

TECHNICAL DATA SHEET

Nitric Acid 20% Technical Grade

Technical · 20%

CAS NUMBER

7697-37-2

ALLIANCE CODE

nitric-acid-20

GENERATED

2026-08-31

REVISION

1.4

REVIEWED

2026-07-17 · Andre Taki

IDENTITY & COMPOSITION

PRODUCT NAME

Nitric Acid 20% Technical Grade

ALLIANCE CODE

nitric-acid-20

GRADE

Technical

CONCENTRATION

20%

CAS NUMBER

7697-37-2 PubChem

FORMULA

HNO3 PubChem

MOLECULAR WEIGHT

63.013 PubChem

PRODUCT TYPE

solution

SPECIFICATIONS

TEST	SPECIFICATION	TYPICAL	METHOD	SOURCE
Assay (HNO3)	19.5 – 20.5%	20.0 %	—	Commercial practice
Nitrite (NO2)	<=100 ppm	0.6 ppm	—	Supplier specification
Oxides of nitrogen	143 ppm max	0.6 ppm	—	Derived by dilution

TEST	SPECIFICATION	TYPICAL	METHOD	SOURCE
Sulfates	< 2.86 ppm	0.000012 %	—	Derived by dilution
Chloride (Cl)	<= 10 ppm	0.09 ppm	—	Supplier specification
Iron (Fe)	<= 10 ppm	0.3 ppm	—	Supplier specification
Residue after ignition	Max 8.8 ppm	0.7 ppm	Gravimetric, evaporation and ignition at 800 C	Interpreted
Arsenic (As)	0.0029 ppm max	0.0006 ppm	—	Derived by dilution
Heavy Metals (as Pb)	0.065 ppm max	0.009 ppm	—	Derived by dilution
Lead (Pb)	0.0000022% max	0.0000003 %	—	Derived by dilution
Mercury (Hg)	0.0014 ppm max	0.00009 ppm	—	Derived by dilution
Nickel (Ni)	0.021 ppm max	0.004 ppm	—	Derived by dilution
Phosphate (PO4)	0.0001 % max	0.00001 %	Molybdenum blue colorimetric	Derived by dilution
Substances reducing permanganate (as HNO2)	0.00015 % max	0.00006 %	Titrimetric, KMnO4 decolorization	Derived by dilution
fluoride	1.5 ppm max	0.06 ppm	—	Derived by dilution

TEST	SPECIFICATION	TYPICAL	METHOD	SOURCE
oxidizable constituents as hno2	4.6 ppm max	1.2 ppm	—	Derived by dilution
non-volatiles	0.016 % max	0.0012 %	—	Derived by dilution

Specification values are guaranteed limits. Typical values are representative of production lots and are not guaranteed. Lot-specific certificates of analysis ship with every order.

AVAILABLE GRADES SAME CAS, ALTERNATE GRADES AND CONCENTRATIONS

GRADE	CONCENTRATION	TYPICAL ASSAY	SKU
THIS GRADE Technical	20%	—	current
ACS Grade	70%	—	nitric-acid-70-acs-grade-low-particle
Technical	70%	—	nitric-acid-70-technical-grade
ACS Grade	69%	—	nitric-acid-acs-69-55-gallon-drum
Technical	69%	—	nitric-acid-69-technical-grade
Technical	65%	—	nitric-acid-65-technical-grade
Technical	40%	—	nitric-acid-40
Technical	30%	—	nitric-acid-30
Technical	25%	—	nitric-acid-25
Reagent	5%	—	nitric-acid-5

Typical assay shown is the rolling-window mean from the sibling product's most recent lots. Grade selection drives downstream end-use — verify the sibling grade matches your specification before substitution.

PHYSICAL & CHEMICAL PROPERTIES

PROPERTY	VALUE	SOURCE
Appearance	Colorless to a pale yellow	Supplier specification
Form	Liquid	Published reference
Color	<= 100	Supplier specification
Odor	Characteristic choking odor	Published reference
Specific Gravity (20 °C)	1.112 – 1.118	Interpreted
Density	1.117 (20% w/w aqueous solution, 20 °C)	Published reference
Boiling Point	Not characterized for the 20% solution	Published reference
Melting Point	Not characterized for the 20% solution	Published reference
Vapor Pressure	48 mmHg (NIOSH, 2024)	Published reference
Solubility (water)	Miscible (NIOSH, 2024)	Published reference

Strong acid — density and vapor–pressure values shown are at 20 °C; values shift markedly with concentration and temperature. Reference concentration–temperature curves before specifying equipment.

MATERIALS OF CONSTRUCTION

MATERIAL	RATING	CONDITIONS	SOURCE
chromium	Compatible	hot nitric acid; concentration not stated	itwreagents.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

UN2031 **49 CFR 172.101**

PACKING GROUP

II **Adjudicated**

HAZARD CLASS

8 **Adjudicated**

PROPER SHIPPING NAME

Nitric acid, other than red fuming, with not more than 20 percent nitric acid

Adjudicated

GHS / OSHA HAZCOM 2012

SIGNAL WORD

Danger **Adjudicated**

H-CODES (HAZARD STATEMENTS)

H290, H314, H332 **Adjudicated**

P-CODES (PRECAUTIONARY STATEMENTS)

P234, P260, P264, P271, 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 ppm TWA **OSHA 29 CFR 1910.1000**

ACGIH TLV

— **no canonical**

NIOSH REL

2 ppm TWA / 4 ppm STEL **NIOSH Pocket Guide**

NIOSH IDLH

25 ppm **NIOSH Pocket Guide**

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

CATALOG EQUIVALENTS CROSS-REFERENCE VS MAJOR CHEMICAL SUPPLIERS

SIGMA-ALDRICH

SKU	GRADE	CONC.	MATCH	NOTES
438073	ACS Reagent	70%	Exact	ACS Reagent fuming-free 70%

Cross-references are informational. Confirm against the manufacturer's current specification before substitution. Competitor trademarks are property of their respective owners.

APPLICATIONS

Used as a laboratory chemical, chemical reagent and oxidizer [laballey.com](https://www.laballey.com)

Used for gold recovery, etching, and testing jewelry and silver [laballey.com](https://www.laballey.com)

Production of fertilizers, dyes, and explosives. [itwreagents.com](https://www.itwreagents.com)

Production of soluble metal nitrates. [itwreagents.com](https://www.itwreagents.com)

Detection of aromatic amino acids and proteins through the xanthoprotein reaction. [itwreagents.com](https://www.itwreagents.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

Cool, dry, well-ventilated area in compatible containers (lined steel, HDPE, FRP — verify per concentration). Segregate from bases, oxidizers, metals, and cyanides.

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

INCOMPATIBILITIES

Bases, active metals (aluminium, zinc), cyanides, sulfides, oxidizing agents. Reacts violently with organic anhydrides.

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

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.

HANDLING PRECAUTIONS

Use full PPE including face shield, acid-resistant gloves and apron. Add acid to water slowly with stirring; never reverse. Ventilation required.

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

SHELF LIFE

Consult Technical Services for product-specific shelf life

PACKAGING & LOGISTICS

SHIPPING DESCRIPTION (US DOT)

UN2031, Nitric acid, other than red fuming, with not more than 20 percent nitric acid, 8, PG II

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

NMFC CLASS
60

PLACARD
Corrosive

PACKING GROUP
PG II

REVISION HISTORY

Last reviewed 2026-07-17 by Andre Taki, DOT Hazmat Specialist.

VERSION	DATE	CHANGE	TRIGGER
1.4	2026-08-05	Canonical data updated: 1 field changed via the provenance/adjudication pipeline. unNumber · canonical change (coa.data_provenance / adjudication)	canonical_change
1.3	2026-07-22	Canonical data updated: 1 field changed via the provenance/adjudication pipeline. dotProperShippingName · canonical change (coa.data_provenance / adjudication)	canonical_change
1.2	2026-07-21	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
1.1	2026-07-17	Canonical data re-verified: 7 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) - dotSubsidiaryHazardClass · canonical adjudication / reground (coa.data_provenance) - ghsClassification · canonical adjudication / reground (coa.data_provenance) - hazard_h_codes · canonical adjudication / reground (coa.data_provenance) - hazard_p_codes · 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.