

Juice test cubic centimeter table for 20 fruit orange sample showing computed gallons and tenths of gallons per standard-packed box according to specified sizes or count. (If 10 fruit are used for information purposes, multiply cubic centimeters obtained by 2.)

This table is based on 3785.4 cubic centimeters per gallon.

DIRECTIONS: To use this table, find the closest figure (under the size column of fruit you are testing) that corresponds to the actual cubic centimeter measurement reading on the graduated cylinder in which the juice is measured, then trace the line beneath number to the gallon column on right or left of the table. The figure above the line followed will show the computed number of gallons per box to the nearest one-tenth gallon.

4/5 Bu Box Sizes - Cubic Centimeters Juice in 20 Oranges

Gal/ box	48s	64s	80s	100s	125s	163s	Gal/ box
4.0	3155	2366	1893	1514	1211	929	4.0
4.1	3233	2425	1940	1552	1242	952	4.1
4.2	3312	2484	1987	1590	1272	975	4.2
4.6	3628	2721	2177	1741	1393	1068	4.6
4.7	3707	2780	2224	1779	1423	1091	4.7
	3785	2839	2271	1817	1454	1115	4.8
5.1	4022	3016	2413	1931	1544	1184	5.1
5.6	4416	3312	2650	2120	1696	1301	5.6
5.7	4495	3371	2697	2158	1726	1324	5.7
5.8	4574	3431	2744	2196	1756	1347	5.8
6.1	4811	3608	2886	2309	1847	1417	6.1

Examples: Should you be testing 20 fruit of size 80, and your total cubic centimeters of juice therein contained were 2650, a complete box of this size would contain 5.6 gallons of juice. You, of course, realize it is impractical to list all readings of 20 fruit which you may have. Therefore, should you test 20 oranges of 100 size, showing 1920 cubic centimeters of juice, you would take the nearest cubic centimeter reading, which would be 1931. This reading would show 5.1 gallons in a complete box of this size.

Table 32. Temperature correction factors for Brix hydrometer calibrated at 20°C (adapted from Soule, Grierson and Blair, 1967).

Temperature (°C)	Correction Factor (°Brix)	Temperature (°C)	Correction Factor (°Brix)
6.0	- 0.60	23.0	+ 0.15
7.0	- 0.55	23.5	+ 0.20
8.0	- 0.55	24.0	+ 0.20
9.0	- 0.50	24.5	+ 0.25
10.0	- 0.45	25.0	+ 0.25
11.0	- 0.40	25.5	+ 0.30
12.0	- 0.40	26.0	+ 0.35
13.0	- 0.35	26.5	+ 0.35
14.0	- 0.30	27.0	+ 0.40
15.0	- 0.30	27.5	+ 0.40
15.5	- 0.25	28.0	+ 0.45
16.0	- 0.25	28.5	+ 0.50
16.5	- 0.20	29.0	+ 0.55
17.0	- 0.15	29.5	+ 0.55
17.5	- 0.10	30.0	+ 0.60
18.0	- 0.10	30.5	+ 0.65
18.5	- 0.05	31.0	+ 0.65
19.0	- 0.05	31.5	+ 0.70
19.5	0.00	32.0	+ 0.75
20.0	0.00	32.5	+ 0.75
20.5	+ 0.05	33.0	+ 0.80
21.0	+ 0.05	33.5	+ 0.85
21.5	+ 0.10	34.0	+ 0.90
22.0	+ 0.10	34.5	+ 0.95
22.5	+ 0.15	35.0	+ 1.00

Table 33. Conversion table from cc. standard alkali (0.3125 N) to % anhydrous citric acid (Soule, Grierson and Blair, 1967).

Standard (0.3125 N) Alkali	Citric Acid Anh.	Standard (0.3125 N) Alkali	Citric Acid Anh.	Standard (0.3125 N) Alkali	Citric Acid Anh.
1.0	.08	7.8	.60	12.5	.96
2.0	.15	7.9	.61	12.6	.97
2.5	.19	8.0	.615	12.7	.98
3.0	.23	8.1	.62	12.8	.985
3.5	.27	8.2	.63	12.9	.99
3.6	.28	8.3	.64	13.0	1.00
3.7	.285	8.4	.645	13.1	1.01
3.8	.29	8.5	.65	13.2	1.015
3.9	.29	8.6	.66	13.3	1.02
4.0	.30	8.7	.67	13.4	1.03
4.1	.31	8.8	.68	13.5	1.04
4.2	.315	8.9	.685	13.6	1.045
4.3	.32	9.0	.69	13.7	1.05
4.4	.32	9.1	.70	13.8	1.06
4.5	.34	9.2	.71	13.9	1.07
4.6	.35	9.3	.715	14.0	1.08
4.7	.35	9.4	.72	14.1	1.085
4.8	.36	9.5	.73	14.2	1.09
4.9	.37	9.6	.74	14.3	1.10
5.0	.38	9.7	.745	14.4	1.11
5.1	.385	9.8	.75	14.5	1.115
5.2	.39	9.9	.76	14.6	1.12
5.3	.40	10.0	.77	14.7	1.13
5.4	.41	10.1	.78	14.8	1.14
5.5	.415	10.2	.785	14.9	1.145
5.6	.42	10.3	.79	15.0	1.15
5.7	.43	10.4	.80	15.1	1.16
5.8	.44	10.5	.81	15.2	1.17
5.9	.445	10.6	.815	15.3	1.18
6.0	.45	10.7	.82	15.4	1.185
6.1	.46	10.8	.83	15.5	1.19
6.2	.47	10.9	.84	15.6	1.20
6.3	.48	11.0	.845	15.7	1.21
6.4	.485	11.1	.85	15.8	1.215
6.5	.49	11.2	.86	15.9	1.22
6.6	.50	11.3	.87	16.0	1.23
6.7	.51	11.4	.88	16.1	1.24
6.8	.515	11.5	.885	16.2	1.245
6.9	.52	11.6	.89	16.3	1.25
7.0	.53	11.7	.90	16.4	1.25
7.1	.54	11.8	.91	16.5	1.27
7.2	.55	11.9	.915	16.6	1.275
7.3	.56	12.0	.92	16.7	1.28
7.4	.57	12.1	.93	16.8	1.29
7.5	.58	12.2	.94	16.9	1.30
7.6	.585	12.3	.945	17.0	1.31
7.7	.59	12.4	.95	17.1	1.315

Table 33. (cont.)

Standard (0.3125 N) Alkali	C. C.	Citric Acid Anh.	Pct.	Standard (0.3125 N) Alkali	C. C.	Citric Acid Anh.	Pct.	Standard (0.3125 N) Alkali	C. C.	Citric Acid Anh.	Pct.
17.2	22.3	1.32	1.715	22.3	27.4	1.715	2.11				
17.3	22.4	1.33	1.72	22.4	27.5	1.72	2.115				
17.4	22.5	1.34	1.73	22.5	27.6	1.73	2.12				
17.5	22.6	1.345	1.74	22.6	27.7	1.74	2.13				
17.6	22.7	1.35	1.745	22.7	27.8	1.745	2.14				
17.7	22.8	1.36	1.75	22.8	27.9	1.75	2.145				
17.8	22.9	1.37	1.76	22.9	28.0	1.76	2.15				
17.9	23.0	1.38	1.77	23.0	28.1	1.77	2.16				
18.0	23.1	1.385	1.775	23.1	28.2	1.775	2.17				
18.1	23.2	1.39	1.78	23.2	28.3	1.78	2.175				
18.2	23.3	1.40	1.79	23.3	28.4	1.79	2.18				
18.3	23.4	1.41	1.80	23.4	28.5	1.80	2.19				
18.4	23.5	1.415	1.81	23.5	28.6	1.81	2.20				
18.5	23.6	1.42	1.815	23.6	28.7	1.815	2.21				
18.6	23.7	1.43	1.82	23.7	28.8	1.82	2.215				
18.7	23.8	1.44	1.83	23.8	28.9	1.83	2.22				
18.8	23.9	1.445	1.84	23.9	29.0	1.84	2.23				
18.9	24.0	1.45	1.845	24.0	29.1	1.845	2.24				
19.0	24.1	1.46	1.85	24.1	29.2	1.85	2.245				
19.1	24.2	1.47	1.86	24.2	29.3	1.86	2.25				
19.2	24.3	1.475	1.87	24.3	29.4	1.87	2.26				
19.3	24.4	1.48	1.88	24.4	29.5	1.88	2.27				
19.4	24.5	1.49	1.885	24.5	29.6	1.885	2.28				
19.5	24.6	1.50	1.89	24.6	29.7	1.89	2.285				
19.6	24.7	1.51	1.90	24.7	29.8	1.90	2.29				
19.7	24.8	1.515	1.91	24.8	29.9	1.91	2.30				
19.8	24.9	1.52	1.915	24.9	30.0	1.915	2.31				
19.9	25.0	1.53	1.92	25.0	30.1	1.92	2.315				
20.0	25.1	1.54	1.93	25.1	30.2	1.93	2.32				
20.1	25.2	1.545	1.94	25.2	30.3	1.94	2.33				
20.2	25.3	1.55	1.945	25.3	30.4	1.945	2.34				
20.3	25.4	1.56	1.95	25.4	30.5	1.95	2.345				
20.4	25.5	1.57	1.96	25.5	30.6	1.96	2.35				
20.5	25.6	1.58	1.97	25.6	30.7	1.97	2.36				
20.6	25.7	1.585	1.98	25.7	30.8	1.98	2.37				
20.7	25.8	1.59	1.985	25.8	30.9	1.985	2.375				
20.8	25.9	1.60	1.99	25.9	31.0	1.99	2.38				
20.9	26.0	1.61	2.00	26.0	31.1	2.00	2.39				
21.0	26.1	1.615	2.01	26.1	31.2	2.01	2.40				
21.1	26.2	1.62	2.015	26.2	31.3	2.015	2.41				
21.2	26.3	1.63	2.02	26.3	31.4	2.02	2.415				
21.3	26.4	1.64	2.03	26.4	31.5	2.03	2.42				
21.4	26.5	1.645	2.04	26.5	31.6	2.04	2.43				
21.5	26.6	1.65	2.045	26.6	31.7	2.045	2.44				
21.6	26.7	1.66	2.05	26.7	31.8	2.05	2.445				
21.7	26.8	1.67	2.06	26.8	31.9	2.06	2.45				
21.8	26.9	1.68	2.07	26.9	32.0	2.07	2.46				
21.9	27.0	1.685	2.075	27.0	32.1	2.075	2.47				
22.0	27.1	1.69	2.08	27.1	32.2	2.08	2.48				
22.1	27.2	1.70	2.09	27.2	32.3	2.09	2.485				
22.2	27.3	1.71	2.10	27.3	32.4	2.10	2.49				
					32.5		2.50				

Table 34. Standards for Grade U.S. No. 1 of Florida oranges (and tangelos), Florida grapefruit and Florida tangerines.^a

Factor	Oranges	Grapefruit	Tangerines
Color	Early & midseason: Fairly well colored ^b Late: 50% Fairly well colored, rest reason- ably well colored	Fairly well colored	Fairly well colored
Firmness	Firm	Firm	
Form	Well formed	Well formed	Well formed
Texture	Fairly smooth	Fairly smooth	Fairly smooth
Buckskin	1" ^c	1-1/4" ^c	3/4" ^c
Caked melanose	5/8"	3/4"	3/8"
Dryness	1/4"	1/4"	1/8"
Green spots	(10) ^d 1/8"	(10) 1/8"	(10) 1/8"
Hail	3/8"	1/2"	1/4"
Oil spots	(5) ⁵ 3/4"	(5) 3/4"	(5) 1/2"
Scab	5/8"	3/4"	3/8"
Scale	5/8"	3/4"	3/8"
Skin breakdown	1/4"	3/8"	1/4"
Spray burn	5/8"	3/4"	3/4"
Sunburn	25%	25%	25%
Thorn scratches	5/8"	3/4"	
Creasing	1/3	1/3	1/3
Scars	Free from damage	Free from damage	Free from damage
Ammoniation	None	None	None

^a Amounts listed are maximum for size 100 oranges, size 35 grapefruit or size 176 tangerines, respectively, more being allowed on a larger fruit or less on a smaller one. Unhealed cuts, bruises, decay, growth cracks and wormy fruit are not allowed. 1 inch = 2.54 mm.

Table 34. (cont.)

^b Area of green must not exceed a circle 1" in diameter on oranges or grapefruit or 1-1/4" on tangerines (see Florida standards).

^c Area of circle in inches, percentage of surface for sunburn and creasing, all in the aggregate.

^d Number of spots each with area not exceeding circle 1/8" diameter

^e Number of spots with aggregate area not more than area of circle of diameter listed.

Table 35. Subclasses of U.S. grades ^a

Grade	Subclass	Amount of discoloration permitted ^b
Fancy		10% of surface
No. 1	Bright	20% of surface (Fla. 10%)
No. 1		33-1/3% of surface (Fla. 25%)
No. 1	Golden	Part with 33-1/3% of surface (Fla. 25%) or less, remainder (Fla. 30%) with over 33-1/3% (Fla. 25%)
No. 1	Bronze	Part with 33-1/3% of surface or less, remainder with over 33-1/3% (all rust mite)
No. 1	Russet	Part with 33-1/3% of surface or less remainder with over 33-1/3%
No. 2	Bright	20% of surface
No. 2		50% of surface
No. 2	Russet	Part with 50% of surface or less remainder with over 50%
No. 3		(No standard)

^aBased on discoloration by rust mite of light brown shade but including light scars and speck-type melanose, except in No. 1 Bronze which must be all rust mite.

^bPercentage of surface in the aggregate; maximum permitted with over 33-1/3% of surface discolored in No. 1 Golden and minimum permitted in No. 1 Bronze, No. 1 Russet and No. 2 Russet are given in tolerance tables (shipping point) of the standards for the respective fruits.

Shipper										Address										Reg. No.					Date				
Hr. & Date Beg					Variety					Containers					Labels					Grade									
Sample	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20									
MAXIMUM DECAY - Fancy - #1 - #2																													
Ind																													
Cum																													
AL-1	0	1	1	1	2	2	2	3	3	3	3	3	4	4	4	4	5	5	5	5									
MAXIMUM VERY SERIOUS DAMAGE INCLUDING DECAY - Fancy - #1 - #2																													
Ind																													
Cum																													
AL-6	4	6	9	11	14	16	18	20	22	24	26	28	30	33	35	37	39	41	43	45									
MAXIMUM TOTAL DEFECTS - Fancy - #1 - #2																													
11																													
10																													
9																													
AL-8																													
7																													
6																													
5																													
4																													
3																													
2																													
1																													
Ind																													
Cum																													
	7	12	17	22	27	32	36	41	45	50	54	59	63	68	72	76	81	85	90	94									
MAXIMUM OFF-SIZE																													
Ind																													
Cum																													
AL-10	7	12	17	22	27	32	36	41	45	50	54	59	63	68	72	76	81	85	90	94									
DISCOLORATION - #1-#1Brt -#2-#2 Brt 1/ Golden 2/ Bronze #1 Russet 3/ #2 Russet 4/																													
1 AL-10	7	12	17	22	27	32	36	41	45	50	54	59	63	68	72	76	81	85	90	94									
2) AL-22	18	34	49	64	80	93	109	122	138	151	166	180	194	208	222	237	251	265	279	294									
5) L-11	15	32	51	69	88	106	125	144	162	182	201	220	240	259	278	297	317	336	355	374									
L-1	3	8	12	18	23	29	34	40	45	51	56	62	68	74	79	85	91	97	102	108									
Ind																													
Cum																													
Time																													
ize																													
Firmness					Shape					Color					Texture					Pack									

Remarks: Samples taken from:

CA	NC	Gal.Per Ex	% Acid	Tot.Solids	Ratio