

EFFECTIVE DATE	N P Analytical Laboratories	METHOD CODE
REVISED: 10/14/25	LABORATORY TEST METHOD SUMMARY	NACL, CL
REPLACES: 01/23/25	Salt (Soluble): Chloride (Soluble)	PAGE 1 OF 1
KEY WORDS: Salt, chloride, sodium chloride		

1. SCOPE AND PURPOSE:

- 1.1. This method measures soluble chloride (Cl), in cereals, grains, mineral concentrates, soy products, roughages, feeds, foods, and feed and food ingredients.
- 1.2. The result for chloride may be converted and reported as Salt (NaCl) using a mathematical conversion factor of 1.65 as determined by the ratio of molecular weights.
- 1.3. There is no assurance that matrices other than those listed can be assayed using this method.

2. PRINCIPLE:

- 2.1. Except for liquid samples which are analyzed directly, chloride is extracted from the sample using dilute nitric acid solution. Using a segmented flow automated analyzer system, samples, sample extracts, and standard chloride solutions are treated with mercuric thiocyanate. Chloride ions displace the thiocyanate, which is reacted with ferric ion, forming a red colored complex, which is measured spectrophotometrically. Chloride content in the sample is quantified from chloride from the set of standards of known concentration that are taken through the procedure. For highly colored liquid samples, consult manager, supervisor, expert, or designate.
- 2.2. The test code NACL is used to report salt which is calculated from soluble chloride. CL is used to report soluble chloride only.
- 2.3. Using a 1.0 g dry sample, the lowest confidence level of this method is 0.05% chloride or 0.0825% sodium chloride. This lowest confidence level may vary with sample matrix.
- 2.4. Known Interferences: All soluble salts of sulfide, bromide, and iodide, are included in the quantitation of chloride and sodium chloride.

3. PRECISION:

Records of method precision based on Method Validation and/or known control summaries are located in the QA Master file for this test method. Assay precision may vary with test matrix and analyte level. Terms used to describe method precision are defined in NPSOP3000, *Validation of Quantitative Chemical Tests*.

4. REFERENCES:

- 4.1. Standard Methods for the Examination of Water and Wastewater; Washington, D.C. (1975) 14th Ed., Methods 602 and 601, APHA-AWWA-WPCF.
- 4.2. Manual of Methods for Chemical Analysis of Water and Wastes; Cincinnati, Ohio (1974) 2nd Ed., Storet No. 00940, E.P.A.
- 4.3. O'Brien J.E., Waste Engineer, Vol. 33, p.p. 670-672, (Dec. 1962)
- 4.4. Technicon Autoanalyzer II Industrial Method No. 99-70W, (Sept. 1973) "Chloride in Water and Wastewater": and No. 229-724/tentative "Sodium Chloride in Meat Extracts" (May 1974), Tarryton, N.J.
- 4.5. Zall D.M., Fisher D., Garner M.D., Analytical Chemistry, Vol. 28, p. 1665, (1956).
- 4.6. Skalar Methods SAN++. Catnr. 239-510 issue 110818/99340545