

Commodity Profiles

Commodity	Maximum Transit & Shelf Life (Days)	Optimum Transit Temperature	Highest Freezing Point	Recommended Container Temperature Setpoint	Air Exchange (cfm) ¹	Relative Humidity (%) ²	Ethylene Production Rate ³	Sensitivity To Ethylene Action ⁴	Benefits from Modified/ Controlled Atmosphere ⁵
		°F	°F	°F					
Fresh Fruits & Vegetables									
Acerola	50-58	32		32-35	M	85-90			
Amaranth	10-14	32		32-35	L	95-100	VL	M	
Anise	14-21	32		32-35	L	90-95			
Apple (non-chilling sensitive)	90-240	30	29.3	32-35	H	90-95	VH	H	YES
Apple (chilling sensitive)	40-45	40	29.3	40-42	H	90-95	VH	H	YES
Apricot	7-14	31	30.1	31-35	H	90-95	H	H	YES
Artichoke, Globe	10-16	32	29.9	32-34	M	90-95	VL	L	YES
Artichoke, Jerusalem	100-150	32	27.5	32-34	L	90-95	VL	L	YES
Asian Pear	150-180	34	29.2	34-36	H	90-95	H	H	YES
Asparagus	14-21	35	30.9	32-35	H	90-95	VL	M	YES
Atemoya	28-42	55		55-58	M	85-90			YES
Avocado (California)	14-28	38	31.5	38-40	H	85-90	H	H	YES
Avocado (Tropical)	14-28	50	31.5	45-55	H	85-90	H	H	YES
Babaco	7-21	45		45-48	M	85-90			
Baby Corn	4-8	32	30.9	32-35	M	90-95	L	L	
Banana	7-28	58	30.6	56-58	H	90-95	M	H	YES
Barbados Cherry	49-56	32		32-34	M	85-90			
Bean Sprouts	49-63	32	31.3	32-34	N	95-100			
Beans, Lima	7-10	32	31.0	32-34	H	90-95	L	M	YES
Beans, Snap or Green	10-14	45	30.7	41-45	H	90-95	L	M	YES
Beets (bunch)	10-14	32	31.3	32-34	L	90-95	VL	L	
Beets (roots)	90-150	32	30.3	32-34	L	95-100	VL	L	
Belgian Endive	14-28	36		36-38	M	95-98	VL	M	
Berries: Blackberry	2-3	31	30.6	32-34	L	90-95	L	L	YES
Blueberry	10-18	31	29.7	32-34	L	90-95	L	L	YES
Cranberry	60-120	36	30.4	36-40	L	90-95	L	L	YES
Currants	7-14	31	30.2	32-34	L	90-95	L	L	
Dewberry	2-3	31	29.7	32-34	L	90-95	L	L	
Elderberry	5-14	31	30.0	32-34	L	90-95	L	L	
Gooseberry	14-28	31	30.0	32-34	L	90-95	L	L	YES
Loganberry	2-3	31	29.7	32-34	L	90-95	L	L	
Raspberry	2-3	31	30.4	32-34	L	90-95	L	L	YES
Strawberry	5-10	31	30.6	32-34	M	90-95	L	L	YES
Bitter Gourd (Bitter Melon)	14-21	53		53-55	L	85-90	L	L	
Black Radish	60-120	32	30.7	32-34	M	90-95	L	N	
Black Sapote	14-21	55		55-60	M	85-90			
Blood Orange	21-56	40		40-44	H	90-95			
Bok Choy	21	32		32-34	H	95-100			

1 Introduction of fresh air into the container during transit to prevent accumulation of ethylene, CO₂, or other gases.

- N** = Vents Closed (0 cfm = 0 cmh)
- L** = Low (15 cfm = 25 cmh)
- M** = Medium (20 cfm = 34 cmh)
- H** = High (45 cfm = 76 cmh)
- VH** = Very High (150 cfm = 255 cmh)

2 Operation of FreshMist advanced humidity control system may require special temperature settings.

- 3 N** = None
- VL** = Very Low (<0.1 µl [microliter] C₂H₄/Kg-hr)
- L** = Low (0.1 - 1.0 µl [microliter] C₂H₄/Kg-hr)
- M** = Moderate (1.0 - 10.0 µl [microliter] C₂H₄/Kg-hr)
- H** = High (10 - 100 µl [microliter] C₂H₄/Kg-hr)
- VH** = Very High (>100 µl [microliter] C₂H₄/Kg-hr)

4 Sensitivity to detrimental effects of ethylene; relative sensitivity is less when low O₂MA/CA is used.

- N** = None
- L** = Low Sensitivity
- M** = Moderately Sensitive
- H** = Highly Sensitive

5 Degree of benefit varies depending on cultivar, temperature, growing conditions, product maturity and transit time.

Initially developed through a grant with University of California at Davis.



www.horizon-lines.com

Commodity Profiles

Commodity	Maximum Transit & Shelf Life (Days)	Optimum Transit Temperature	Highest Freezing Point	Recommended Container Temperature Setpoint	Air Exchange (cfm) ¹	Relative Humidity (%) ²	Ethylene Production Rate ³	Sensitivity To Ethylene Action ⁴	Benefits from Modified/Controlled Atmosphere ⁵
		°F	°F	°F					
Boniato	20-150	55		55-60	H	85-90			
Breadfruit	14-40	56		56-58	H	85-90	M	M	
Broccoli	10-14	32	30.9	32-34	M	90-95	VL	H	YES
Brussel Sprouts	21-35	32	30.5	32-34	H	90-95	VL	H	YES
Cabbage, Chinese	30-60	32	30.4	32-34	H	95-100	VL	H	
Cabbage (green, red, savoy)	90-180	32	30.4	32-34	H	95-100	VL	H	YES
Cabbage (white)	90-180	32	29.5	32-34	H	95-100	VL	H	
Cactus Pears	21	36		36-40	M	90-95			
Caimito	21	38		38	H	90			
Calabaza	60-90	50		50-55	H	50-70			
Calamondin	14	48		48-50	H	90			
Canistel	21	55		55-60	H	85-90			
Cantaloupe	10-14	38	29.9	36-41	H	85-90	H	M	YES
Cape Gooseberry	30-60	54		54-59	M	80	L	L	
Carambola (Star Fruit)	21-28	48		48-50	M	90-95	L	L	
Carrots, topped	28-180	32	29.5	32-34	L	95-100	VL	L	YES
Casaba Melon	21-28	50	30.1	45-50	H	85-90	L	L	YES
Cashew Apple	35	32		32-34	M	85-90			
Cassava	14-21	56		56-58	L	85-90	VL		YES
Cauliflower	20-30	32	30.6	32-34	H	90-95	VL	H	YES
Celeriac	180-240	32	30.3	32-34	L	95-100	VL	L	YES
Celery	14-28	32	31.1	32-34	H	90-95	VL	M	YES
Chantarelle	14	32		32-36	N	85-90	VL	N	
Chard	10-14	32	31.9	32-34	H	95-100	VL	H	
Chayote	8-10	45	31.0	45-50	H	85-90			
Cherimoya	14-28	55		55	H	90-95	VH	H	YES
Cherry, Sour	3-7	31	29.0	31-33	-L	90-95	VL	L	YES
Cherry, Sweet	14-21	30	28.8	30-33	L	90-95	VL	L	YES
Chicory	14-28	32		32-34	H	95-100	VL	H	YES
Chili (Pepper)	14-21	46	30.7	45-50	M	90-95	L	L	YES
Chinese Artichoke	7-14	32		32-34	N	90-95	N	N	
Chinese Cabbage	60-90	32		32	H	95-100	VL	M	
Chinese Gooseberry	28-84	32	30.4	32-34	N	90-95	L	H	YES
Clementine	14-28	40		38-40	L	90-95	L	N	
Coconut	30-60	32	30.4	32-34	N	80-85	L	L	
Collards	10-14	32	30.6	32-34	H	90-95	VL	M	
Corn, Sweet	4-6	32	30.9	32-34	L	90-95	VL	L	YES
Courgette (Zucchini)	14-21	45	31.1	45-50	M	90-95	L	M	YES
Crenshaw Melon	21-28	50	30.1	45-50	H	85-90	M	H	YES
Cucumbers	10-14	50	30.1	50-52	H	90-95	L	H	YES
Custard Apple (Sweetsop)	28-42	41		41-45	M	85-90			YES

1 Introduction of fresh air into the container during transit to prevent accumulation of ethylene, CO₂, or other gases.

- N** = Vents Closed (0 cfm = 0 cmh)
- L** = Low (15 cfm = 25 cmh)
- M** = Medium (20 cfm = 34 cmh)
- H** = High (45 cfm = 76 cmh)
- VH** = Very High (150 cfm = 255 cmh)

2 Operation of FreshMist advanced humidity control system may require special temperature settings.

- 3 N** = None
- VL** = Very Low (<0.1 µl [microliter] C₂H₄/Kg-hr)
- L** = Low (0.1 - 1.0 µl [microliter] C₂H₄/Kg-hr)
- M** = Moderate (1.0 - 10.0 µl [microliter] C₂H₄/Kg-hr)
- H** = High (10 - 100 µl [microliter] C₂H₄/Kg-hr)
- VH** = Very High (>100 µl [microliter] C₂H₄/Kg-hr)

4 Sensitivity to detrimental effects of ethylene; relative sensitivity is less when low O₂/MA/CA is used.

- N** = None
- L** = Low Sensitivity
- M** = Moderately Sensitive
- H** = Highly Sensitive

5 Degree of benefit varies depending on cultivar, temperature, growing conditions, product maturity and transit time.

Initially developed through a grant with University of California at Davis.



www.horizonlines.com

Commodity Profiles

Commodity	Maximum Transit & Shelf Life (Days)	Optimum Transit Temperature	Highest Freezing Point	Recommended Container Temperature Setpoint	Air Exchange (cfm) ¹	Relative Humidity (%) ²	Ethylene Production Rate ³	Sensitivity To Ethylene Action ⁴	Benefits from Modified/ Controlled Atmosphere ⁵
		°F	°F	°F					
Daikon	120	32		32-34	N	95-100			
Dasheen or Taro	42-140	56		52-56	L	85-90	VL	L	YES
Dates	165-365	32		32-34	L	70-75	VL	L	
Durian	42-56	39		39-42	M	85-90			YES
Eggplant	10-14	50	30.6	50-54	L	90-95	L	L	YES
Endive (Escarole)	14-21	32	31.9	32-34	M	95-100	VL	M	
Feijoa (Pineapple Guava)	14-21	41		41-50	M	90	M	L	
Fennel	14-28	32		32-34	N	90-95	N	N	
Figs	7-10	32	27.6	32-34	M	85-90	M	L	YES
Garlic	140-210	32	30.5	32-34	L	65-70	VL	L	YES
Ginger	90-180	55		55-56	L	65-70	VL	L	YES
Granadilla	21-28	50		50	H	85-90			
Grapefruit (CA & AZ)	28-42	56	30.0	50-60	H	85-95	VL	M	YES
Grapefruit (FL & TX)	28-42	56	30.0	50-60	H	85-95	V	M	YES
Grapefruit (Mexico)	28-42	56	30.0	56-60	H	85-95	VL	M	YES
Grapes	56-180	30	28.1	31-33	L	90-95	VL	L	YES
"Greens, Leafy"	10-14	32	31.7	32-34	H	95-100	VL	H	YES
Guava	14-21	50		48-50	M	85-90	L	M	
Haricot Vert	7-10	40		40-45	M	95			
Honeydew Melon (untreated)	21-28	50	30.3	46-50	H	85-90	M	H	YES
Honeydew Melon (C ₂ H ₄ treated)	21-28	50	30.9	36-38	H	85-90	M	M	YES
Horseradish	300-350	32	28.7	32-34	L	95-100	VL	L	YES
Jaboticaba	2-3	55		55-60	H	90-95			
Jackfruit	14-45	56		54-56	H	85-90	M		
Jaffa Orange	56-84	46		46-50	H	85-90			
Japanese Eggplant	7	46		46-54	H	90-95			
Jerusalem Artichoke	100-150	32	27.5	32-34	L	90-95	VL	L	YES
Jicama	30-60	55		55-65	H	65-70			
Kaki (Persimmon)	60-90	32	28.1	31-33	H	90-95	L	H	
Kale	10-14	32	31.1	32-34	M	95-100	VL	M	
Kiwano	180	50		50-60	H	90			
Kiwifruit (Chinese Gooseberry)	28-84	32	30.4	32-34	H	90-95	L	H	YES
Kohlrabi	25-30	32	30.2	32-34	L	95-100	VL	L	YES
Kumquat	14-28	40		40	M	90-95	L	N	
Langsat	14	52		52-58	H	85-90	VL	M	
Leeks	60-90	32	30.7	32-34	M	95-100	VL	M	YES
Lemon	30-180	54	29.4	50-55	H	85-90	VL	M	YES
Lettuce (butterhead)	8-12	32		32-34	H	90-95	L	M	YES
Lettuce (head)	14-21	32	31.7	32-34	H	95-100	VL	H	YES
Lettuce (iceberg)	9-14	32		32-34	H	90-95	VL	H	YES
Lime (Persian, Tahiti)	21-35	54	29.1	52-55	H	85-90	VL	M	YES

1 Introduction of fresh air into the container during transit to prevent accumulation of ethylene, CO₂, or other gases.

N = Vents Closed (0 cfm = 0 cmh)
L = Low (15 cfm = 25 cmh)
M = Medium (20 cfm = 34 cmh)
H = High (45 cfm = 76 cmh)
VH = Very High (150 cfm = 255 cmh)

2 Operation of FreshMist advanced humidity control system may require special temperature settings.

3 **N** = None
VL = Very Low (<0.1 µl [microliter] C₂H₄/Kg-hr)
L = Low (0.1 - 1.0 µl [microliter] C₂H₄/Kg-hr)
M = Moderate (1.0 - 10.0 µl [microliter] C₂H₄/Kg-hr)
H = High (10 - 100 µl [microliter] C₂H₄/Kg-hr)
VH = Very High (>100 µl [microliter] C₂H₄/Kg-hr)

4 Sensitivity to detrimental effects of ethylene; relative sensitivity is less when low O₂MA/CA is used.

N = None
L = Low Sensitivity
M = Moderately Sensitive
H = Highly Sensitive

5 Degree of benefit varies depending on cultivar, temperature, growing conditions, product maturity and transit time.

Initially developed through a grant with University of California at Davis.



www.horizonlines.com

Commodity Profiles

Commodity	Maximum Transit & Shelf Life (Days)	Optimum Transit Temperature	Highest Freezing Point	Recommended Container Temperature Setpoint	Air Exchange (cfm) ¹	Relative Humidity (%) ²	Ethylene Production Rate ³	Sensitivity To Ethylene Action ⁴	Benefits from Modified/ Controlled Atmosphere ⁵
		°F	°F	°F					
Lime (Mexican, Key)	42-56	54	29.1	52-55	H	85-90	VL	M	YES
Limequat	21-28	50		50	H	90-95	L	N	
Lo Bok	60-120	32		32-34	H	95-100			
Longan	21-35	35		35	M	90-95			
Loquat	14-21	32		32	M	90			
Lychee	21-35	41		35-50	M	90-95	M	M	YES
Malanga	90	45		45	N	70-80			
Mandarine	14-28	45	30.1	44-46	H	85-90	VL	M	
Maney	14-42	55		55-60	H	90-95			
Mango	14-25	56	30.4	54-56	H	85-90	M	H	YES
Mangosteen	14-25	56		54-56	H	85-90	M	H	
Manico (Yuca)	150-180	32		32-36	N	85-90	N	N	
Mineola	21-35	38		39-44	M	90-95	VL	M	
Mushrooms	12-17	32	30.4	32-34	M	90-95	VL	M	YES
Nectarine	14-28	31		31-32	H	90-95			YES
Okra	7-14	50	28.7	47-50	M	90-95	L	M	YES
Olive	28-42	45	29.4	44-46	H	85-90	L	M	YES
Onions (dry)	30-180	32	30.6	32-34	M	65-75	VL	M	YES
Onions (green)	7-10	32	30.4	32-34	M	95-100	VL	L	YES
Orange (CA & AZ)	21-56	45	30.6	40-45	H	85-90	VL	M	YES
Orange (FL & TX)	56-84	36	30.6	34-36	H	85-90	VL	M	YES
Pak Choi	30-40	32		32-34	H	90-95	N	N	
Papaya	7-21	54	30.4	53-55	H	85-90	H		YES
Paprika	12-18	50	30.7	45-50	M	90-95	L	L	YES
Parsley	30-60	32	30.0	32-34	H	95-100	VL	H	YES
Parsnip	120-150	32	30.4	32-34	L	95-100	VL	L	YES
Passion Fruit	14-21	54		53-55	H	90-95	VH	H	
Peach	14-28	31	30.3	32-34	H	90-95	H	H	YES
Pear (Anjou)	120-180	30	29.2	31-34	H	90-95	H	H	YES
Pear (Bosc, Bartlett)	60-90	30	29.2	31-34	H	90-95	H	H	YES
Peas	7-10	32	30.9	32-34	H	90-95	VL	M	
Pepino	30	40		40-42	M	85-90			
Pepper, Bell (Sweet)	12-18	50	30.7	45-50	M	90-95	L	L	YES
Peppers, Chili	14-21	50	30.7	45-50	M	90-95	L	L	YES
Persian Melon	14-21	50	30.6	46-50	H	85-90	M	H	YES
Persimmon (Fuyu)	35-84	50	28.1	48-50	H	90-95	L	H	YES
Persimmon (Hachiya)	50-90	41	28.1	40-45	H	90-95	L	H	YES
Pineapple	14-36	50	30.0	45-50	L	85-90	L	L	YES
Pineapple Guava (Feijoa)	14-21	41		41-50	M	90-95	M	L	
Plantain	10-35	58	30.6	54-58	H	85-90	L		YES
Plum & Prune	14-28	31	30.5	32-34	H	90-95	M	H	YES

1 Introduction of fresh air into the container during transit to prevent accumulation of ethylene, CO₂, or other gases.

N = Vents Closed (0 cfm = 0 cmh)
L = Low (15 cfm = 25 cmh)
M = Medium (20 cfm = 34 cmh)
H = High (45 cfm = 76 cmh)
VH = Very High (150 cfm = 255 cmh)

2 Operation of FreshMist advanced humidity control system may require special temperature settings.

3 **N** = None
VL = Very Low (<0.1 µl [microliter] C₂H₄/Kg-hr)
L = Low (0.1 - 1.0 µl [microliter] C₂H₄/Kg-hr)
M = Moderate (1.0 - 10.0 µl [microliter] C₂H₄/Kg-hr)
H = High (10 - 100 µl [microliter] C₂H₄/Kg-hr)
VH = Very High (>100 µl [microliter] C₂H₄/Kg-hr)

4 Sensitivity to detrimental effects of ethylene; relative sensitivity is less when low O₂MA/CA is used.

N = None
L = Low Sensitivity
M = Moderately Sensitive
H = Highly Sensitive

5 Degree of benefit varies depending on cultivar, temperature, growing conditions, product maturity and transit time.

Initially developed through a grant with University of California at Davis.



www.horizonlines.com

Commodity Profiles

Commodity	Maximum Transit & Shelf Life (Days)	Optimum Transit Temperature	Highest Freezing Point	Recommended Container Temperature Setpoint	Air Exchange (cfm) ¹	Relative Humidity (%) ²	Ethylene Production Rate ³	Sensitivity To Ethylene Action ⁴	Benefits from Modified/ Controlled Atmosphere ⁵
		°F	°F	°F					
Pomegranate	28-56	41	27.6	40-44	L	90-95	L	L	YES
Potato, processing	56-175	50	30.5	48-52	M	90-95	VL	M	YES
Potato, seed	84-175	40	30.5	38-41	M	90-95	VL	M	YES
Potato, table	56-140	45	30.5	45-46	M	90-95	VL	M	YES
Prickly Pear	21-28	41		40-45	M	90-95	N	L	
Pummelo	84	45		45-48	M	85-90			
Pumpkin	84-160	54	30.5	50-65	L	70-75	L	L	YES
Quince	60-90	31	28.4	32-34	H	90-95	L	H	
Raddichio	14-21	32		32-34	N	95-100			
Radish	21-28	32	30.7	32-34	L	95-100	VL	L	YES
Red Beet	120-180	37		37-39	L	95-98	VL	L	
Red Whortleberry (cowberry)	21-280	32		32-34	N	90-95	N	N	
Rambutan	7-21	54		50-54	H	85-90	H	H	YES
Rhubarb	14-21	32	30.3	32-34	L	95-100	VL	L	
Rutabaga	60-120	32	30.1	32-34	L	95-100	VL	L	YES
Salsify	60-120	32	30.1	32-34	L	95-100	VL	L	YES
Sapodilla	14-21	60		60-68	H	85-90			YES
Sapota	14-21	54		54-56	H	85-90	VH	H	
Satsumas	56-84	39		37-39	M	85-90	L	N	
Scorzonera	180	32		32-34	N	95-98	N	N	
Seville Orange (Sour Orange)	90	50		50-54	M	85-90	L	N	
Snow Pea	7-14	32		32-34	M	90-95			
Spinach	10-14	32	31.5	32-34	H	95-100	VL	H	YES
Squash, soft skin (summer)	7-14	50	31.1	49-51	M	90-95	L	M	YES
Squash, hard skin (winter)	84-150	54	30.5	52-56	L	70-75	L	L	YES
Star Fruit	21-28	48		48-50	M	85-90	L	L	
Sugar Apple	28	45		45-47	H	85-90			YES
Sugar Pea (Snow Pea)	7-14	32		32-34	M	90-95			
Summer Squash	14-21	45		45-50	M	90-95	L	M	YES
Swede (Rhutabaga)	60-120	32	30.1	32-34	L	95-100	VL	L	YES
Sweet Corn	4-6	32	30.9	32-34	L	90-95	VL	L	YES
Sweet Pepper (Bell Pepper)	12-18	50	30.7	45-50	M	90-95	L	L	YES
Sweet Potato	90-180	56	29.7	55-58	L	85-90	VL	L	YES
Tamarillo	28-42	32		32-34	M	90-95	L	M	
Tamarind	21-28	45		44-46	H	90-95			
Tangerine	14-28	45	30.1	44-46	H	85-90	VL	M	
Taro Root	120-150	45		45-50	N	85-90	N	N	
Tomatillos	21	55		55-60	H	85-90			
Tomato, mature-green	21-28	56	31	55-58	H	90-95	VL	H	YES
Tomato, breaker to light pink	7-14	50	31	50-52	H	90-95	M	H	YES
Tree-Tomato	21-70	39		37-39	H	85-90	H	M	

1 Introduction of fresh air into the container during transit to prevent accumulation of ethylene, CO₂, or other gases.

N = Vents Closed (0 cfm = 0 cmh)

L = Low (15 cfm = 25 cmh)

M = Medium (20 cfm = 34 cmh)

H = High (45 cfm = 76 cmh)

VH = Very High (150 cfm = 255 cmh)

2 Operation of FreshMist advanced humidity control system may require special temperature settings.

3 N = None

VL = Very Low (<0.1 µl [microliter] C₂H₄/Kg-hr)

L = Low (0.1 - 1.0 µl [microliter] C₂H₄/Kg-hr)

M = Moderate (1.0 - 10.0 µl [microliter] C₂H₄/Kg-hr)

H = High (10 - 100 µl [microliter] C₂H₄/Kg-hr)

VH = Very High (>100 µl [microliter] C₂H₄/Kg-hr)

4 Sensitivity to detrimental effects of ethylene; relative sensitivity is less when low O₂MA/CA is used.

N = None

L = Low Sensitivity

M = Moderately Sensitive

H = Highly Sensitive

5 Degree of benefit varies depending on cultivar, temperature, growing conditions, product maturity and transit time.

Initially developed through a grant with University of California at Davis.



www.horizonlines.com

Commodity Profiles

Commodity	Maximum Transit & Shelf Life (Days)	Optimum Transit Temperature	Highest Freezing Point	Recommended Container Temperature Setpoint	Air Exchange (cfm) ¹	Relative Humidity (%) ²	Ethylene Production Rate ³	Sensitivity To Ethylene Action ⁴	Benefits from Modified/Controlled Atmosphere ⁵
		°F	°F	°F					
Tumip, roots	60-120	32	30.1	32-34	L	95-100	VL	L	YES
Tumip, greens	10-14	32	31.5	32-34	H	95-100	VL	H	
Ugli Fruit	14-21	40	30.1	40-45	H	90-95	L	N	
Water Chestnut	100-128	40		40-45	L	85-90			
Watercress	4-7	32	31.5	32-34	H	95-100	VL	H	
Watermelon	14-21	50	30.9	45-50	L	85-90	L	L	YES
White Asparagus	14-21	32		32-34	H	95-100			
White Radish	120	32		32-34	N	90-95	N	N	
White Sapote	14-21	67		67-70	H	85-90			
Winged Bean	28	50		50-55	N	90			
Yam	50-115	56	30	56-60	L	85-90	VL	L	YES
Yucca Root	10-14	50		50-55	N	90-95	VL		
Zucchini Squash	14-21	45	31.1	45-50	H	90-95	N	N	
FRESH MEAT									
Beef, lamb, pork, poultry, veal	14-28	29	28.4	30-32	N	85-95	N	N	YES
PROCESSED MEAT									
Bacon, slab	21-28	29	28.4	32-34	N	85-95	N	N	YES
Bacon, sliced	21-28	29	28.4	32-34	N	85-95	N	N	YES
Bologna, franks	21-28	29	28.4	32-34	N	85-95	N	N	YES
Braunschweilerger	21-28	29	28.4	32-34	N	85-95	N	N	YES
Cold Cuts, sliced	21-28	29	28.4	32-34	N	85-95	N	N	YES
Dried Beef, sliced	21-28	41	28.4	41	N	85-95	N	N	YES
Hams: baked, boiled, Ready-to-eat	21-28	29	28.4	32-34	N	85-95	N	N	YES
Hams, smoked	21-28	29	28.4	32-34	N	85-95	N	N	YES
Liver Sausage, liver loaves	21-28	29	28.4	32-34	N	85-95	N	N	YES
Pork Sausage	21-28	29	28.4	32-34	N	85-95	N	N	YES
Sausage, Country and Polish	21-28	29	28.4	32-34	N	85-95	N	N	YES
DAIRY PRODUCTS & CHEESE									
Cheese: Natural (Brick, Cheddar, Camembert)		30-34	28.4	32-34	N	70-80	N	N	
Cheese: Cottage, Cream, Neufchatel		32-34	28.4	32-34	N	70-80	N	N	
Cheese: Process (American, Brick, Limburger)		38-45	28.4	45	N	70-80	N	N	
Roquefort (Natural)		30-34	28.4	32-34	N	70-80	N	N	
Swiss (Natural)		30-34	28.4	32-34	N	70-80	N	N	
Cheese Foods		40-45	28.4	45	N	70-80	N	N	
Butter: Fresh		38-42	28.4	32-34	N	70-80	N	N	
Frozen		-5		-5	N	70-80	N	N	
Margarine		35		35	N	70-80	N	N	

1 Introduction of fresh air into the container during transit to prevent accumulation of ethylene, CO₂, or other gases.

- N** = Vents Closed (0 cfm = 0 cmh)
- L** = Low (15 cfm = 25 cmh)
- M** = Medium (20 cfm = 34 cmh)
- H** = High (45 cfm = 76 cmh)
- VH** = Very High (150 cfm = 255 cmh)

2 Operation of FreshMist advanced humidity control system may require special temperature settings.

- 3 N** = None
- VL** = Very Low (<0.1 µl [microliter] C₂H₄/Kg-hr)
- L** = Low (0.1 - 1.0 µl [microliter] C₂H₄/Kg-hr)
- M** = Moderate (1.0 - 10.0 µl [microliter] C₂H₄/Kg-hr)
- H** = High (10 - 100 µl [microliter] C₂H₄/Kg-hr)
- VH** = Very High (>100 µl [microliter] C₂H₄/Kg-hr)

4 Sensitivity to detrimental effects of ethylene; relative sensitivity is less when low O₂MA/CA is used.

- N** = None
- L** = Low Sensitivity
- M** = Moderately Sensitive
- H** = Highly Sensitive

5 Degree of benefit varies depending on cultivar, temperature, growing conditions, product maturity and transit time.

Initially developed through a grant with University of California at Davis.



www.horizonlines.com

Commodity Profiles

Commodity	Maximum Transit & Shelf Life (Days)	Optimum Transit Temperature	Highest Freezing Point	Recommended Container Temperature Setpoint	Air Exchange (cfm) ¹	Relative Humidity (%) ²	Ethylene Production Rate ³	Sensitivity To Ethylene Action ⁴	Benefits from Modified/ Controlled Atmosphere ⁵
		°F	°F	°F					
Ice Cream		-15		-15	N	70-80	N	N	
Milk		32		32-34	N	70-80	N	N	
POULTRY AND EGGS									
Poultry: Fresh, ice-packed	14-28	33	27	30-32	N	85-95	N	N	
Fresh, chilled	14-28	29	27	30-32	N	85-95	N	N	
Eggs	180	33-38	31	34-38	N		N	N	
FROZEN FISH									
Fatty (Atlantic Halibut, Herring, Mackerel, Carp, Mullet, Salmon, Sardines, Shad, Shark, Snapper, Sturgeon, Tuna)	120-140	-10 to-5		-10 to-5	N		N	N	
Lean (Cod, Flounder, Fluke, Haddock, Pacific Halibut, Perch, Pike, Pollock, Whitting)	240-300	-10 to-5		-10 to-5	N		N	N	
Shrimp, Scallops	120-360	-10 to-5		-10 to-5	N		N	N	
Crab, Lobster	120-360	-10 to-5		-10 to-5	N		N	N	
FROZEN MEAT									
Beef, Lamb, Pork, Poultry, Veal		-5		-5	N		N	N	
FROZEN VEGETABLES AND FRUITS									
		-10		-10	N		N	N	
LIVE PLANTS									
Cut Flowers:									
Carnations	21-28	32	30.8	34-36	H	90-95	VL	H	
Chrysanthemums	21-28	32	30.8	34-36	H	90-95	VL	H	
Gladioli	42-56	36	31.4	36-50	H	90-95	VL	H	
Roses	4-14	32	31.2	34-40	H	90-95	VL	H	
Potted plants	14-360	27-65		34-65	H	90-95	VL	H	
Nursery stock (cuttings, transplants)	21-180	30-40		31-40	H	90-95	VL	H	
Christmas Trees		32		34	N	90-95	N	N	
Flowering bulbs:									
Bulbs	60-360	45-59	30	28-60	VH	65-75	VL		
Corns	60-360	45-59	30	28-60	VH	65-75	VL	H	
Rhizomes	60-360	45-59	30	28-60	VH	65-75	VL	H	
Tubers	60-360	45-59	30	28-60	VH	65-75	VL	H	
MISCELLANEOUS									
Batteries		45		45	N		N	N	
Candy	60	30	60	N		N	N		
Dried Fruits & Vegetables	360	32		32-34	N	60-70	VL	L	
Film/photographic paper, Chemicals and Pharmaceuticals		50		50	N		N	N	YES
Resins/chemicals		0-45		0-45	N		N	N	
Tree Nuts, unshelled	0-720	32		32-34	L	60-70	VL	L	YES

1 Introduction of fresh air into the container during transit to prevent accumulation of ethylene, CO₂, or other gases.

- N** = Vents Closed (0 cfm = 0 cmh)
- L** = Low (15 cfm = 25 cmh)
- M** = Medium (20 cfm = 34 cmh)
- H** = High (45 cfm = 76 cmh)
- VH** = Very High (150 cfm = 255 cmh)

2 Operation of FreshMist advanced humidity control system may require special temperature settings.

- 3 N** = None
- VL** = Very Low (<0.1 µl [microliter] C₂H₄/Kg-hr)
- L** = Low (0.1 - 1.0 µl [microliter] C₂H₄/Kg-hr)
- M** = Moderate (1.0 - 10.0 µl [microliter] C₂H₄/Kg-hr)
- H** = High (10 - 100 µl [microliter] C₂H₄/Kg-hr)
- VH** = Very High (>100 µl [microliter] C₂H₄/Kg-hr)

4 Sensitivity to detrimental effects of ethylene; relative sensitivity is less when low O₂MA/CA is used.

- N** = None
- L** = Low Sensitivity
- M** = Moderately Sensitive
- H** = Highly Sensitive

5 Degree of benefit varies depending on cultivar, temperature, growing conditions, product maturity and transit time.

Initially developed through a grant with University of California at Davis.



www.horizonlines.com