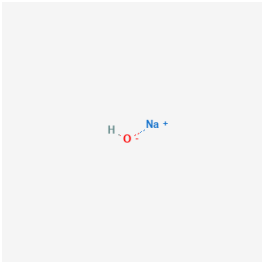
Technical Data Sheet

Sodium Hydroxide 50% Solution ACS Grade

ACS Grade · 50%

Alliance Code	Revised	Revision
sodium-hydroxide-50-solution-acs-grade	2026-10-07	1.4

CAS number 1310-73-2	UN number UN1824	Hazard class · packing group 8 · PG II
 Structure · PubChem	Grade ACS Grade · 50%	Signal word **Danger**
Hazards Corrosive H290 H314		
Proper shipping name Sodium hydroxide solution		

IDENTITY & COMPOSITION

PRODUCT NAME
Sodium Hydroxide 50% Solution ACS Grade

ALLIANCE CODE
sodium-hydroxide-50-solution-acs-grade

GRADE
ACS Grade

CONCENTRATION
50% w/w

CAS NUMBER
1310-73-2 PubChem

FORMULA
NaOH PubChem

PRODUCT TYPE
Solution

SPECIFICATIONS

TEST	SPECIFICATION	TYPICAL	METHOD	SOURCE
Assay (NaOH)	49.5-52.0 % w/w	—	—	Interpreted

TEST	SPECIFICATION	TYPICAL	METHOD	SOURCE
Ammonium hydroxide precipitate	Max 0.01%	—	—	Interpreted
Calcium (Ca)	Max 0.0025%	—	—	Interpreted
Chloride (Cl)	Max 0.002%	—	—	Interpreted
Color (APHA)	Max 20	—	—	Interpreted
Heavy metals (as Ag)	Max 0.001%	—	—	Interpreted
Iron (Fe)	Max 5 ppm (0.0005%)	—	—	Interpreted
Magnesium (Mg)	Max 0.001%	—	—	Interpreted
Mercury (Hg)	Max 0.05 ppm	—	—	Interpreted
Nickel (Ni)	Max 5 ppm (0.0005%)	—	—	Interpreted
Nitrogen compounds (as N)	Max 5 ppm (0.0005%)	—	—	Interpreted
Phosphate (PO4)	Max 5 ppm (0.0005%)	—	—	Interpreted
Potassium (K)	Max 0.01%	—	—	Interpreted
Sodium carbonate	0.00-0.25 % (w/w)	—	—	Interpreted
Sulfate (SO4)	Max 0.001%	—	—	Interpreted

Values are reproduced from the current product reference. Source labels do not by themselves establish a supplier guarantee or a test result for your lot. Confirm applicable acceptance limits and request lot-specific documentation.

AVAILABLE GRADES SAME CAS, ALTERNATE GRADES AND CONCENTRATIONS

GRADE	CONCENTRATION	TYPICAL ASSAY	SKU
THIS GRADE ACS Grade	50%	—	current

GRADE	CONCENTRATION	TYPICAL ASSAY	SKU
Membrane Grade	50%	—	sodium-hydroxide-50-membrane-grade-caustic-soda-lye
ACS	30%	—	sodium-hydroxide-30-acs-grade
Technical	30%	—	sodium-hydroxide-30-technical-grade
ACS Grade	25%	—	sodium-hydroxide-25-acs-grade
Technical	25%	—	sodium-hydroxide-25
ACS	20%	—	sodium-hydroxide-20-acs-grade
Technical	20%	—	sodium-hydroxide-20-technical-grade
ACS	15%	—	sodium-hydroxide-15-acs-grade
Technical	15%	—	sodium-hydroxide-15-technical-grade
ACS	10%	—	sodium-hydroxide-10-acs-grade
Technical	10%	—	sodium-hydroxide-10-technical-grade
Technical	5%	—	sodium-hydroxide-5-technical-grade

Typical assay for each grade is the average of its recent lots. Confirm a grade meets your specification before substituting it.

PHYSICAL & CHEMICAL PROPERTIES

PROPERTY	VALUE	SOURCE
Appearance	Clear, colorless liquid	Adjudicated
Form	Liquid	Published reference
Odor	Odorless	Adjudicated
pH	13–14	Adjudicated
Specific Gravity	1.520 - 1.545	Interpreted
Density	1.53 (50% w/w aqueous solution, 20 °C)	Published reference
Boiling Point	142 to 145 °C (288 to 293 °F) (aqueous solution)	Adjudicated
Melting Point	10 to 15 °C (50 to 59 °F), freezing point (aqueous solution)	Adjudicated
Vapor Pressure	1.2 hPa (0.9 mmHg); 6.3 mmHg at 40 °C	Adjudicated
Solubility (water)	Completely miscible with water (strongly exothermic)	Adjudicated

Strong base — hygroscopic; values may drift in opened containers. See storage guidance.

MATERIALS OF CONSTRUCTION

MATERIAL	RATING	CONDITIONS	SOURCE
HDPE / polyethylene (bottle, drum)	Compatible	50-52% (w/w) sodium hydroxide solution as packaged for sale by the supplier; no temperature stated	media.vwr.com

Compatibility is drawn from published manufacturer and supplier documentation for this product; each rating is sourced. Confirm against your specific duty cycle before equipment selection.

REGULATORY & TRANSPORT

DOT / 49 CFR

UN NUMBER
UN1824 Adjudicated

HAZARD CLASS
8 Adjudicated

PACKING GROUP
II Adjudicated

PROPER SHIPPING NAME
Sodium hydroxide solution Adjudicated

GHS / OSHA HCS 2024

SIGNAL WORD
Danger Adjudicated

H-CODES (HAZARD STATEMENTS)
H290, H314 Adjudicated

P-CODES (PRECAUTIONARY STATEMENTS)
P234, P260, P264, P280, P301+P330+P331, P303+P361+P353, P304+P340, P305+P351+P338, P310, P321, P363, P390, P405, P406, P501

Adjudicated

OCCUPATIONAL EXPOSURE LIMITS

OSHA PEL (29 CFR 1910.1000)
2 mg/m^3 TWA OSHA 29 CFR 1910.1000

ACGIH TLV
2 mg/m^3 Ceiling Adjudicated

NIOSH REL
2 mg/m^3 ceiling NIOSH Pocket Guide

NIOSH IDLH
10 mg/m^3 NIOSH Pocket Guide

Transport descriptions reflect 49 CFR 172.101 lookup at time of publication. Sourced data: NIOSH Pocket Guide for REL/IDLH, OSHA Z-Tables for PEL. Always verify against the latest regulatory text before shipment-critical decisions.

HEALTH & FIRE HAZARD

ACUTE TOXICOLOGY

LD$_{50}$ DERMAL (RABBIT)
1350 mg/kg Adjudicated

Acute toxicology values from SDS Section 11 or NIOSH RTECS.

APPLICATIONS

pH adjustment in water treatment; pulp and paper; textile scouring and dyeing; soap and detergent manufacturing; petroleum refining and oil drilling; aluminum processing; chemical synthesis

basekim.com

Applications are drawn from published manufacturer and supplier documentation; each is sourced. Suitability for a specific use is the buyer's to confirm.

STORAGE & HANDLING

RECOMMENDED STORAGE

Store above 15 °C (59 °F): 50% caustic crystallizes at about 12 °C (54 °F). Use steel, polyethylene or polypropylene containers, never aluminum, zinc, tin or galvanized metal. Keep away from acids.

Adjudicated

HANDLING PRECAUTIONS

Use full PPE including chemical splash goggles and alkali-resistant gloves. Add base to water slowly with stirring. Highly exothermic dilution.

Class-level guidance — not product-specific; the SDS controls.

INCOMPATIBILITIES

Acids (violent reaction); aluminum, zinc, tin, magnesium and their alloys, including galvanized metal (releases flammable hydrogen); organic halogen compounds; nitro compounds; flammable liquids; strong oxidizers.

Adjudicated

SHELF LIFE

36 months media.vwr.com

Source states a 3 year shelf-life for a 50% (w/w) sodium hydroxide solution (BDH reagent grade catalog listing, not ACS); no storage conditions are stated.

For full hazard, PPE, and emergency response guidance, refer to the Safety Data Sheet (SDS) for this product. The SDS controls in all cases where guidance differs.

PACKAGING & LOGISTICS

SHIPPING DESCRIPTION (US DOT)

```
UN1824, Sodium hydroxide solution, 8, PG II
```

Sourced from 49 CFR 172.101. Confirm against shipping documents and carrier requirements before tender.

NMFC CLASS	PLACARD	PACKING GROUP
60	Corrosive	PG II

REVISION HISTORY

Last reviewed 2026-10-07 by Andre Taki, Chief Commercial Officer, DOT Hazmat–certified (49 CFR 172.704).

VERSION	DATE	CHANGE	TRIGGER
1.4	2026-10-07	Canonical data updated: 17 fields changed via the provenance/adjudication pipeline. • vaporPressure · canonical change (coa.data_provenance / adjudication) • solubility · canonical change (coa.data_provenance / adjudication) • odor · canonical change (coa.data_provenance / adjudication) • pH · canonical change (coa.data_provenance / adjudication) • oel_acgih_tlv · canonical change (coa.data_provenance / adjudication) • cercla_rq · canonical change (coa.data_provenance / adjudication) • dot_transport_note · canonical change (coa.data_provenance / adjudication) • incompatible_materials · canonical change (coa.data_provenance / adjudication) • conditions_to_avoid · canonical change (coa.data_provenance / adjudication) • hazardous_decomposition_products · canonical change (coa.data_provenance / adjudication) • storage_precautions · canonical change (coa.data_provenance / adjudication) • synonyms · canonical change (coa.data_provenance / adjudication) • restrictions_on_use · canonical change (coa.data_provenance / adjudication) • recommended_use · canonical change (coa.data_provenance / adjudication) • ghsClassification · canonical change (coa.data_provenance / adjudication) • hazard_h_codes · canonical change (coa.data_provenance / adjudication) • hazard_p_codes · canonical change (coa.data_provenance / adjudication)	canonical_change
1.3	2026-09-30	Canonical data updated: 3 fields changed via the provenance/adjudication pipeline. • boilingPoint · canonical change (coa.data_provenance / adjudication) • appearance · canonical change (coa.data_provenance / adjudication) • meltingPoint · canonical change (coa.data_provenance / adjudication)	canonical_change
1.2	2026-07-22	Canonical data updated: 2 fields changed via the provenance/adjudication pipeline. • dotSubsidiaryHazardClass · canonical change (coa.data_provenance / adjudication) • dotProperShippingName · canonical change (coa.data_provenance / adjudication)	canonical_change

VERSION	DATE	CHANGE	TRIGGER
1.1	2026-07-06	Canonical data re-verified: 4 fields updated against independent vendor SDSs, CLP Annex VI, 49 CFR, and OSHA HazCom 2024 (GHS classification, hazard/precautionary codes, signal word, physical properties as applicable). • countryOfOrigin · canonical adjudication / reground (coa.data_provenance) • ghsClassification · canonical adjudication / reground (coa.data_provenance) • hsCode · canonical adjudication / reground (coa.data_provenance) • physicalProperties · canonical adjudication / reground (coa.data_provenance)	canonical_change
1.0	2026-05-20	Initial URL-first TDS published from canonical chemistry registry.	initial

This Technical Data Sheet is provided for technical reference. The Safety Data Sheet (SDS) controls in all cases where guidance differs. Values reflect Alliance Chemical canonical data at time of generation; subsequent revisions are recorded in the Revision History above.