evaluation				
9.1	Taste	-	2.2	-	Organoleptic
9.2	Colour/ Appearance	-	2.6	-	Visual
9.3	Texture	-	2.4	-	Visual
9.4	Overall acceptability	-	2.6	-	Visual


Aruna Singh
(Authorized Signatory)



Valued Quality. Delivered.

Intertek India Pvt. Ltd. (Food Services)

NABL Accreditation No. T-2052(Chemical) & T- 2053 (Biological) Validity 18.08.13

No. 68, Udyog Vihar Phase - 1,
Gurgaon - 122016
Haryana, India.
Email : food.gurgaon@intertek.com
Telephone : 0124 - 4840600
Fax : 0124 - 4147881
www.intertek.com

TEST REPORT

Doc. No. IFS/DOC/003_01

ISSUED TO

Assocom-India Pvt. Ltd.
Flat No. 601, DDA Building District Center,
Plot No. 4, Laxmi Nagar, New Delhi – 110092

LAB REFERENCE No : IFS -121212002
Issue Date : 20/12/2012
Your Ref : Receipt
Dated : 05/12/2012

Kind Attn: Mr. Raj Kapoor

Sample Particulars: Pomegranate (Coated)

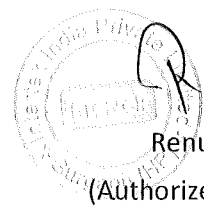
Page 2 of 2

Sample Registration Date : 12/12/2012
Analysis starting Date : 12/12/2012
Name of the Product : Pomegranate (Coated)
Quantity received : 06 pieces
Sample details : 7th Day (Room Temp)
Tests required : Chemical and Microbiological test.
SAMPLE TESTED AS RECEIVED
Analysis Completion Date: 18/12/2012
Reporting code: FS/CR/JSK;

TEST RESULTS

Sr. No	Test Parameters	Units of Measurement	Result	Limit of detection	Method of testing
Microbiological Parameter					
1.	TPC	cfu/gm	Not detected	10	IS:5402:2002
2.	Yeast & Mould	cfu/gm	Not detected	10	IS:5403:1999

*****END OF TEST REPORT*****



Renu Singh

(Authorized Signatory)



Valued Quality. Delivered.

Intertek India Pvt. Ltd. (Food Services)

NABL Accreditation No. T-2052(Chemical) & T- 2053 (Biological) Validity 18.08.13

No. 68, Udyog Vihar Phase - 1,
Gurgaon - 122016
Haryana, India.
Email : food.gurgaon@intertek.com
Telephone : 0124 - 4840600
Fax : 0124 - 4147881
www.intertek.com

TEST REPORT

Doc. No. IFS/DOC/003_01

ISSUED TO

Assocom-India Pvt. Ltd.
Flat No. 601, DDA Building District Center,
Plot No. 4, Laxmi Nagar, New Delhi – 110092

LAB REFERENCE No : IFS -121212003
Issue Date : 20/12/2012
Your Ref : Receipt
Dated : 05/12/2012

Kind Attn: Mr. Raj Kapoor

Sample Particulars: Pomegranate (Uncoated)

Page 1 of 2

Sample Registration Date : 12/12/2012
Analysis starting Date : 12/12/2012
Name of the Product : Pomegranate (Uncoated)
Quantity received : 06 pieces
Sample details : 7th Day (Cold Storage)
Tests required : Chemical and Microbiological test.
SAMPLE TESTED AS RECEIVED
Analysis Completion Date: 18/12/2012
Reporting code: FS/CR/JSK;

TEST RESULTS

Sr. No	Test Parameters	Units of Measurement	Result	Limit of detection	Method of testing
Chemical Parameter					
1.	Average Weight at 7 th day	gm	371.22	-	Physical
2.	Average Juice Content	ml	81.7	-	Physical
3.	pH	-	3.30	-	IFS/C/STP/FC/015
4.	Total solids	%	16.72	-	IS:11623-2008
5.	Titratable acidity	%	1.04	-	IFS/C/STP/FC/032
6.	Reducing sugar	%	15.43	-	IFS/C/STP/FC/020
7.	Decay	%	Nil	-	Visual
8.	External sensory evaluation				
8.1	Visual/ Appearance	-	8.6	-	Visual
8.2	Overall acceptability	-	8.4	-	Visual
9.	Internal sensory evaluation				
9.1	Taste	-	8.8	-	Organoleptic
9.2	Colour/ Appearance	-	8.6	-	Visual
9.3	Texture	-	7.4	-	Visual
9.4	Overall acceptability	-	8.0	-	Visual


Aruna Singh

(Authorized Signatory)



Valued Quality. Delivered.

Intertek India Pvt. Ltd. (Food Services)

NABL Accreditation No. T-2052(Chemical) & T- 2053 (Biological) Validity 18.08.13

No. 68, Udyog Vihar Phase - 1,
Gurgaon - 122016
Haryana, India.
Email : food.gurgaon@intertek.com
Telephone : 0124 - 4840600
Fax : 0124 - 4147881
www.intertek.com

TEST REPORT

Doc. No. IFS/DOC/003_01

ISSUED TO

Assocom-India Pvt. Ltd.
Flat No. 601, DDA Building District Center,
Plot No. 4, Laxmi Nagar, New Delhi – 110092

LAB REFERENCE No : IFS -121212003
Issue Date : 20/12/2012
Your Ref : Receipt
Dated : 05/12/2012

Kind Attn: Mr. Raj Kapoor

Sample Particulars: Pomegranate (Uncoated)


Page 2 of 2

Sample Registration Date : 12/12/2012
Analysis starting Date : 12/12/2012
Name of the Product : Pomegranate (Uncoated)
Quantity received : 06 pieces
Sample details : 7th Day (Cold Storage)
Tests required : Chemical and Microbiological test.
SAMPLE TESTED AS RECEIVED
Analysis Completion Date: 18/12/2012
Reporting code: FS/CR/JSK;

TEST RESULTS

Sr. No	Test Parameters	Units of Measurement	Result	Limit of detection	Method of testing
Microbiological Parameter					
1.	TPC	cfu/gm	Not detected	10	IS:5402:2002
2.	Yeast & Mould	cfu/gm	Not detected	10	IS:5403:1999

*****END OF TEST REPORT*****


Renu Singh
(Authorized Signatory)



Valued Quality. Delivered.

Intertek India Pvt. Ltd. (Food Services)

NABL Accreditation No. T-2052(Chemical) & T- 2053 (Biological) Validity 18.08.13

No. 68, Udyog Vihar Phase - 1,
Gurgaon - 122016
Haryana, India.
Email : food.gurgaon@intertek.com
Telephone : 0124 - 4840600
Fax : 0124 - 4147881
www.intertek.com

TEST REPORT

Doc. No. IFS/DOC/003_01

ISSUED TO

Assocom-India Pvt. Ltd.
Flat No. 601, DDA Building District Center,
Plot No. 4, Laxmi Nagar, New Delhi – 110092

LAB REFERENCE No : IFS -121212004
Issue Date : 20/12/2012
Your Ref : Receipt
Dated : 05/12/2012

Kind Attn: Mr. Raj Kapoor


Sample Particulars: Pomegranate (Coated)

Page 1 of 2

Sample Registration Date : 12/12/2012
Analysis starting Date : 12/12/2012
Name of the Product : Pomegranate (Coated)
Quantity received : 06 pieces
Sample details : 7th Day (Cold Storage)
Tests required : Chemical and Microbiological test.
SAMPLE TESTED AS RECEIVED
Analysis Completion Date: 18/12/2012
Reporting code: FS/CR/JSK;

TEST RESULTS

Sr. No	Test Parameters	Units of Measurement	Result	Limit of detection	Method of testing
Chemical Parameter					
1.	Average Weight at 7 th day	gm	345.67	-	Physical
2.	Average Juice Content	ml	82	-	Physical
3.	pH	-	3.48	-	IFS/C/STP/FC/015
4.	Total solids	%	17.8	-	IS:11623-2008
5.	Titratable acidity	%	0.89	-	IFS/C/STP/FC/032
6.	Reducing sugar	%	16.03	-	IFS/C/STP/FC/020
7.	Decay	%	Nil	-	Visual
8.	External sensory evaluation				
8.1	Visual/ Appearance	-	9.0	-	Visual
8.2	Overall acceptability	-	8.0	-	Visual
9.	Internal sensory evaluation				
9.1	Taste	-	8.6	-	Organoleptic
9.2	Colour/ Appearance	-	8.6	-	Visual
9.3	Texture	-	7.6	-	Visual
9.4	Overall acceptability	-	8.4	-	Visual


Aruna Singh
(Authorized Signatory)



Valued Quality. Delivered.

Intertek India Pvt. Ltd. (Food Services)

NABL Accreditation No. T-2052(Chemical) & T- 2053 (Biological) Validity 18.08.13

No. 68, Udyog Vihar Phase - 1,
Gurgaon - 122016
Haryana, India.
Email : food.gurgaon@intertek.com
Telephone : 0124 - 4840600
Fax : 0124 - 4147881
www.intertek.com

TEST REPORT

Doc. No. IFS/DOC/003_01

ISSUED TO

Assocom-India Pvt. Ltd.
Flat No. 601, DDA Building District Center,
Plot No. 4, Laxmi Nagar, New Delhi – 110092

LAB REFERENCE No : IFS -121212004
Issue Date : 20/12/2012
Your Ref : Receipt
Dated : 05/12/2012

Kind Attn: Mr. Raj Kapoor

Sample Particulars: Pomegranate (Coated)

Page 2 of 2

Sample Registration Date : 12/12/2012	Analysis Completion Date: 18/12/2012
Analysis starting Date : 12/12/2012	
Name of the Product : Pomegranate (Coated)	
Quantity received : 06 pieces	
Sample details : 7 th Day (Cold Storage)	
Tests required : Chemical and Microbiological test.	
SAMPLE TESTED AS RECEIVED	Reporting code: FS/CR/JSK;


TEST RESULTS

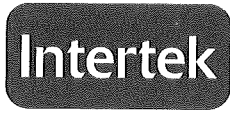
Sr. No	Test Parameters	Units of Measurement	Result	Limit of detection	Method of testing
--------	-----------------	----------------------	--------	--------------------	-------------------

Microbiological Parameter

1.	TPC	cfu/gm	Not detected	10	IS:5402:2002
2.	Yeast & Mould	cfu/gm	Not detected	10	IS:5403:1999

*****END OF TEST REPORT*****


Renu Singh
(Authorized Signatory)



Valued Quality. Delivered.

Intertek India Pvt. Ltd. (Food Services)

NABL Accreditation No. T-2052(Chemical) & T- 2053 (Biological) Validity 18.08.13

No. 68, Udyog Vihar Phase - 1,
Gurgaon - 122016
Haryana, India.
Email : food.gurgaon@intertek.com
Telephone : 0124 - 4840600
Fax : 0124 - 4147881
www.intertek.com

TEST REPORT

Doc. No. IFS/DOC/003_01

ISSUED TO

Assocom-India Pvt. Ltd.
Flat No. 601, DDA Building District Center,
Plot No. 4, Laxmi Nagar, New Delhi – 110092

LAB REFERENCE No : IFS -121219001
Issue Date : 26/12/2012
Your Ref : Receipt
Dated : 05/12/2012

Kind Attn: Mr. Raj Kapoor

Sample Particulars: Pomegranate (Uncoated)

Page 1 of 2

Sample Registration Date : 19/12/2012
Analysis starting Date : 19/12/2012
Name of the Product : Pomegranate (Uncoated)
Quantity received : 06 pieces
Sample details : 14th Day (Room temperature)
Tests required : Chemical and Microbiological test.
SAMPLE TESTED AS RECEIVED
Analysis Completion Date: 24/12/2012
Reporting code: FS/CR/JSK;

TEST RESULTS

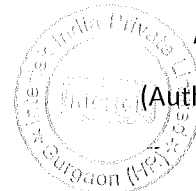
Sr. No	Test Parameters	Units of Measurement	Result	Limit of detection	Method of testing
--------	-----------------	----------------------	--------	--------------------	-------------------

Chemical Parameter

1.	Average Weight at 14 th day	gm	330.57	-	Physical
2.	Average Juice Content	ml	85.0	-	Physical
3.	pH	-	3.67	-	IFS/C/STP/FC/015
4.	Total solids	%	17.9	-	IS:11623-2008
5.	Titratable acidity	%	0.62	-	IFS/C/STP/FC/032
6.	Reducing sugar	%	15.37	-	IFS/C/STP/FC/020
7.	Decay	%	75.0	-	Visual
8.	External sensory evaluation				
8.1	Visual/ Appearance	-	4.0	-	Visual
8.2	Overall acceptability	-	5.0	-	Visual
9.	Internal sensory evaluation				
9.1	Taste	-	4.0	-	Organoleptic
9.2	Colour/ Appearance	-	4.0	-	Visual
9.3	Texture	-	4.0	-	Visual
9.4	Overall acceptability	-	4.8	-	Visual

Aruna Singh

(Authorized Signatory)





Valued Quality. Delivered.

Intertek India Pvt. Ltd. (Food Services)

NABL Accreditation No. T-2052(Chemical) & T- 2053 (Biological) Validity 18.08.13

No. 68, Udyog Vihar Phase - 1,
Gurgaon - 122016
Haryana, India.
Email : food.gurgaon@intertek.com
Telephone : 0124 - 4840600
Fax : 0124 - 4147881
www.intertek.com

Doc. No. IFS/DOC/003_01

TEST REPORT

ISSUED TO

Assocom-India Pvt. Ltd.
Flat No. 601, DDA Building District Center,
Plot No. 4, Laxmi Nagar, New Delhi – 110092

LAB REFERENCE No : IFS -121219001
Issue Date : 26/12/2012
Your Ref : Receipt
Dated : 05/12/2012

Kind Attn: Mr. Raj Kapoor

Sample Particulars: Pomegranate (Uncoated)

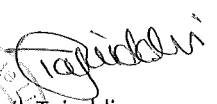
Page 2 of 2

Sample Registration Date : 19/12/2012
Analysis starting Date : 19/12/2012
Name of the Product : Pomegranate (Uncoated)
Quantity received : 06 pieces
Sample details : 14th Day (Room temperature)
Tests required : Chemical and Microbiological test.
SAMPLER TESTED AS RECEIVED
Analysis Completion Date: 24/12/2012
Reporting code: FS/CR/JSK;

TEST RESULTS

Sr. No	Test Parameters	Units of Measurement	Result	Limit of detection	Method of testing
Microbiological Parameter					
1.	TPC	cfu/gm	Not detected	10	IS:5402:2002
2.	Yeast & Mould	cfu/gm	Not detected	10	IS:5403:1999

*****END OF TEST REPORT*****


Shaik Tajuddin
(Authorized Signatory)



Valued Quality. Delivered.

Intertek India Pvt. Ltd. (Food Services)

NABL Accreditation No. T-2052(Chemical) & T- 2053 (Biological) Validity 18.08.13

No. 68, Udyog Vihar Phase - 1,
Gurgaon - 122016
Haryana, India.
Email : food.gurgaon@intertek.com
Telephone : 0124 - 4840600
Fax : 0124 - 4147881
www.intertek.com

TEST REPORT

Doc. No. IFS/DOC/003_01

ISSUED TO

Assocom-India Pvt. Ltd.
Flat No. 601, DDA Building District Center,
Plot No. 4, Laxmi Nagar, New Delhi – 110092

LAB REFERENCE No : IFS -121219002
Issue Date : 26/12/2012
Your Ref : Receipt
Dated : 05/12/2012

Kind Attn: Mr. Raj Kapoor

Sample Particulars: Pomegranate (Coated)

Page 1 of 2

Sample Registration Date : 19/12/2012
Analysis starting Date : 19/12/2012
Name of the Product : Pomegranate (Coated)
Quantity received : 06 pieces
Sample details : 14th Day (Room temperature)
Tests required : Chemical and Microbiological test.
SAMPLE TESTED AS RECEIVED
Analysis Completion Date: 24/12/2012
Reporting code: FS/CR/JSK;

TEST RESULTS

Sr. No	Test Parameters	Units of Measurement	Result	Limit of detection	Method of testing
Chemical Parameter					
1.	Average Weight at 14 th day	gm	382.12	-	Physical
2.	Average Juice Content	ml	94.0	-	Physical
3.	pH	-	3.62	-	IFS/C/STP/FC/015
4.	Total solids	%	17.7	-	IS:11623-2008
5.	Titrateable acidity	%	0.66	-	IFS/C/STP/FC/032
6.	Reducing sugar	%	17.62	-	IFS/C/STP/FC/020
7.	Decay	%	20.0	-	Visual
8.	External sensory evaluation				
8.1	Visual/ Appearance	-	6.6	-	Visual
8.2	Overall acceptability	-	6.8	-	Visual
9.	Internal sensory evaluation				
9.1	Taste	-	6.2	-	Organoleptic
9.2	Colour/ Appearance	-	6.0	-	Visual
9.3	Texture	-	6.6	-	Visual
9.4	Overall acceptability	-	6.6	-	Visual



Ar
Aruna Singh

(Authorized Signatory)



Valued Quality. Delivered.

Intertek India Pvt. Ltd. (Food Services)

NABL Accreditation No. T-2052(Chemical) & T- 2053 (Biological) Validity 18.08.13

No. 68, Udyog Vihar Phase - 1,
Gurgaon - 122016
Haryana, India.
Email : food.gurgaon@intertek.com
Telephone : 0124 - 4840600
Fax : 0124 - 4147881
www.intertek.com

TEST REPORT

Doc. No. IFS/DOC/003_01

ISSUED TO

Assocom-India Pvt. Ltd.
Flat No. 601, DDA Building District Center,
Plot No. 4, Laxmi Nagar, New Delhi – 110092

LAB REFERENCE No : IFS -121219002
Issue Date : 26/12/2012
Your Ref : Receipt
Dated : 05/12/2012

Kind Attn: Mr. Raj Kapoor

Sample Particulars: Pomegranate (Coated)

Page 2 of 2

Sample Registration Date : 19/12/2012	Analysis Completion Date: 24/12/2012
Analysis starting Date : 19/12/2012	
Name of the Product : Pomegranate (Coated)	
Quantity received : 06 pieces	
Sample details : 14 th Day (Room temperature)	
Tests required : Chemical and Microbiological test.	
SAMPLE TESTED AS RECEIVED	Reporting code: FS/CR/JSK;

TEST RESULTS

Sr. No	Test Parameters	Units of Measurement	Result	Limit of detection	Method of testing
Microbiological Parameter					
1.	TPC	cfu/gm	Not detected	10	IS:5402:2002
2.	Yeast & Mould	cfu/gm	Not detected	10	IS:5403:1999

*****END OF TEST REPORT*****



Shaik Tajuddin
(Authorized Signatory)



Valued Quality. Delivered.

Intertek India Pvt. Ltd. (Food Services)

NABL Accreditation No. T-2052(Chemical) & T- 2053 (Biological) Validity 18.08.13

No. 68, Udyog Vihar Phase - 1,
Gurgaon - 122016
Haryana, India.
Email : food.gurgaon@intertek.com
Telephone : 0124 - 4840600
Fax : 0124 - 4147881
www.intertek.com

TEST REPORT

Doc. No. IFS/DOC/003_01

ISSUED TO

Assocom-India Pvt. Ltd.
Flat No. 601, DDA Building District Center,
Plot No. 4, Laxmi Nagar, New Delhi – 110092

LAB REFERENCE No : IFS -121219003

Issue Date : 26/12/2012

Your Ref : Receipt

Dated : 05/12/2012

Kind Attn: Mr. Raj Kapoor

Sample Particulars: Pomegranate (Uncoated)

Page 1 of 2


Sample Registration Date : 19/12/2012	Analysis Completion Date: 24/12/2012
Analysis starting Date : 19/12/2012	
Name of the Product : Pomegranate (Uncoated)	
Quantity received : 06 pieces	
Sample details : 14 th Day (Cold Storage)	
Tests required : Chemical and Microbiological test.	
SAMPLE TESTED AS RECEIVED	Reporting code: FS/CR/JSK;

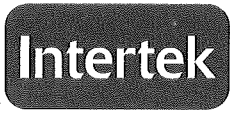
TEST RESULTS

Sr. No	Test Parameters	Units of Measurement	Result	Limit of detection	Method of testing
--------	-----------------	----------------------	--------	--------------------	-------------------

Chemical Parameter

1.	Average Weight at 14 th day	gm	329.55	-	Physical
2.	Average Juice Content	ml	76.7	-	Physical
3.	pH	-	3.57	-	IFS/C/STP/FC/015
4.	Total solids	%	17.4	-	IS:11623-2008
5.	Titrateable acidity	%	0.71	-	IFS/C/STP/FC/032
6.	Reducing sugar	%	15.79	-	IFS/C/STP/FC/020
7.	Decay	%	Nil	-	Visual
8.	External sensory evaluation				
8.1	Visual/ Appearance	-	6.6	-	Visual
8.2	Overall acceptability	-	6.8	-	Visual
9.	Internal sensory evaluation				
9.1	Taste	-	6.2	-	Organoleptic
9.2	Colour/ Appearance	-	6.0	-	Visual
9.3	Texture	-	6.6	-	Visual
9.4	Overall acceptability	-	6.6	-	Visual


Aruna Singh
(Authorized Signatory)



Valued Quality. Delivered.

Intertek India Pvt. Ltd. (Food Services)

NABL Accreditation No. T-2052(Chemical) & T- 2053 (Biological) Validity 18.08.13

No. 68, Udyog Vihar Phase - 1,
Gurgaon - 122016
Haryana, India.
Email : food.gurgaon@intertek.com
Telephone : 0124 - 4840600
Fax : 0124 - 4147881
www.intertek.com

TEST REPORT

Doc. No. IFS/DOC/003_01

ISSUED TO

Assocom-India Pvt. Ltd.
Flat No. 601, DDA Building District Center,
Plot No. 4, Laxmi Nagar, New Delhi – 110092

LAB REFERENCE No : IFS -121219003
Issue Date : 26/12/2012
Your Ref : Receipt
Dated : 05/12/2012

Kind Attn: Mr. Raj Kapoor

Sample Particulars: Pomegranate (Uncoated)


Page 2 of 2

Sample Registration Date : 19/12/2012
Analysis starting Date : 19/12/2012
Name of the Product : Pomegranate (Uncoated)
Quantity received : 06 pieces
Sample details : 14th Day (Cold Storage)
Tests required : Chemical and Microbiological test.
SAMPLE TESTED AS RECEIVED
Analysis Completion Date: 24/12/2012
Reporting code: FS/CR/JSK;

TEST RESULTS

Sr. No	Test Parameters	Units of Measurement	Result	Limit of detection	Method of testing
Microbiological Parameter					
1.	TPC	cfu/gm	Not detected	10	IS:5402:2002
2.	Yeast & Mould	cfu/gm	Not detected	10	IS:5403:1999

*****END OF TEST REPORT*****


Shaik Tajuddin
(Authorized Signatory)



Valued Quality. Delivered.

Intertek India Pvt. Ltd. (Food Services)

NABL Accreditation No. T-2052(Chemical) & T- 2053 (Biological) Validity 18.08.13

No. 68, Udyog Vihar Phase - 1,
Gurgaon - 122016
Haryana, India.
Email : food.gurgaon@intertek.com
Telephone : 0124 - 4840600
Fax : 0124 - 4147881
www.intertek.com

TEST REPORT

Doc. No. IFS/DOC/003_01

ISSUED TO

Assocom-India Pvt. Ltd.
Flat No. 601, DDA Building District Center,
Plot No. 4, Laxmi Nagar, New Delhi – 110092

LAB REFERENCE No : IFS -121219004

Issue Date : 26/12/2012

Your Ref : Receipt

Dated : 05/12/2012

Kind Attn: Mr. Raj Kapoor


Sample Particulars: Pomegranate (Coated)

Page 1 of 2

Sample Registration Date : 19/12/2012	Analysis Completion Date: 24/12/2012
Analysis starting Date : 19/12/2012	
Name of the Product : Pomegranate (Coated)	
Quantity received : 06 pieces	
Sample details : 14 th Day (Cold Storage)	
Tests required : Chemical and Microbiological test.	
SAMPLE TESTED AS RECEIVED	Reporting code: FS/CR/JSK;

TEST RESULTS

Sr. No	Test Parameters	Units of Measurement	Result	Limit of detection	Method of testing
Chemical Parameter					
1.	Average Weight at 14 th day	gm	303.23	-	Physical
2.	Average Juice Content	ml	62.7	-	Physical
3.	pH	-	3.54	-	IFS/C/STP/FC/015
4.	Total solids	%	17.3	-	IS:11623-2008
5.	Titrateable acidity	%	0.73	-	IFS/C/STP/FC/032
6.	Reducing sugar	%	16.09	-	IFS/C/STP/FC/020
7.	Decay	%	Nil	-	Visual
8.	External sensory evaluation				
8.1	Visual/ Appearance	-	6.4	-	Visual
8.2	Overall acceptability	-	7.0	-	Visual
9.	Internal sensory evaluation				
9.1	Taste	-	6.2	-	Organoleptic
9.2	Colour/ Appearance	-	6.4	-	Visual
9.3	Texture	-	6.6	-	Visual
9.4	Overall acceptability	-	7.0	-	Visual


 Aruna Singh
 (Authorized Signatory)



Valued Quality. Delivered.

Intertek India Pvt. Ltd. (Food Services)

NABL Accreditation No. T-2052(Chemical) & T- 2053 (Biological) Validity 18.08.13

No. 68, Udyog Vihar Phase - 1,
Gurgaon - 122016
Haryana, India.
Email : food.gurgaon@intertek.com
Telephone : 0124 - 4840600
Fax : 0124 - 4147881
www.intertek.com

Doc. No. IFS/DOC/003_01

TEST REPORT

ISSUED TO

Assocom-India Pvt. Ltd.
Flat No. 601, DDA Building District Center,
Plot No. 4, Laxmi Nagar, New Delhi – 110092

LAB REFERENCE No : IFS -121219004
Issue Date : 26/12/2012
Your Ref : Receipt
Dated : 05/12/2012

Kind Attn: Mr. Raj Kapoor

Sample Particulars: Pomegranate (Coated)

Page 2 of 2

Sample Registration Date : 19/12/2012
Analysis starting Date : 19/12/2012
Name of the Product : Pomegranate (Coated)
Quantity received : 06 pieces
Sample details : 14th Day (Cold Storage)
Tests required : Chemical and Microbiological test.
SAMPLE TESTED AS RECEIVED
Analysis Completion Date: 24/12/2012
Reporting code: FS/CR/JSK;

TEST RESULTS

Sr. No	Test Parameters	Units of Measurement	Result	Limit of detection	Method of testing
Microbiological Parameter					
1.	TPC	cfu/gm	Not detected	10	IS:5402:2002
2.	Yeast & Mould	cfu/gm	Not detected	10	IS:5403:1999

*****END OF TEST REPORT*****

Shaik Tajuddin
(Authorized Signatory)