

**A RECALCULATION OF WEIN'S TABLE OF STARCH EQUIVALENT TO COPPER FOUND, BASED ON THE FACTOR 0.92.<sup>1</sup>**

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IN Wein's "Tabellen zur quantitativen Bestimmung der Zuckerarten" a table is given on page 41, by means of which the starch or dextrin can be directly obtained from the copper found by converting the starch into dextrose and determining the latter with Allihn's solution. This table is based on the factor 0.90, which assumes that the formula of starch is  $(C_6H_{10}O_5)_n$ , and that it is all converted into dextrose. Nägeli determined the formula of starch to be  $C_{36}H_{62}O_{33}$ , and if this be correct the factor becomes 0.918. Ost, working with the Sacchse method decided upon the factor 0.925. In view of all these conflicting data Wiley recommends the factor 0.92, a mean between the two last cited, which will give the analyst fairly accurate results. This factor has been used in the recalculation of the table.

Milligrams copper.	Milligrams starch or dextrin.	Milligrams copper.	Milligrams starch or dextrin.	Milligrams copper.	Milligrams starch or dextrin.	Milligrams copper.	Milligrams starch or dextrin.	Milligrams copper.	Milligrams starch or dextrin.
10..	5.6	30..	14.7	50..	23.8	70..	32.9	90..	42.2
11..	6.1	31..	15.2	51..	24.3	71..	33.4	91..	42.7
12..	6.5	32..	15.6	52..	24.7	72..	33.9	92..	43.1
13..	7.0	33..	16.1	53..	25.2	73..	34.3	93..	43.6
14..	7.5	34..	16.6	54..	25.7	74..	34.8	94..	44.1
15..	7.9	35..	17.0	55..	26.1	75..	35.1	95..	44.5
16..	8.3	36..	17.4	56..	26.5	76..	35.7	96..	45.0
17..	8.7	37..	17.8	57..	27.0	77..	36.2	97..	45.4
18..	9.2	38..	18.3	58..	27.4	78..	36.5	98..	45.9
19..	9.7	39..	18.8	59..	27.9	79..	37.1	99..	46.4
20..	10.1	40..	19.3	60..	28.3	80..	37.5	100..	46.8
21..	10.5	41..	19.7	61..	28.8	81..	38.0	101..	47.3
22..	11.0	42..	20.1	62..	29.3	82..	38.5	102..	47.7
23..	11.5	43..	20.6	63..	29.7	83..	38.9	103..	48.2
24..	12.0	44..	21.1	64..	30.2	84..	39.4	104..	48.7
25..	12.4	45..	21.5	65..	30.6	85..	39.9	105..	49.2
26..	12.9	46..	22.0	66..	31.1	86..	40.4	106..	49.7
27..	13.3	47..	22.4	67..	31.6	87..	40.8	107..	50.1
28..	13.8	48..	22.9	68..	32.0	88..	41.3	108..	50.6
29..	14.3	49..	23.4	69..	32.5	89..	41.8	109..	51.1

<sup>1</sup> Read at the meeting of the Washington Section, March 11, 1897.

Milligrams copper.	Milligrams starch or dextrin.	Milligrams copper.	Milligrams starch or dextrin.	Milligrams copper.	Milligrams starch or dextrin.	Milligrams copper.	Milligrams starch or dextrin.	Milligrams copper.	Milligrams starch or dextrin.
110..	51.5	152..	71.3	194..	91.5	236..	112.0	278..	132.8
111..	52.0	153..	71.8	195..	92.0	237..	112.5	279..	133.4
112..	52.4	154..	72.3	196..	92.5	238..	113.0	280..	133.9
113..	52.9	155..	72.8	197..	92.9	239..	113.5	281..	134.4
114..	53.4	156..	73.2	198..	93.4	240..	114.0	282..	134.9
115..	53.9	157..	73.7	199..	93.8	241..	114.5	283..	135.4
116..	54.3	158..	74.2	200..	94.4	242..	115.0	284..	135.9
117..	54.7	159..	74.7	201..	94.9	243..	115.5	285..	136.4
118..	55.3	160..	75.2	202..	95.4	244..	115.9	286..	136.9
119..	55.8	161..	75.6	203..	95.9	245..	116.5	287..	137.4
120..	56.2	162..	76.1	204..	96.3	246..	116.9	288..	137.8
121..	56.7	163..	76.6	205..	96.9	247..	117.4	289..	138.5
122..	57.1	164..	77.1	206..	97.3	248..	117.8	290..	138.9
123..	57.6	165..	77.6	207..	97.8	249..	118.4	291..	139.5
124..	58.1	166..	78.0	208..	98.3	250..	118.9	292..	139.9
125..	58.5	167..	78.5	209..	98.8	251..	119.3	293..	140.5
126..	59.1	168..	79.0	210..	99.3	252..	119.9	294..	140.9
127..	59.5	169..	79.5	211..	99.7	253..	120.3	295..	141.5
128..	60.0	170..	79.9	212..	100.3	254..	120.9	296..	142.0
129..	60.4	171..	80.4	213..	100.7	255..	121.3	297..	142.5
130..	60.9	172..	80.9	214..	101.2	256..	121.8	298..	143.0
131..	61.4	173..	81.4	215..	101.8	257..	122.4	299..	143.5
132..	61.8	174..	81.9	216..	102.2	258..	122.8	300..	144.0
133..	62.3	175..	82.3	217..	102.7	259..	123.4	301..	144.5
134..	62.7	176..	82.8	218..	103.1	260..	123.8	302..	145.0
135..	63.3	177..	83.3	219..	103.7	261..	124.3	303..	145.5
136..	63.8	178..	83.8	220..	104.0	262..	124.8	304..	146.0
137..	64.2	179..	84.3	221..	104.6	263..	125.3	305..	146.6
138..	64.7	180..	84.7	222..	105.2	264..	125.9	306..	147.0
139..	65.1	181..	85.2	223..	105.6	265..	126.3	307..	147.6
140..	65.6	182..	85.6	224..	106.1	266..	126.8	308..	148.0
141..	66.1	183..	86.2	225..	106.6	267..	127.3	309..	148.6
142..	66.5	184..	86.7	226..	107.1	268..	127.8	310..	149.0
143..	67.1	185..	87.1	227..	107.5	269..	128.3	311..	149.6
144..	67.5	186..	87.6	228..	108.0	270..	128.8	312..	150.0
145..	68.0	187..	88.0	229..	108.5	271..	129.4	313..	150.6
146..	68.4	188..	88.6	230..	109.0	272..	129.8	314..	151.1
147..	68.9	189..	89.1	231..	109.5	273..	130.3	315..	151.6
148..	69.4	190..	89.5	232..	110.0	274..	130.8	316..	152.1
149..	69.9	191..	90.0	233..	110.5	275..	131.4	317..	152.6
150..	70.3	192..	90.5	234..	111.0	276..	131.8	318..	153.1
151..	70.8	193..	91.0	235..	111.5	277..	132.4	319..	153.6

Milligrams copper.	Milligrams starch or dextrin.	Milligrams copper.	Milligrams starch or dextrin.	Milligrams copper.	Milligrams starch or dextrin.	Milligrams copper.	Milligrams starch or dextrin.	Milligrams copper.	Milligrams starch or dextrin.
320..	154.1	349..	169.0	378..	184.3	407..	199.6	436..	215.2
321..	154.7	350..	169.6	379..	184.7	408..	200.1	437..	215.7
322..	155.1	351..	170.1	380..	185.3	409..	200.7	438..	216.3
323..	155.7	352..	170.6	381..	185.8	410..	201.2	439..	216.8
324..	156.1	353..	171.1	382..	186.3	411..	201.8	440..	217.4
325..	156.7	354..	171.6	383..	186.9	412..	202.3	441..	217.9
326..	157.2	355..	172.1	384..	187.4	413..	202.8	442..	218.5
327..	157.7	356..	172.7	385..	188.0	414..	203.3	443..	219.1
328..	158.2	357..	173.2	386..	188.4	415..	203.9	444..	219.6
329..	158.7	358..	173.8	387..	189.0	416..	204.4	445..	220.2
330..	159.2	359..	174.2	388..	189.5	417..	205.0	446..	220.6
331..	159.8	360..	174.8	389..	190.0	418..	205.4	447..	221.2
332..	160.3	361..	175.4	390..	190.5	419..	206.0	448..	221.7
333..	160.8	362..	175.8	391..	191.1	420..	206.5	449..	222.3
334..	161.3	363..	176.4	392..	191.6	421..	207.1	450..	222.8
335..	161.8	364..	176.9	393..	192.1	422..	207.6	451..	223.4
336..	162.4	365..	177.5	394..	192.6	423..	208.2	452..	223.9
337..	162.8	366..	177.9	395..	193.2	424..	208.7	453..	224.4
338..	163.4	367..	178.5	396..	193.8	425..	209.3	454..	225.0
339..	163.9	368..	179.0	397..	194.3	426..	209.8	455..	225.6
340..	164.4	369..	179.5	398..	194.8	427..	210.3	456..	226.0
341..	165.0	370..	180.0	399..	195.3	428..	210.9	457..	226.6
342..	165.4	371..	180.6	400..	195.9	429..	211.4	458..	227.1
343..	166.0	372..	181.1	401..	196.4	430..	212.0	459..	227.7
344..	166.4	373..	181.6	402..	197.0	431..	212.5	460..	228.3
345..	167.0	374..	182.1	403..	197.4	432..	213.1	461..	228.8
346..	167.5	375..	182.7	404..	197.9	433..	213.6	462..	229.4
347..	168.0	376..	183.2	405..	198.5	434..	214.2	463..	230.0
348..	168.5	377..	183.7	406..	199.1	435..	214.7		

### THE PROTEIDS OF LUPIN SEEDS.<sup>1</sup>

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THE lupin is a leguminous plant little known in this country except as a garden ornament. The yellow lupin (*Lupinus luteus*) and the blue lupin (*Lupinus angustifolius*), both native to Mediterranean regions, have long been cultivated in Europe because of their ability to grow luxuriantly on sandy or gravelly soils, and by their help large areas of poor, "worn out" land have been reclaimed and made agriculturally profitable, as these plants furnish abundant fodder and by the decay of their deeply penetrating roots, and especially when plowed under

<sup>1</sup> From the Report of the Connecticut Agricultural Experiment Station for 1896.