

**1510.0420** MR 1993 [Renumbered 1510.0421]

**1510.0420 INVESTIGATIONAL ALLOWANCES.**

Subpart 1. **Primary plant nutrients.** A commercial fertilizer is deficient if the analysis of any plant nutrient is below the guarantee by an amount exceeding the values in the following schedule, or if the overall index value of the fertilizer is below 97 percent.

Guaranteed percent	Nitrogen percent	Available Phosphate percent	Potash percent
04	0.49	0.67	0.41
05	0.51	0.67	0.43
06	0.52	0.67	0.47
07	0.54	0.68	0.53
08	0.55	0.68	0.60
09	0.57	0.68	0.65
10	0.58	0.69	0.70
12	0.61	0.69	0.79
14	0.63	0.70	0.87
16	0.67	0.70	0.94
18	0.70	0.71	1.01
20	0.73	0.72	1.08
22	0.75	0.72	1.15
24	0.78	0.73	1.21
26	0.81	0.73	1.27
28	0.83	0.74	1.33
30	0.86	0.75	1.39
32 or more	0.88	0.76	1.44

For guarantees not listed, calculate the appropriate value by interpolation.

The overall index value is calculated by comparing the commercial value guaranteed with the commercial value found. For example, when using a 2:2:1 ratio, assuming that the nitrogen and phosphorus are valued at twice the amount of potash:

$$10.0 \text{ units N} \quad \times \quad 2 \quad = \quad 20.0$$

$$10.0 \text{ units P}_2\text{O}_5 \quad \times \quad 2 \quad = \quad 20.0$$

$$10.0 \text{ units K}_2\text{O} \quad \times \quad 1 \quad = \quad 10.0$$

Commercial Value Guaranteed = 50.0

$$10.1 \text{ units N} \quad \times \quad 2 \quad = \quad 20.2$$

$$10.2 \text{ units P}_2\text{O}_5 \quad \times \quad 2 \quad = \quad 20.4$$

$$10.1 \text{ units K}_2\text{O} \quad \times \quad 1 \quad = \quad 10.1$$

Commercial Value Found = 50.7

$$\text{Overall Index Value} = 100(50.7/50.0) = 101.4\%$$

Subp. 2. **Secondary and micro plant nutrients.** Secondary and micro plant nutrients are deficient if any plant nutrient is below the guarantee by an amount exceeding the values in the following schedule:

Plant Nutrient	Allowable Deficiency
Calcium (Ca)	0.2 unit + 5% of guarantee
Magnesium (Mg)	0.2 unit + 5% of guarantee
Sulfur (S)	0.2 unit + 5% of guarantee
Boron (B)	0.003 unit + 15% of guarantee
Cobalt (Co)	0.0001 unit + 30% of guarantee
Molybdenum (Mo)	0.0001 unit + 30% of guarantee
Chlorine (Cl)	0.005 unit + 10% of guarantee
Copper (Cu)	0.005 unit + 10% of guarantee
Iron (Fe)	0.005 unit + 10% of guarantee
Manganese (Mn)	0.005 unit + 10% of guarantee
Sodium (Na)	0.005 unit + 10% of guarantee
Zinc (Zn)	0.005 unit + 10% of guarantee

The maximum allowance when calculated under this subpart is one unit (one percent).

Subp. 3. **Analytical procedures.** Sampling equipment, procedures, preparation, and analysis must be those adopted by the Association of Official Analytical Chemists. In

cases not covered by those methods, or in cases where methods are available in which improved applicability has been demonstrated, the commissioner may adopt appropriate methods from other sources.

**Statutory Authority:** *MS s 18C.121*

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