

Formula 1

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Formula 2

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Formula 3

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Related Content

Title	Type	Slug
Seismic Monitoring Setup and PPV Interpretation	lesson	seismic-monitoring-ppv-interpretation
Blast Design Excel Template v4.2	resource	blast-design-excel-template
Drill Rig Maintenance Inspection Checklist	resource	drill-rig-maintenance-checklist
Rock Mass Rating (RMR) Field Survey Sheet	resource	rmr-field-survey-sheet
Drilling Energy Benchmarking Dashboard (Power BI)	resource	drilling-energy-dashboard

Detailed Explanation

The NAG Test Protocol is designed to simulate accelerated oxidative weathering of sulfide-bearing mine wastes—such as tailings, waste rock, and overburden—to evaluate their potential to generate acid over decades to centuries. Unlike static geochemical tests that measure instantaneous acid-base accounting

(e.g., Acid Base Accounting), ASTM D7786-22 employs a two-stage procedure: first, samples are reacted with 30% H₂O₂ to oxidize reactive sulfides (e.g., pyrite, pyrrhotite) to sulfuric acid; second, the resulting solution is titrated to quantify total acidity and neutralizing capacity (primarily from carbonates and hydroxides), yielding net acid generation values. The protocol specifies strict controls on particle size (<75 µm), reaction time (24 h ± 1 h), temperature (23 ± 2 °C), and reagent purity to ensure reproducibility and inter-laboratory comparability. Results are reported as NAG pH (pH of the final suspension after titration to endpoint), NAG acidity (total acid produced, corrected for neutralization), and NAG Neutralization Potential (NP), enabling classification into ARD risk categories (e.g., potentially acid generating, non-acid generating, or transitional). This kinetic–semi-quantitative approach bridges the gap between simple screening tests and complex long-term column leaching studies, supporting robust environmental management decisions in mine planning, closure design, and regulatory compliance.

Key Components

#	Component
1	Peroxide Oxidation Step
2	Acid-Base Titration & Endpoint Determination
3	Particle Size Reduction and Sample Homogenization

Applications

#	Application
1	Pre-mine geochemical characterization of waste rock and tailings
2	Post-closure ARD risk assessment and predictive modeling input
3	Regulatory compliance reporting for mine permitting and environmental impact assessments

Related Concepts

#	Concept
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1	Acid Rock Drainage (ARD)
2	Acid Base Accounting (ABA)
3	Kinetic Leaching Tests

Tags

geochemistry, mine waste, acid rock drainage, ASTM standard, environmental testing

NAG Test Protocol & Interpretation Guide (ASTM D7786-22)

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