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Getränkeanalytik

Determination of not fermented sugar in wine with the areometer for residual sugar according to Dr. Kielhöfer

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page 1/2

The areometer for residual sugar according to Dr. Kielhöfer (scale 0-15:0,5) incl. thermometer allows to estimate the not fermented sugar in the wine, whose original value of Oechsle is known, relatively exactly.

- Approx. 500ml of wine with ambient temperature (15 to 25°C) are vigorously shaken in a bottle or Erlenmeyer flask for removing the carbonic acid (repeated discharging off the positive pressure).
- The wine in such a way degassed is filled into the dry spindle cylinder (or rinsed with wine) to approx. 5 cm under the edge. Strongly yeast-cloudy young wine has previously to be filtered (fold filter).
- Bring the clean and dry spindle (please touch only at the stack point!) carefully into the wine and release it, as soon as it swims. Read off at height of the meniscus, whereby the eye likewise is at height of the liquid level. After the spindle value the thermometer value is read off. The measured value of the spindle will apply directly, if the thermometer indicates accurately 20°C. For each degree over 20°C 0.2 sugar degrees have to be added, for each degree under 20°C 0.2 sugar degrees have to be taken off (please consider measuring range clearance 15°C to 25°C!).
- With the temperature-corrected sugar value **and** the original Oechsle value of the must before fermentation the sugar content of the wine may be taken from the sugar board in g/l (see overleaf). If the must or wine has been sugared, the value of Oechsle of the sugared must will apply.
- The values of the sugar board are computed on the basis of 24 g/l sugar-free extract. They are valid without correction with nature wines from extract-rich grape/varieties sorts of middle to good classes of approximately 70 – 85° Oechsle, e.g. Riesling.

Correction of the sugar content after reading off the sugar board:

- for young wines still fermenting before crystallisation of tartar 2 g/l sugar have to be taken off.
- for wines poor in acid (due to strong malolactic fermentation or strong chemical removing of acid) 2 g/l sugar have to be added.
- for wines extremely poor in acid 3–4 g/l sugar have to be added.
- for wines poor in extract and acid e.g. Mueller Thurgau, are 3– 4 g/l sugar have to be added.
- for wines from Botrytis-molded grapes (high in sugar-free extract) 2– 4 g/l sugar have to be taken off, the same for **red wines**.
- for noble wines (berry selections) the method is unreliable.

Example 1: normal wine

with 16°C read-off = 11,5 sugar degrees
correction of temperature = minus 0,8
temperature-corrected
sugar degrees = 10,7
original Oechsle = 82
g/l sugar = 23,4

Example 2: very acid-poor wine

with 22°C read-off = 9,7 sugar degrees
correction of temperature = plus 0,4
temperature-corrected
sugar degrees = 10,1
original Oechsle = 93
g/l sugar = 25,7
corrected by adding of 3 g/l sugar = 28,7

Table for the areometer for residual sugar acc. to Dr. Kielhöfer (g sugar / l):

Degrees of sugar read off the spindle	°Oe %Brix -KMW	Extract in the must before fermentation											
		70	73	76	79	82	85	88	91	94	97	100	103
		16,00 14,00	16,69 14,60	17,37 15,20	18,06 15,80	18,74 16,40	19,43 17,00	20,11 17,60	20,80 18,20	21,49 18,80	22,17 19,40	22,86 20,00	23,54 20,60
0	-	-	-	-	-	1,2	2,1	3,1	4,1	5,0	6,0	7,0	
0,5	-	-	-	-	1,3	2,2	3,2	4,2	5,1	6,1	7,1	8,1	
1	-	-	-	1,4	2,3	3,3	4,3	5,3	6,2	7,2	8,2	9,2	
1,5	-	-	1,5	2,5	3,4	4,4	5,4	6,4	7,3	8,3	9,3	10,3	
2	-	1,5	2,5	3,6	4,7	5,5	6,5	7,5	8,4	9,4	10,4	11,4	
2,5	1,6	2,6	3,6	4,7	5,6	6,6	7,6	8,5	9,5	10,4	11,4	12,4	
3	2,7	3,7	4,7	5,7	6,7	7,7	8,7	9,6	10,6	11,5	12,5	13,5	
3,5	3,8	4,8	5,8	6,8	7,8	8,8	9,8	10,7	11,7	12,6	13,7	14,8	
4	4,8	5,9	6,9	7,9	8,9	9,9	10,9	11,8	12,7	13,7	14,7	15,7	
4,5	5,9	6,9	8,0	9,0	10,0	11,0	12,0	12,9	13,9	14,8	15,8	16,8	
5	7,0	8,0	9,0	10,1	11,1	12,1	13,0	14,0	15,0	15,9	16,9	17,9	
5,5	8,1	9,1	10,1	11,1	12,2	13,1	14,1	15,1	16,1	17,0	18,0	19,0	
6	9,2	10,1	11,1	12,2	13,2	14,2	15,2	16,2	17,2	18,1	19,1	20,1	
6,5	10,3	11,2	12,2	13,2	14,3	15,3	16,3	17,4	18,3	19,2	20,2	21,2	
7	11,3	12,3	13,4	14,4	15,4	16,4	17,4	18,4	19,3	20,2	21,2	22,2	
7,5	12,4	13,4	14,4	15,4	16,4	17,5	18,5	19,4	20,4	21,2	22,2	23,2	
8	13,5	14,5	15,5	16,5	17,6	18,6	19,6	20,5	21,5	22,4	23,4	24,4	
8,5	14,5	15,5	16,6	17,6	18,6	19,7	20,7	21,6	22,6	23,5	24,5	25,5	
9	15,5	16,6	17,6	18,6	19,7	20,7	21,7	22,7	23,6	24,5	25,5	26,5	
9,5	16,6	17,6	18,6	19,7	20,7	21,8	22,9	23,9	24,7	25,6	26,6	27,6	
10	17,6	18,7	19,7	20,8	21,8	22,9	23,9	24,9	25,8	26,7	27,7	28,7	
10,5	18,7	19,8	20,9	21,9	22,9	24,0	25,0	25,9	26,9	27,8	28,8	29,8	
11	19,8	20,9	21,9	23,0	24,0	25,1	26,0	27,1	28,0	28,9	29,9	30,9	
11,5	20,9	21,9	23,0	24,0	25,1	26,1	27,1	28,1	29,1	30,0	31,0	32,0	
12	21,9	23,0	24,0	25,1	26,1	27,1	28,1	29,1	30,1	31,1	32,1	33,1	
12,5	23,0	24,1	25,1	26,2	27,2	28,2	29,2	30,2	31,2	32,2	33,2	34,2	
13	24,1	25,2	26,2	27,2	28,2	29,2	30,2	31,3	32,3	33,3	34,3	35,3	
13,5	25,2	26,3	27,2	28,3	29,3	30,3	31,3	32,3	33,3	34,4	35,4	36,4	
14	26,3	27,4	28,3	29,4	30,4	31,4	32,4	33,4	34,4	35,5	36,5	37,5	
14,5	27,4	28,4	29,4	30,5	31,5	32,5	33,5	34,5	35,5	36,5	37,6	38,7	
15	28,4	29,4	30,5	31,6	32,6	33,6	34,6	35,6	36,6	37,6	38,6	39,6	