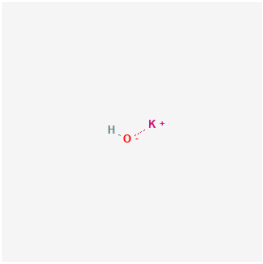
Technical Data Sheet

Potassium Hydroxide 45% Solution ACS Grade

ACS Reagent · 45% w/w

Alliance Code	Revised	Revision
potassium-hydroxide-45-solution-acs-grade	2026-10-08	1.5

CAS number 1310-58-3	UN number UN1814	Hazard class · packing group 8 · PG II
 Structure · PubChem	Grade ACS Reagent · 45% w/w	Signal word **Danger**

Hazards

Corrosive | Irritant / harmful | H290 H302 H314

Proper shipping name

Potassium hydroxide solution

IDENTITY & COMPOSITION

PRODUCT NAME

Potassium Hydroxide 45% Solution ACS Grade

ALLIANCE CODE

potassium-hydroxide-45-solution-acs-grade

GRADE

ACS Reagent

CONCENTRATION

45% w/w

CAS NUMBER

1310-58-3 Adjudicated

FORMULA

HKO Adjudicated

MOLECULAR WEIGHT

56.106 Adjudicated

PRODUCT TYPE

Solution

SPECIFICATIONS

TEST	SPECIFICATION	TYPICAL	METHOD	SOURCE
Assay (KOH)	44.0 - 46.0 % w/w	—	—	Interpreted
Chloride (Cl)	Max 0.005%	—	—	Interpreted
Other Heavy Metals (as Ag)	Max 0.0005%	—	—	Interpreted
Iron (Fe)	Max 0.0002%	—	—	Interpreted
Phosphate (PO4)	Max 0.0002%	—	—	Interpreted
Potassium Carbonate (K2CO3)	Max 0.2%	—	—	Interpreted
Sodium (Na)	Max 0.25%	—	—	Interpreted
Sulfate (SO4)	Max 0.001%	—	—	Interpreted
Nitrogen compounds (as N)	Max 0.0005%	—	Nessler colorimetric after Devarda reduction	Interpreted
Calcium (Ca)	Max 0.002%	—	ICP-OES	Interpreted
Magnesium (Mg)	Max 0.001%	—	ICP-OES	Interpreted
Nickel (Ni)	Max 0.0005%	—	ICP-OES / AAS	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 Reagent	45% w/w	—	current
Technical	45% w/w	—	potassium-hydroxide-45-solution-technical-grade-caustic-potash-liquid-koh
Technical	30% w/w	—	potassium-hydroxide-30-solution-technical-grade
Technical	25% w/w	—	potassium-hydroxide-25-solution-technical-grade-caustic-potash-liquid-koh

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
Odor	Odorless	Adjudicated
pH	14	Adjudicated
Specific Gravity	1.452–1.462 at 20 °C (water = 1)	Adjudicated
Boiling Point	About 132–133 °C (270–271 °F)	Adjudicated
Melting Point	-33 to -29 °C (-27 to -20 °F), freezing point	Adjudicated
Flash Point	Not applicable	Adjudicated
Vapor Pressure	6.4 mmHg at 25 °C	Adjudicated
Solubility (water)	Completely miscible with water (dilution releases heat)	Adjudicated

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

MATERIALS OF CONSTRUCTION

MATERIAL	RATING	CONDITIONS	SOURCE
HDPE	Compatible	45% (w/w) KOH aqueous solution, ambient catalog storage; basis is the supplier packaging the 45% solution in an HDPE bottle	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
UN1814 Adjudicated

HAZARD CLASS
8 Adjudicated

PACKING GROUP
II Adjudicated

PROPER SHIPPING NAME
Potassium hydroxide solution Adjudicated

GHS / OSHA HCS 2024

SIGNAL WORD
Danger Adjudicated

H-CODES (HAZARD STATEMENTS)
H290, H302, H314 Adjudicated

P-CODES (PRECAUTIONARY STATEMENTS)
P234, P260, P264, P270, P280,
P301+P312+P330, 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)
— no canonical

ACGIH TLV
2 mg/m^3 Ceiling Adjudicated

NIOSH REL
2 mg/m^3 Ceiling Adjudicated

NIOSH IDLH
— no canonical

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} ORAL

214–333 mg/kg (potassium hydroxide, rat); estimated ATE of the 45% solution about 475–740 mg/kg (Acute Tox. 4, H302)

Adjudicated

Acute toxicology values from SDS Section 11 or NIOSH RTECS.

APPLICATIONS

Industrial uses of potassium hydroxide: detergents/soaps, dyeing and bleaching, paint and varnish removers, electroplating, photo engraving, lithography, alkaline batteries, analytical chemistry, fuel and gas, thickening agent, organic synthesis, stabilizer

corecheminc.com

Used in a large number of manufacturing processes store.astm.org

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 closed in steel, polyethylene or polypropylene, never aluminum or galvanized. Protect from freezing. 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, copper, magnesium and their alloys, including galvanized metal (release flammable hydrogen); nitro compounds; organic materials; halogenated compounds.

Adjudicated

SHELF LIFE

Consult Technical Services for product-specific shelf life

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)

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UN1814, Potassium hydroxide solution, 8, PG II
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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 2026-10-08 by Andre Taki, Chief Commercial Officer, DOT Hazmat–certified (49 CFR 172.704).

VERSION	DATE	CHANGE	TRIGGER
1.5	2026-10-08	Canonical data updated: 20 fields changed via the provenance/adjudication pipeline. • synonyms · canonical change (coa.data_provenance / adjudication) • oel_acgih_tlv · canonical change (coa.data_provenance / adjudication) • oel_niosh_rel · canonical change (coa.data_provenance / adjudication) • rcra_waste_codes · canonical change (coa.data_provenance / adjudication) • hazardous_decomposition_products · canonical change (coa.data_provenance / adjudication) • restrictions_on_use · canonical change (coa.data_provenance / adjudication) • odor · canonical change (coa.data_provenance / adjudication) • pH · canonical change (coa.data_provenance / adjudication) • solubility · canonical change (coa.data_provenance / adjudication) • flashPoint · canonical change (coa.data_provenance / adjudication) • incompatible_materials · canonical change (coa.data_provenance / adjudication) • conditions_to_avoid · canonical change (coa.data_provenance / adjudication) • storage_precautions · canonical change (coa.data_provenance / adjudication) • recommended_use · canonical change (coa.data_provenance / adjudication) • specificGravity · canonical change (coa.data_provenance / adjudication) • boilingPoint · canonical change (coa.data_provenance / adjudication) • meltingPoint · canonical change (coa.data_provenance / adjudication) • vaporPressure · canonical change (coa.data_provenance / adjudication) • cercla_rq · canonical change (coa.data_provenance / adjudication) • dot_transport_note · canonical change (coa.data_provenance / adjudication)	canonical_change
1.4	2026-10-07	Canonical data updated: 3 fields changed via the provenance/adjudication pipeline. • 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

VERSION	DATE	CHANGE	TRIGGER
1.3	2026-09-30	Canonical data updated: 3 fields changed via the provenance/adjudication pipeline. • boilingPoint · canonical change (coa.data_provenance / adjudication) • meltingPoint · canonical change (coa.data_provenance / adjudication) • appearance · canonical change (coa.data_provenance / adjudication)	canonical_change
1.2	2026-08-27	Canonical data updated: 1 field changed via the provenance/adjudication pipeline. • oel_niosh_rel · canonical change (coa.data_provenance / adjudication)	canonical_change
1.1	2026-08-11	Canonical data updated: 12 fields changed via the provenance/adjudication pipeline. • casNumber · canonical change (coa.data_provenance / adjudication) • formula · canonical change (coa.data_provenance / adjudication) • molecularWeight · canonical change (coa.data_provenance / adjudication) • unNumber · canonical change (coa.data_provenance / adjudication) • hazardClass · canonical change (coa.data_provenance / adjudication) • packingGroup · canonical change (coa.data_provenance / adjudication) • dotProperShippingName · canonical change (coa.data_provenance / adjudication) • signalWord · 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) • dotSubsidiaryHazardClass · canonical change (coa.data_provenance / adjudication)	canonical_change

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.