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EVALUATION REPORT

Send To: C0250471
Mr. Allen Armstrong
Industrial Solution Services, Inc.
P.O. Box 1921
Upland, CA 91785

Facility: C0605263
Industrial Solution Services, Inc.
6391 Columbus Street
Suite A
Riverside CA 92504
United States

Result	**PASS**	Report Date	05-MAY-2023

Customer Name	Industrial Solution Services, Inc.
Tested To	NSF/ANSI/CAN 60
Description	Ammonium Sulfate | Liquid
Trade Designation	Ammonium Sulfate
Test Type	Annual Collection
Job Number	A-00455220
Project Number	W0820548
Project Manager	Jennifer Biers

This report documents the testing of the referenced product to the requirements of NSF/ANSI/CAN Standard 60 (Drinking Water Treatment Chemicals - Health Effects). This standard establishes minimum requirements for chemicals, the chemical contaminants, and impurities that are added to drinking water from drinking water treatment chemicals. Contaminants produced as by-products through reaction of the treatment chemical with a constituent of the drinking water are not covered by this Standard. Reference the "About the Standard" section at the end of this report for additional information about NSF/ANSI/CAN Standard 60 and the products covered under this Standard.

Thank you for having your product tested by NSF.

Please contact your Project Manager if you have any questions or concerns pertaining to this report.

Report Authorization Scott E Randall **Date** 05-MAY-2023

Scott E. Randall - Senior Manager Commercial Water

Common Terms and Acronyms Used:

Sample.....	Test result on the submitted product sample after prepared or exposed in accordance with the standard.
Control.....	Test result on a laboratory blank sample analyzed in parallel with the sample.
Result.....	Sample test result minus the Control test result.
Normalized Result...	Result normalized in accordance with the test standard to reflect potential at-the-tap concentrations
ND().....	Result is below the detection level of the analytical procedure as identified in the parenthesis.
DCC Number.....	NSF document control code of the registered formulation of the product tested
ug/L.....	Microgram per liter = 0.001 milligram per liter (mg/L)
SPAC.....	Acceptance criteria of the standard (Single Product Allowable Concentration)

References to Testing Procedures:

NSF Reference	Parameter / Test Description
C1183	Metals II in water by ICPMS (Ref: EPA 200.8)

Test descriptions preceded by an asterisk "*" indicate that testing has been performed per NSF requirements but is not within its scope of accreditation.

Unless otherwise indicated, method uncertainties are not applied in any determinations of conformity. Testing utilizes the requested sections of any referenced standards, which may not be the entire standard.

Dates of Laboratory Activity: 21-APR-2023 to 26-APR-2023

Testing Laboratories:

	Id	Address
All work performed at: ⟶	NSF_AA	NSF 789 N. Dixboro Road Ann Arbor MI 48105

About the Standard:

NSF/ANSI/CAN Standard 60: Drinking Water Treatment Chemicals - Health Effects

NSF/ANSI/CAN 60 establishes minimum health effects requirements for the chemicals, the chemical contaminants, and the impurities that are directly added to drinking water from drinking water treatment chemicals. It does not establish performance or taste and odor requirements. The standard contains requirements for chemicals that are directly added to water and are intended to be present in the finished water as well as other chemical products that are added to water but are not intended to be present in the finished water. Chemicals covered by this Standard include, but are not limited to, coagulation and flocculation chemicals, softening, precipitation, sequestering, pH adjustment, and corrosion/scale control chemicals, disinfection and oxidation chemicals, miscellaneous treatment chemicals, and miscellaneous water supply chemicals.

The testing performed to this standard is done to estimate the level of contaminants or impurities added to drinking water when the chemical is used at the "Maximum Use Level" under attestment. Prior to testing, information is obtained on the formulation and sources of supply used to manufacture the chemical. This information is then reviewed along with the minimum requirements of the standard to establish the potential contaminants of concern. A representative sample of chemical is obtained for testing. The chemical sample is prepared for analysis through specific methods established in the standard based on the type of chemical and then is analyzed for potential contaminants determined during the formulation review. The laboratory results are normalized to represent potential at-the-tap values and then compared to the "single product allowable concentration" (SPAC) established by the standard. The product is found in compliance with the standard if the normalized value is less than or equal to the allowable concentration.

General Information

Standard: NSF/ANSI/CAN 60

Chemical Name: Ammonium Sulfate
Monitor Code: A
Physical Description of Sample: Liquid
Tested DCC Number: DA09741
Trade Designation/Model Number: Ammonium Sulfate

Sample Id: **S-0001986456**
Description: Ammonium Sulfate | Liquid
Sampled Date: 24-Apr-2023
Received Date: 14-Feb-2023

Tox Normalization Information:		**Lab Normalization Information:**	
Calculated NF	0.0833	Date exposure completed	24-APR-2023
Preparation method used	A	Final volume of solution	0.25 L
MUL	60 mg/L	Mass of material used	180 mg
Compound Reference Key:	SPAC		

Normalization Calculation:

Normalized Result = Test Result (ug/L) * NF

Where $NF = MUL\ (mg/L) * \frac{\text{Final Volume Of Solution (L)}}{\text{Mass of Material Used (mg)}}$

- *MUL = Maximum Use Level;*
- *Mass of Material Used = The mass of sample analyzed in the laboratory;*
- *Final Volume of Solution = The volume of water used to dilute the sample;*
- *An additional factor may be used to adjust the analytical result to field use conditions to account for product carryover, flushing, or other assumptions stipulated with the use of the product. If an additional factor is used, it is included in the information above.*

Testing Parameter	Units	Sample	Control	Result	Norm. Result	Acceptance Criteria(1)	Evaluation Status
Ann Arbor Chemistry Lab							
Metals II in water by ICPMS (Ref: EPA 200.8)							
Arsenic	ug/L	ND(1)	ND(1)	ND(1)	ND(0.08)	1	Pass
Barium	ug/L	ND(1)	ND(1)	ND(1)	ND(0.08)	200	Pass
Beryllium	ug/L	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.04)	0.4	Pass
Cadmium	ug/L	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.02)	0.5	Pass
Chromium	ug/L	ND(1)	ND(1)	ND(1)	ND(0.08)		
Copper	ug/L	ND(1)	ND(1)	ND(1)	ND(0.08)	130	Pass
Mercury	ug/L	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.02)	0.2	Pass
Lead	ug/L	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.04)	0.5	Pass
Antimony	ug/L	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.04)	0.6	Pass
Selenium	ug/L	ND(1)	ND(1)	ND(1)	ND(0.08)	5	Pass
Thallium	ug/L	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.02)	0.2	Pass

1 - If the acceptance criteria is blank and the evaluation status is "Fail", then the criteria used will be noted on the letter accompanying these results.

AMMONIUM SULFATE

Safety Data Sheet

SECTION 1. PRODUCT AND COMPANY INDENTIFICATION

Product/Chemical Name: Ammonium Sulfate
Chemical Family: Inorganic ammonium salt
General Use: Drinking water treatment, waste water treatment, food processing, fermentation, pharmaceuticals, and other manufacturing applications

Company Information:

Industrial Solution Services, Inc

Phone: 909-931-1860 FAX:909-931-1960

Emergency Phone:
1-800-424-9300 Chemtrec (USA)

SECTION 2. HAZARDS IDENTIFICATION

Pictogram:

Signal Word: WARNING

Hazard Statements: May cause respiratory irritation
Causes eye irritation

Precautionary Statements:
Do not get in eyes, on skin or on clothing
Avoid breathing dust.
IF ON SKIN: Wash with plenty of soap and water
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
If eye irritation persists: get medical advice or attention
Collect spillage
Store in a closed container
Dispose of container in accordance with local, state, province and federal regulations.

SECTION 3. COMPOSITION / INFORMATION ON INGREDIENTS

Substance Ammonium Sulfate
Chemical Name: Ammonium Sulfate CAS#: 7783-20-2 (99 - 100%)
Synonyms: Ammonium Sulphate; Diammonium Sulfate; Granular Ammonium Sulfate; Aqua Aide™ Crystal, FCC Ammonium Sulfate, Purified Ammonium Sulfate, Reagent Ammonium sulfate, Technical Ammonium Sulfate
Impurities: NA. No impurities or additives which are themselves classified and which contribute to the classification of the substance.

SECTION 4. FIRST AID MEASURES

Inhalation of dust:
Remove person from source of exposure to fresh air. If breathing is difficult, administer oxygen. If not breathing, start CPR. Get medical attention immediately.
Skin contact:
Immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing.
If irritation develops get medical attention.
Eye contact:
Immediately flush eyes with plenty of water for at least 15 minutes while holding eyelids open.
Get medical attention if irritation persists.
Ingestion:
If fully conscious, drink as much water as can be tolerated. DO NOT induce vomiting. Get medical attention.

Most Important Symptoms/Effects:
Inhalation:
Dust may irritate nose, throat, mucous membranes, and respiratory tract.
Skin contact:
Prolonged and repeated exposure may cause mild irritation.
Eye contact:
May cause irritation. May cause pain and tearing.
Ingestion:
May cause irritation of the mouth, throat, gastrointestinal tract. May cause salivation, pain, nausea, vomiting, diarrhea.

SECTION 5. FIRE FIGHTING MEASURES

Flammability:
Product is not flammable and will not burn.
Suitable Extinguishing Media:
For fires in area, use appropriate extinguishing media.
Specific Hazards Arising from the Chemical:
In a fire, dried ammonium sulfate can decompose at temperatures above 455°F (235°C) and may release ammonia and sulfur oxides which are toxic and may be flammable.

Special Protective Equipment and Precautions for Firefighters:
Wear full protective fire fighting clothing including NIOSH approved self contained breathing apparatus. Remain upwind of fire to avoid hazardous vapors and decomposition products.

SECTION 6. ACCIDENTIAL RELEASE MEASURES

General:
Site specific procedures to address accidental spills are necessary as dictated by facility design, location, staffing, containment structures, and regulatory requirements. Consult engineers if needed.

Personal Precautions, Protective Equipment and Emergency Procedures:
In the event of a spill, clear unnecessary personnel from spill area. If direct contact with spilled material is likely, use personal protective equipment recommended in Section 8.

Methods and Materials for Containment and Cleaning Up:
Sweep up spilled material and collect for reuse or disposal. Dispose of material in accordance with local, state, province, and federal regulations. DO NOT flush material with water.

SECTION 7. HANDLING AND STORAGE

Incompatible Chemicals:
Avoid contact with alkalis and basic (high pH) materials.

Containment:
Keep in closed containers.

General Hygiene:
Do not eat, drink, take medication or smoke when direct contact is possible.
Always thoroughly wash hands after leaving a work area where contact is possible or has occurred.

Storage:
Keep containers closed and contents protected from dust, dirt, and moisture.
Have containers properly labeled for contents.

Temperature for Storage:
Preferred storage temperature range is 4°C-43°C (40°F-90°F).

Ventilation:
Local ventilation and dust collection

Personal Protection:
If direct contact with material is likely use personal protective equipment.

SECTION 8. EXPOSURE CONTROL / PERSONAL PROTECTION

Exposure Limits

Ingredient: ammonium soluble salts (nuisance dust)

OSHA PEL		ACGIH TLV		NIOSH TLV		NIOSH
TWA	STEL	TWA	STEL	TWA	STEL	IDLH
15mg/m^3	none est.	10mg/m^3	none est.	none est.	none est.	none est.

Respiratory - Ventilation:
Local ventilation and dust collection is typically used. Under normal conditions respiratory protective equipment is not needed. If work requires direct exposure to product dust, use appropriate, NIOSH approved respiratory protection. Consult engineers if necessary.

Eye - Skin wash:
Have appropriate eye wash and safety shower stations available in the work area.
Eyes:
Use protective eye glasses with side shields or goggles to prevent direct contact.
Skin:
Wear long sleeve shirt, full length trousers, and gloves. No open-toed footwear. For spill cleanup, use gloves and NIOSH approved dust mask.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance: Solid white crystals
Odor: No odor
Odor Threshold: NA
pH: 5.0 – 6.0 (5% solution)
Melting/Freeze point: NA
Boiling point-range: NA
Flash point: NA
Evaporation rate: NA
Flammability: Not flammable.
Upper/lower flammability limits: NA
Vapor pressure: NA
Vapor density: NA
Relative Density (Bulk Density): 66 – 69 lbs./cu. ft.
Water Solubility: 74.4g/100ml @ 20°C (68°F)
Partial coefficient: n-octanol/water: NA
Auto ignition: NA
Decomposition temperature: >235°C (455°F)
Viscosity: NA

SECTION 10. STABILITY AND REACTIVITY

Reactivity:
No data available
Chemical Stability:
Product is chemically stable under normal ambient temperature and conditions while stored or used.
Possibility of Hazardous Reactions:
Product will not polymerize.
Conditions to Avoid:
Keep away from incompatibles.
Incompatible Materials:
Strong alkalis, strong acids, strong oxidizing agents, chlorates, nitrates, hypochlorites, mild steel, iron, and non-ferrous metals. Consult engineers if necessary.
Hazardous Decomposition Products:
At temperatures above 235°C (455°F) ammonia and sulfur oxide gasses are released. These gasses are toxic, corrosive and are oxidizers. Ammonia and sulfur trioxide are fire hazards.

SECTION 11. TOXICOLOGICAL INFORMATION

Component Analysis - LD50/LC50
The components of this material have been reviewed in various sources and the following selected endpoints are published:
Ammonium sulfate (7783-20-2)
Oral LD50 Rat 2840 mg/kg

HEALTH EFFECTS
Inhalation - Acute Exposure
Inhalation may cause slight irritation of mucous membranes.
Inhalation - Chronic Exposure
Repeated or prolonged exposure may cause irritation of the mucous membranes.
Skin Contact - Acute Exposure
May cause slight irritation.
Skin Contact - Chronic Exposure
May cause irritation.
Eye Contact - Acute Exposure
May cause irritation, pain and tearing.
Eye Contact - Chronic Exposure
May cause irritation, pain and tearing.
Ingestion - Acute Exposure
May cause irritation of the mouth, throat, gastrointestinal tract. May cause salivation, pain, nausea, vomiting, diarrhea.
Ingestion - Chronic Exposure
No data available.

SECTION 12. ECOLOGICAL INFORMATION

Ecotoxicity (aquatic):
Ammonium sulfate (7783-20-2)
Fish: LC50 Atlantic Salmon: 306817 ug/L
Invertebrate: LC50 Daphnia magna: 218,400 ug/L
Persistence and Degradability:
No information available
Bioaccumulation Potential:
This product is not expected to bioaccumulate.
Mobility in Soil:
No information available.
Other Adverse Effects:
No information available

SECTION 13. DISPOSAL CONSIDERATIONS

RCRA Hazardous Waste: Not listed.
Neutralization:
No neutralization required.

Contaminated Packaging:
Packaging and storage containers that cannot be thoroughly cleaned must be disposed of in accordance with local, state, province, and federal regulations.

SECTION 14. TRANSPORTATION INFORMATION

Land (DOT), Sea (IMDG), Air (ICAO/IATA)
Identification Number: NA
Proper Shipping Name: NA
Hazard Class: NA
Packing Group: NA
Environmental Hazards: Marine pollutant: no; Hazardous substance: no
Special Precautions: None known

SECTION 15. REGULATORY INFORMATION

RCRA Hazardous Waste: Not Listed.
CERCLA Hazardous Substance: No
CERCLA Reportable Quantity (RQ): NA
SARA 311/312 Categories:
- **Acute (immediate) health effects:** No
- **Chronic (delayed) health effects:** No
- **Sudden release of pressure hazard:** No
- **Reactivity hazard:** No
- **Fire hazard:** No

SARA 313 Toxic Chemical Listing: Not listed
SARA Extremely Hazardous Substance (EHS): Not listed
OSHA Air (29CFR 1910.10000, Table Z-1, Z-1A): Not listed
OSHA Special Regulated Substance (29CFR 1910): Not listed
California Prop 65 Chemical: No
United States TSCA Section Inventory Status: Product exempt or listed on the TSCA Inventory.
State Regulations: State specific regulations have not been determined by GAC Chemical Corporation. Consult engineers if necessary.

SECTION 16. OTHER INFORMATION

HMIS Rating:
Health: 1
Flammability: 0
Reactivity: 0
NFPA Rating:
Health: 1
Fire: 0
Reactivity: 0
Special: NA

Preparatory Statement:
The information in this Safety Data Sheet (SDS) is correct to the best of our knowledge, information we have available, and belief as of the publication date. The information is designed solely as guidance for handling, storage, transportation, release, and disposal and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with other materials or in any process unless specified in the text.

Date Sources for the SDS:
Literature, databases, practice, publications, own tests, regulations

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