AuSaMicS™ Life Science

# TECHNICAL DATA SHEET

TDS-ASC-8051 | Sodium Chloride (NaCl) — Laboratory Grade

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|---|---|---|---|
| **Product Name** | Sodium Chloride — Laboratory Grade | **Cat. No.** | ASC-8051 |
| **Molecular Formula** | NaCl | **MW (g/mol)** | 58.44 |
| **CAS Number** | 7647-14-5 | **EC Number** | 231-598-3 |
| **Grade** | Laboratory Grade / High Purity | **HS Code** | 2849.10.00 |
| **Synonyms** | Sodium Chloride; NaCl; Common Salt; Halite; Saline Salt; Table Salt (lab grade) | | |

## 1. Product Description

Sodium Chloride Laboratory Grade (ASC-8051) is a high-purity inorganic salt (NaCl, CAS 7647-14-5, assay >= 99.5%) supplied as a white, free-flowing crystalline powder. It is one of the most widely used reagents in laboratory science — essential for the preparation of physiological saline, phosphate buffered saline (PBS), culture media, electrophoresis buffers, and osmolarity adjustment in biological and chemical experiments.

AuSaMicS ASC-8051 is manufactured and packed in Melbourne, Australia. Each batch is released with a full batch-specific Certificate of Analysis confirming compliance with all physicochemical specifications.

## 2. Physicochemical Specifications

| Parameter | Specification | Method |
|---|---|---|
| Assay (NaCl) | >= 99.5% (w/w) | Argentometric titration / potentiometric |
| **Appearance** | White crystalline powder or granules; free-flowing | Visual |
| pH (5% aq. solution, 25°C) | 6.7 – 7.3 | Potentiometric (calibrated electrode) |
| **Loss on Drying (105°C / 2 hr)** | <= 0.5% | Gravimetric |
| Insoluble Matter | <= 0.005% | Gravimetric filtration |
| **Sulfate (as SO4 2-)** | <= 0.005% | Turbidimetric (BaSO4) |
| Chlorate (as ClO3-) | <= 0.003% | Titrimetric |
| **Bromide (as Br-)** | <= 0.01% | ICP / titrimetric |
| Heavy Metals (as Pb) | <= 5 ppm | ICP-OES / atomic absorption |
| **Iron (as Fe)** | <= 2 ppm | Spectrophotometric |
| Calcium (as Ca) | <= 0.002% | Complexometric / ICP-OES |
| **Magnesium (as Mg)** | <= 0.001% | ICP-OES |
| Potassium (as K) | <= 0.005% | Flame photometry / ICP |
| **Nitrogen compounds (as N)** | <= 0.001% | Kjeldahl / spectrophotometric |

## 3. Physical Data

| Property | Value |
|---|---|
| Melting Point | 801 degrees C |
| **Boiling Point** | 1,465 degrees C |
| Density | 2.165 g/cm3 (at 25 degrees C) |
| **Solubility in Water** | 357 g/L at 20 degrees C;  391 g/L at 100 degrees C |
| Refractive Index (nD) | 1.5442 |
| **Crystal System** | Cubic (face-centred cubic — rock salt structure) |
| Vapour Pressure | Negligible at room temperature |

## 4. Typical Applications

| Application Area | Typical Use |
|---|---|
| Buffer Preparation | Phosphate Buffered Saline (PBS), normal saline (0.9%), HEPES buffer, TRIS buffer, SSC buffer for hybridisation |
| **Culture Media** | Osmolarity adjustment; component in most microbiological culture media formulations |
| Molecular Biology | DNA/RNA extraction buffers, hybridisation solutions, cell lysis buffers, precipitation protocols |
| **Electrophoresis** | Running buffers for agarose and polyacrylamide gel electrophoresis |
| Osmolarity Control | Cell culture osmolarity adjustment; cryoprotection solutions |
| **General Chemistry** | Titrations, standard solutions, solution preparation, gravimetric analysis |

## 5. Common Laboratory Recipes

**Phosphate Buffered Saline (1x PBS, pH 7.4, per litre):**

- NaCl (ASC-8051): 8.0 g
- KCl: 0.2 g
- Na2HPO4: 1.44 g
- KH2PO4: 0.24 g
- Dissolve in 800 mL distilled water. Adjust pH to 7.4 with HCl. Make up to 1 litre. Autoclave 121°C / 15 min.

**Normal Saline (0.9% NaCl, per litre):**

- NaCl (ASC-8051): 9.0 g
- Dissolve in 1 litre distilled water. Autoclave 121°C / 15 min or filter-sterilise (0.2 um).

## 6. Preparation Notes

1. Weighing: NaCl is mildly hygroscopic. Weigh quickly in a dry environment and close the stock container immediately after use.
2. Dissolution: Dissolve in distilled or deionised water with stirring at room temperature. NaCl dissolves readily — no heating required for standard concentrations (<350 g/L).
3. pH: NaCl solutions are nearly pH-neutral (pH 6.7-7.3). Adjust pH after all buffer components are dissolved and before final volume adjustment.
4. Sterilisation: Autoclave NaCl solutions at 121°C for 15 minutes. Alternatively, filter-sterilise through a 0.2 um membrane for heat-sensitive applications.

## 7. Storage & Shelf Life

Store at 15-25°C in a tightly closed container, away from moisture.
NaCl is hygroscopic — reseal immediately after use. Use a desiccant in high-humidity storage areas.
Shelf life: Indefinite under proper dry storage conditions. Purity is not affected by age.
Do not expose to excessive humidity or direct moisture.

## 8. Literature References

5. Haynes WM (ed). CRC Handbook of Chemistry and Physics. 97th ed. CRC Press; 2016. Sodium Chloride physical and chemical data.
6. Sambrook J, Russell DW. Molecular Cloning: A Laboratory Manual. 3rd ed. Cold Spring Harbor Laboratory Press; 2001. PBS and saline buffer protocols.
7. ISO 6353-1:1982. Reagents for chemical analysis — Part 1: General testing methods. ISO, Geneva.
8. British Pharmacopoeia 2023. Sodium Chloride monograph. MHRA, London.