

Appendix A – Tables

Table 1-1. Agencies Responsible for Package Regulations and Applicable Requirements			
Commodity	Responsible Agency	NIST Handbook 133 Sampling Plans	Table of Maximum Allowable Variations
Meat and Poultry	U.S. Department of Agriculture/ Food Safety and Inspection Service and State and local weights and measures.	<p>1. Use Table 2-1. Sampling Plans for Category A to test packages at other than point of pack.</p> <p>2. Use Table 2-2. Sampling Plans for Category B to test packages in Federally inspected meat and poultry plants.</p>	Table 2-9. U.S. Department of Agriculture, Meat and Poultry, Groups and Lower Limits for Individual Packages.
Foods, drugs, and cosmetics subject to the Food, Drug, and Cosmetic Act including those packaged at the retail store level that have been in interstate commerce (e.g., seafood) or those made with ingredients that have been in interstate commerce.	<p>U.S. Food and Drug Administration and State and local weights and measures.</p> <p>http://www.fda.gov</p>	<p>Use Table 2-1. Sampling Plans for Category A to test packages at all locations</p>	<p>Table 2-5. MAVs for Packages Labeled by Weight</p> <p>Table 2-6. MAVs for Packages Labeled by Liquid or Dry Volume.</p> <p>Table 2-7. MAVs for Packages Labeled by Count</p>
Food products <u>not</u> subject to the Federal Food, Drug, and Cosmetic Act, including meat and poultry products packaged at the retail store level.	<p>State and local weights and measures.</p> <p>http://www.nist.gov/owm</p>		<p>Table 2-8. MAVs for Packages Labeled by Length (Width) or Area.</p> <p>Table 2-10. Exceptions to the MAVs for Textiles, Polyethylene Sheeting and Film, Mulch and Soil Labeled by Volume, Packaged Firewood, and Packages Labeled by Count with Less than 50 Items.</p>
Non-food Consumer Products	<p>Federal Trade Commission</p> <p>http://www.ftc.gov</p>		
Non-food Consumer and Non-consumer Products	State and local weights and measures.		
Alcohol and Tobacco Products	<p>U.S. Bureau of Alcohol, Tobacco, and Firearms and State and local weights and measures.</p> <p>http://www.atf.treas.gov</p>		
Pesticides	<p>U.S. Environmental Protection Agency and State and local weights and measures.</p> <p>http://www.epa.gov</p>		

Table 2-1. Sampling Plans for Category A					
1	2	3	4	5	6
Inspection Lot Size	Sample Size	Sample Correction Factor	Number of Minus Package Errors Allowed to Exceed the MAV*	Initial Tare Sample Size**	
				Glass and Aerosol Packages	All Other Packages
1	1	Apply MAV	0*	2	2
2	2	8.984			
3	3	2.484			
4	4	1.591			
5	5	1.241			
6	6	1.050			
7	7	0.925			
8	8	0.836			
9	9	0.769			
10	10	0.715			
11	11	0.672			
12 to 250	12	0.635	1*	3	
251 to 3,200	24	0.422			
More than 3,200	48	0.291			

*For mulch and soils packaged by volume, see Table 2-10. Exceptions to the Maximum Allowable Variations – 1 package may exceed the MAV for every 12 packages in the sample.

**If sample size is 11 or less, the initial tare sample size and the total tare sample size is 2 samples. (Amended 2001)

Table 2-2. Sampling Plans for Category B			
For Use In USDA-Inspected Meat and Poultry Plants Only			
1	2	3	4
Inspection Lot Size	Sample Size	Initial Tare Sample Size	Number of Packages Allowed to Exceed the MAVs in Table 2-9
250 or Less	10	2	0
251 or More	30	5	

**Table 2-3. Category A – Total Number of Packages to be Opened for Tare Determination
Numbers Include those Packages Opened for Initial Tare Sample**

Ratio of Rc/Rt Sample Size	Total Number of Packages in Tare Sample				
	12	24		48	
Initial Tare Sample Size	2	2	3	2	3
If range of tare equals "zero," use Initial Tare Sample Size. If the ratio is "zero" based on a "zero" range of net weight open all of the packages in the sample.	2	2	3	2	3
If the ratio is greater than 0 but less than or equal to 0.2	12	24	24	48	48
0.21 to 0.60	12	24	24	48	48
0.61 to 0.70	12	24	24	47	47
0.71 to 0.80	12	23	23	47	47
0.81 to 1.00	12	23	23	46	46
1.01 to 1.10	11	23	23	46	46
1.11 to 1.20	11	23	23	45	45
1.21 to 1.30	11	22	22	45	45
1.31 to 1.50	11	22	22	44	44
1.51 to 1.60	11	22	22	43	43
1.61 to 1.70	11	21	21	42	42
1.71 to 1.80	10	21	21	42	42
1.81 to 1.90	10	21	21	41	41
1.91 to 2.00	10	20	20	41	41
2.01 to 2.10	10	20	20	40	40
2.11 to 2.20	10	20	20	39	39
2.21 to 2.30	10	19	19	39	39
2.31 to 2.40	9	19	19	38	38
2.41 to 2.50	9	19	19	37	37
2.51 to 2.60	9	18	18	37	37
2.61 to 2.70	9	18	18	36	36
2.71 to 2.80	9	18	18	35	35
2.81 to 2.90	9	17	17	34	34
2.91 to 3.00	8	17	17	34	34
3.01 to 3.10	8	17	17	33	33
3.11 to 3.30	8	16	16	32	32
3.31 to 3.40	8	16	16	31	31
3.41 to 3.50	8	15	15	30	30
3.51 to 3.60	7	15	15	30	30
3.61 to 3.70	7	15	15	29	29
3.71 to 3.90	7	14	14	28	28
3.91 to 4.00	7	14	14	27	27
4.01 to 4.10	7	13	13	27	27
4.11 to 4.20	7	13	13	26	26
4.21 to 4.30	6	13	13	25	25
4.31 to 4.40	6	12	12	25	25
4.41 to 4.60	6	12	12	24	24
4.61 to 4.70	6	12	12	23	23
4.71 to 4.80	6	11	11	23	23
4.81 to 4.90	6	11	11	22	22
4.91 to 5.00	5	11	11	22	22

Go to Next Page for Additional Values.

Table 2-3. (Continued)
Category A – Total Number of Packages to be Opened for Tare Determination
Numbers Include those Packages Opened for Initial Tare Sample

Ratio of Rc/Rt Sample Size	Total Number of Packages in Tare Sample				
	12	24		48	
Initial Tare Sample Size	2	2	3	2	3
5.01 to 5.10	5	11	11	21	21
5.11 to 5.20	5	10	10	21	21
5.21 to 5.40	5	10	10	20	20
5.41 to 5.60	5	10	10	19	19
5.61 to 5.70	5	9	9	19	19
5.71 to 5.80	5	9	9	18	18
5.81 to 5.90	4	9	9	18	18
5.91 to 6.10	4	9	9	17	17
6.11 to 6.20	4	8	8	17	17
6.21 to 6.50	4	8	8	16	16
6.51 to 6.70	4	8	8	15	15
6.71 to 6.80	4	7	7	15	15
6.81 to 7.00	4	7	7	14	14
7.01 to 7.20	3	7	7	14	14
7.21 to 7.40	3	7	7	13	13
7.41 to 7.60	3	6	6	13	13
7.61 to 8.00	3	6	6	12	12
8.01 to 8.20	3	6	6	11	11
8.21 to 8.50	3	5	5	11	11
8.51 to 8.80	3	5	5	10	10
8.81 to 9.00	2	5	5	10	10
9.01 to 8.30	2	5	5	9	9
9.31 to 8.70	2	4	4	9	9
9.71 to 10.40	2	4	4	8	8
10.41 to 10.90	2	4	4	7	7
10.91 to 11.30	2	3	3	7	7
11.31 to 12.50	2	3	3	6	6
12.51 to 13.20	2	3	3	5	5
13.21 to 13.90	2	2	3	5	5
13.91 to 16.00	2	2	3	4	4
16.01 to 19.10	2	2	3	3	3
19.11 to 19.20	2	2	3	2	3
Initial Tare Sample Size	2	2	3	2	3

Table 2-4. Category B – Total Number of Packages to be Opened for Tare Determination
Numbers Include those Packages Opened for Initial Tare Sample

Ratio of Rc/Rt Sample Size	Total Number of Packages in Tare Sample	
	10	30
Initial Tare Sample Size	2	5
If the ratio is zero, based on a "zero" range of tare, use Initial Tare Sample Size. If the ratio is "zero" based on a "zero" range of net weight, open all the packages in the sample.	2	5
If the ratio is greater than 0 but less than or equal to 0.2	10	30
0.21 to 0.40	10	29
0.41 to 0.60	10	28
0.61 to 0.80	9	26
0.81 to 1.00	8	24
1.01 to 1.20	8	23
1.21 to 1.40	7	21
1.41 to 1.60	7	19
1.61 to 1.80	6	17
1.81 to 2.00	5	15
2.01 to 2.20	5	14
2.21 to 2.40	5	13
2.41 to 2.60	4	12
2.61 to 2.80	4	11
2.81 to 3.00	4	10
3.01 to 3.20	3	9
3.21 to 3.60	3	8
3.61 to 3.80	3	7
3.81 to 4.40	2	6
If the ratio is greater than 4.40, use the Initial Tare Sample Size	2	5

Table 2-5. Maximum Allowable Variations (MAVs) for Packages Labeled by Weight
Do Not Use This Table for Meat and Poultry Products subject to USDA Regulations – Use Table 2.9
For Polyethylene Sheeting and Film, see Table 2-10. Exceptions to the MAVs

Labeled Quantity	Maximum Allowable Variations
Less than 36 g, 0.08 lb, or 1.28 oz	10 percent of labeled quantity
36 g or more to 54 g 0.08 lb or more to 0.12 lb 1.28 oz or more to 1.92 oz	4 g 0.008 lb 1/8 oz
More than 54 g to 82 g More than 0.12 lb to 0.18 lb More than 1.92 oz to 2.88 oz	5 g 0.012 lb 3/16 oz
More than 82 g to 118 g More than 0.18 lb to 0.26 lb More than 2.88 oz to 4.16 oz	7 g 0.016 lb 1/4 oz
More than 118 g to 154 g More than 0.26 lb to 0.34 lb More than 4.16 oz to 5.44 oz	9 g 0.020 lb 5/16 oz
More than 154 g to 209 g More than 0.34 lb to 0.46 lb More than 5.44 oz to 7.36 oz	11 g 0.024 lb 3/8 oz
More than 209 g to 263 g More than 0.46 lb to 0.58 lb More than 7.36 oz to 9.28 oz	13 g 0.028 lb 7/16 oz
More than 263 g to 318 g More than 0.58 lb to 0.70 lb More than 9.28 oz to 11.20 oz	15 g 0.032 lb ½ oz
More than 318 g to 381 g More than 0.70 lb to 0.84 lb More than 11.20 oz to 13.44 oz	16 g 0.036 lb 9/16 oz
More than 381 g to 426 g More than 0.84 lb to 0.94 lb More than 13.44 oz to 15.04 oz	18 g 0.04 lb 5/8 oz
More than 426 g to 490 g More than 0.94 lb to 1.08 lb More than 15.04 oz to 17.28 oz	20 g 0.044 lb 11/16 oz
More than 490 g to 572 g More than 1.08 lb to 1.26 lb	22 g 0.048 lb
More than 572 g to 635 g More than 1.26 lb to 1.40 lb	24 g 0.052 lb
More than 635 g to 698 g More than 1.40 lb to 1.54 lb	25 g 0.056 lb
More than 698 g to 771 g More than 1.54 lb to 1.7 lb	27 g 0.060 lb
More than 771 g to 852 g More than 1.7 lb to 1.88 lb	29 g 0.064 lb
More than 852 g to 971 g More than 1.88 lb to 2.14 lb	32 g 0.070 lb
More than 971 g to 1.125 kg More than 2.14 lb to 2.48 lb	35 g 0.078 lb
More than 1.125 kg to 1.350 kg More than 2.48 lb to 2.76 lb	40 g 0.086 lb
More than 1.350 kg to 1.60 kg More than 2.76 lb to 3.20 lb	45 g 0.094 lb

Continued - Table 2-5. Maximum Allowable Variations (MAVs) for Packages Labeled by Weight
 Do Not Use This Table for Meat and Poultry Products Subject to USDA-Regulations. Use Table 2.9 for USDA
 Regulated Products

Labeled Quantity	Maximum Allowable Variations (MAVs)
More than 1.60 kg to 1.80 kg More than 3.20 lb to 3.90 lb	50 g 0.11 lb
More than 1.80 kg to 2.10 kg More than 3.90 lb to 4.70 lb	55 g 0.12 lb
More than 2.10 kg to 2.64 kg More than 4.70 lb to 5.80 lb	65 g 0.14 lb
More than 2.64 kg to 3.08 kg More than 5.80 lb to 6.80 lb	70 g 0.15 lb
More than 3.08 kg to 3.80 kg More than 6.80 lb to 7.90 lb	80 g 0.17 lb
More than 3.80 kg to 4.40 kg More than 7.90 lb to 9.40 lb	85 g 0.19 lb
More than 4.40 kg to 5.20 kg More than 9.40 lb to 11.70 lb	100 g 0.22 lb
More than 5.20 kg to 6.80 kg More than 11.70 lb to 14.30 lb	115 g 0.25 lb
More than 6.80 kg to 8.20 kg More than 14.30 lb to 17.70 lb	130 g 0.28 lb
More than 8.20 kg to 10.60 kg More than 17.70 lb to 23.20 lb	145 g 0.31 lb
More than 10.60 kg to 14.30 kg More than 23.20 lb to 31.60 lb	170 g 0.37 lb
More than 14.30 kg to 19.25 kg More than 31.60 lb to 42.40 lb	200 g 0.44 lb
More than 19.25 kg to 24.70 kg More than 42.40 lb to 54.40 lb	230 g 0.50 lb
More than 24.70 kg More than 54.40 lb	2 percent of labeled quantity

Table 2-6. Maximum Allowable Variations for Packages Labeled by Liquid and Dry Volume

Do Not Use This Table for Meat and Poultry Products Subject to USDA Regulations

For Mulch, see Table 2-10. Exceptions to the Maximum Allowable Variations

Use Table 2-9 for USDA- Regulated Products

Labeled Quantity	Maximum Allowable Variations (MAVs)
3 mL or less 0.5 fl oz or less 0.18 cu in or less	0.5 mL 0.5 mL 0.03 cu in
More than 3 mL to 8 mL More than 0.18 cu in to 0.49 cu in	1 mL 0.06 cu in
More than 8 mL to 15 mL More than 0.49 cu in to 0.92 cu in	1.5 mL 0.09 cu in
More than 15 mL to 22 mL More than 0.5 fl oz to 0.75 fl oz More than 0.92 cu in to 1.35 cu in	2 mL 0.06 fl oz 0.11 cu in
More than 22 mL to 67 mL More than 0.75 fl oz to 2.25 fl oz More than 1.35 cu in to 4.06 cu in	3.5 mL 0.13 fl oz 0.23 cu in
More than 67 mL to 126 mL More than 2.25 fl oz to 4.25 fl oz More than 4.06 cu in to 7.67 cu in	5.5 mL 0.19 fl oz 0.34 cu in
More than 126 mL to 170 mL More than 4.25 fl oz to 5.75 fl oz More than 7.67 cu in to 10.38 cu in	7.5 mL 0.25 fl oz 0.45 cu in
More than 170 mL to 222 mL More than 5.75 fl oz to 7.50 fl oz More than 10.38 cu in to 13.54 cu in	9 mL 0.31 fl oz 0.56 cu in
More than 222 mL to 347 mL More than 7.50 fl oz to 11.75 fl oz More than 13.54 cu in to 21.21 cu in	11 mL 0.38 fl oz 0.68 cu in
More than 347 mL to 503 mL More than 11.75 fl oz to 17 fl oz More than 21.21 cu in to 30.68 cu in	15 mL 0.5 fl oz 0.9 cu in
More than 503 mL to 621 mL More than 17 fl oz to 21 fl oz More than 30.68 cu in to 37.90 cu in	18 mL 0.63 fl oz 1.13 cu in
More than 621 mL to 798 mL More than 21 fl oz to 27 fl oz More than 37.90 cu in to 48.73 cu in	22 mL 0.75 fl oz 1.35 cu in
More than 798 mL to 917 mL More than 27 fl oz to 31 fl oz More than 48.73 cu in to 55.95 cu in	26 mL 0.88 fl oz 1.58 cu in
More than 917 mL to 1.153 L More than 31 fl oz to 39 fl oz More than 55.95 cu in to 70.38 cu in	30 mL 1 fl oz 1.8 cu in
More than 1.153 L to 1.627 L More than 39 fl oz to 55 fl oz 70.38 cu in or more to 99.26 cu in	37 mL 1.25 fl. Oz. 2.26 cubic inch
More than 1.627 L to 2.041 L More than 55 fl oz to 69 fl oz More than 99.26 cu in to 124.5 cu in	44 mL 1.5 fl oz 2.71 cu in

Table 2-6. Continued – Maximum Allowable Variations (MAVs) for Packages Labeled by Volume
Do Not Use This Table for Meat and Poultry Products Subject to USDA Regulations – Use Table 2-9
For Mulch, see Table 2-10. Exceptions to the Maximum Allowable Variations

Labeled Quantity	Maximum Allowable Variations (MAVs)
More than 2.041 L to 2.514 L More than 69 fl oz to 85 fl oz More than 124.5 cu in to 153.4 cu in	52 mL 1.75 fl oz 3.2 cu in
More than 2.514 L to 3.046 L More than 85 fl oz to 103 fl oz More than 153.4 cu in to 185.9 cu in.	59 mL 2 fl oz 3.6 cu in
More than 3.046 L to 4.732 L More than 103 fl oz to 160 fl oz More than 185.9 cu in to 288.8 cu in	74 mL 2.5 fl oz 4.5 cu in
More than 4.732 L to 5.489 L More than 160 fl oz to 185.6 fl oz More than 288.8 cu in to 335 cu in.	89 mL 3 fl oz 5.4 cu in
More than 5.489 L to 7.098 L More than 185.6 fl oz to 240 fl oz More than 335 cu in to 443.1 cu in	104 mL 3.5 fl oz 6.3 cu in
More than 7.098 L to 8.044 L More than 240 fl oz to 272 fl oz More than 443.1 cu in to 490.9 cu in.	118 mL 4 fl oz 7.2 cu in
More than 8.044 L to 10.173 L More than 272 fl oz to 344 fl oz More than 490.9 cu in to 620.8 cu in	133 mL 4.5 fl oz 8.1 cu in
More than 10.173 L to 11.593 L More than 344 fl oz to 392 fl oz More than 620.8 cu in to 707.4 cu in	148 mL 5 fl oz 9 cu in
More than 11.593 L to 16.561 L More than 392 fl oz to 560 fl oz More than 707.4 cu in to 1011 cu in	177 mL 6 fl oz 10.8 cu in
More than 16.561 L to 18.927 L More than 560 fl oz to 640 fl oz (5 gal) More than 1011 to 1155 cu. in.	207 mL 7 fl oz 12.6 cu in
More than 18.927 L to 23.659 L More than 640 fl oz to 800 fl oz More than 1155 cu in to 1444 cu in	237 mL 8 fl oz 14.4 cu in
More than 23.659 L to 26.734 L More than 800 fl oz to 904 fl oz More than 1444 cu in to 1631 cu in	266 mL 9 fl oz 16.2 cu in
More than 26.734 L More than 904 fl oz More than 1631cu in	1 percent of labeled quantity

Table 2-7. Maximum Allowable Variations (MAVs) for Packages Labeled by Count	
Labeled Quantity	Maximum Allowable Variations (MAVs)
17 or less	0
18 to 50	1
51 to 83	2
84 to 116	3
117 to 150	4
151 to 200	5
201 to 240	6
241 to 290	7
291 to 345	8
346 to 400	9
401 to 465	10
466 to 540	11
541 to 625	12
626 to 725	13
726 to 815	14
816 to 900	15
901 to 990	16
991 to 1075	17
1076 to 1165	18
1166 to 1250	19
1251 to 1333	20
1334 or more	1.5 % of labeled count rounded off to the nearest whole number

Table 2-8. Maximum Allowable Variations for Packages Labeled by Length, (Width), or Area	
See Table 2.10 Exceptions to the MAVs for textiles, and polyethylene sheeting and film	
Labeled Quantity	Maximum Allowable Variations (MAVs)
1m or less 1yd or less	3 % of labeled quantity
More than 1 m to 40 m More than 1 yd to 48 yd	1.5 % of labeled quantity
More than 40 m to 85 m More than 48 yd to 96 yd	2 % of labeled quantity
More than 85 m to 140 m More than 96 yd to 154 yd	2.5 % of labeled quantity
More than 140 m to 300 m More than 154 yd to 330 yd	3 % of labeled quantity
More than 300 m to 1000 m More than 330 yd to 1100 yd	4 % of labeled quantity
More than 1000 m or 1100 yd	5 % of labeled quantity
Maximum Allowable Variations for Packages Labeled by Area.	
The MAV for packages labeled by area is 3 percent of labeled quantity	
See Table 2.10. Exceptions to the MAVs for textiles, and polyethylene sheeting and film...	

Table 2-9. U.S. Department of Agriculture, Meat and Poultry Groups and Lower Limits for Individual Packages (Maximum Allowable Variations)		
Definition of Group and Labeled Quantity		Lower Limit for Individual Weights (MAVs)
Homogenous Fluid when Filled (e.g., baby food or containers of lard)	All Other Products	
Less than 85 g or 3 oz		10 % of labeled quantity
85 g or more to 453 g 3 oz or more to 16 oz		7.1 g 0.016 lb (0.25 oz)
More than 453 g More than 16 oz	85 g or more to 198 g 3 oz to 7 oz	14.2 g 0.031 lb (0.5 oz)
	More than 198 g to 1.36 kg 7 oz to 48 oz	28.3 g 0.062 lb (1 oz)
	More than 1.36 kg to 4.53 kg More than 48 oz to 160 oz	42.5 g 0.094 lb (1.5 oz)
	More than 4.53 kg More than 160 oz	1 % of labeled quantity

Table 2-10. Exceptions to the Maximum Allowable Variations for Textiles, Polyethylene Sheeting and Film, Mulch and Soil Labeled by Volume, Packaged Firewood, and Packages Labeled by Count with Less than 50 Items.

Maximum Allowable Variations (MAVs)	
Polyethylene Sheeting and Film	<p>Thickness</p> <p>When the labeled thickness is 25 μm (1 mil or 0.001 in) or less, any individual thickness measurement of polyethylene film may be up to 35 percent below the labeled thickness.</p> <p>When the labeled thickness is greater than 25 μm (1 mil or 0.001 in), individual thickness measurements of polyethylene sheeting may be up to 20 percent less than the labeled thickness.</p> <p>The average thickness of a single package of polyethylene sheeting may be up to four percent less than the labeled thickness.</p> <p>Weight</p> <p>The MAV for individual packages of polyethylene sheeting and film shall be 4 percent of the labeled quantity.</p>
Textiles	<p>The MAVs are:</p> <p>For packages labeled with dimensions of 60 cm (24 in) or more:</p> <p>Three percent of the labeled quantity for negative errors and 6 percent of the labeled quantity for plus errors.</p> <p>For packages labeled with dimensions less than 60 cm (24 in):</p> <p>Six percent of the labeled quantity for negative errors and 12 percent for plus errors.</p>
Mulch and Soil Labeled by Volume	<p>The MAVs are:</p> <p>For individual packages: 5 percent of the labeled volume.</p> <p>For samples: one package may exceed the MAV for every 12 packages in the sample (e.g., when the sample size is 12 or less, 1 package may exceed the MAV and when the sample size is 48 packages, 4 packages may exceed the MAV).</p>
Packaged Firewood and Packages Labeled By Count with Less Than 50 Items	<p>MAVs are not applied to these packages.</p>

Table 2-11. Accuracy Requirements for Packages Labeled by Low Count (50 or Less) and Packages Given Tolerances (Glass and Stemware)		
1	2	3
Sample Size	For Packages Labeled by Low Count (50 or Less)	For Packages Given Tolerances (Glasses and Stemware)
	Number of Packages Allowed to Contain Less than the Labeled Count	Number of Package Errors that May Exceed the Allowable Difference
1-11	1	0
12	1	0
24	2	1
48	3	2