

Optimal Fresh

The fruit, vegetable and fresh produce expert system



Detailed Report Printed on Wednesday, 19 December 2001

Crop grape
Maturity stage General
Category Fruit
Plant Part Fruit
Usage Dried, Fresh/ Raw, Juice/ Drink, Wine/ Cider
Botanical name *Vitis vinifera* L.
Botanical family Vitaceae



Picture source: Sydney Postharvest Laboratory, 1999

Alternate names include

(C) pu tao (G) Weintraube (J-R) gureepu
 (E) grape (J-K) 8^ZOL (S) uva de mesa
 (F) raisin (J-K) L^D^3
 (G) Tafeltrabe (J-R) budou

Refrigerated Container/Coolroom Recommendations

Optimum product storage temperature	-0.5 to 0.0°C
Temperature set point Add a margin for uncertainty in equipment performance if necessary. For return air control set point add 1°C to delivery set point.	-0.5°C
Ventilation (air exchange) settings for containers:	
6 m (20') =	10 m ³ /h = 5 cfm
12 m (40') =	15 m ³ /h = 10 cfm
Acceptable product temperature at loading into container	-1.0 to 4.0°C

Key Properties

Storage time (days)†	Humidity (% RH)	Freezing point (°C)	Storage time at ambient (~20°C)	Ventilation rate
50 - 100	90 - 95	-2.1	6 - 7	Very Low

† at optimum storage temperature

Stalks freeze at higher temperatures than berries

Other Properties

Ref	Maturity stage	Air exchange *	Freezing Point (°C)	Ethylene production **	Ethylene sensitivity	Ice compatibility	Water loss ***	% Water content	Bruising susceptibility
1	General	Very Low	-2.1	Very Low	Low	Yes	H	81.6	High

* Air exchange rates: Nil = 0%; Very low = 25%; Low = 50%; Medium = 100%; High = 200%; Very high = 400% fresh air/hour.

** Ethylene production rates at 20°C: Nil = 0 nM; Very low = <4 nM; Low = 4 - 40 nM; Medium = 40 - 400 nM; High = 400 - 4000 nM; Very high =>4000 nM ethylene/kg/hour.

*** Where % weight loss/week is given this is converted as: Low <= 1%; Medium = 1.1 - 3.4%; High = >3.5%

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Controlled Atmosphere

Ref	Maturity stage	% O2		% CO2		Temp°C		Benefit of controlled atmosphere
		min	max	min	max	min	max	
1	General	2	5	1	3	-1	0	Slight, (+90 days)?

Reference notes

1 Incompatible with SO2 fumigation

Respiration* and Heat Transfer

Ref	Maturity stage	0°C		5°C		10°C		15°C		20°C		25°C		Specific heat kJ/kg/EC **
		min	max	min	max	min	max	min	max	min	max	min	max	
1	General	3	8	8	23	16	37	30	51	47	74	68	102	3.57

* Respiration values given are in Watts per tonne. 1 W/t = 20.4 kCal/t/d = 82.1 Btu/tn./d = 73.3 Btu/2000 lbs/d = 0.167 mL CO2/kg/h = 7.0 umol CO2/kg/h = 0.308 mg CO2/kg/h

** Specific heat (kJ/kg°C) = 0.0335 x % water content + 0.8374; Specific heat in Btu/lb°F = 0.08 x % water content + 0.2

Compatibility in Mixed Storage

Temperature compatibility group

0	7	13	20
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Humidity compatibility group

Dry 60-80%	Moderate 80-90%	High 90-95%	Very high 95-100%
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Not compatible with crops that:

Odours will be absorbed by: If SO2 fumigated - other fruits & vegs

Absorbs odours from: Garlic, leeks, onions

Seasonal Availability

Ref	Country	Region (where given)	Start Season	End Season	Start Peak	End Peak
1	USA		January	December	-	-
1	Canada		August	October	September	October
1	Australia		December	September	December	May
1	Chile		November	May	-	-
1	Thailand		January	December	September	April
1	Italy		July	January	-	-

References for grape

Values quoted in Detailed Report are taken from a compilation of the best set of figures from all references. This best set of figures is always referred to as Reference 1.

See Reference Report for full listing of all values, original references and alternate names.