

NONA

Safety Data Sheet

According To Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules And Regulations

Revision Date: 05/12/2015

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Version: 1.0

SECTION 1: IDENTIFICATION

1.1. Product Identifier

Product Form: Mixture

Product Name: NONA

Chemical Name: 2,4,6,2',4',6',2'',4''',6''''-Nonanitro-[1,1';3',1''']terphenyl or 2,4,6,2',4',6',2'',4''',6''''-Nonanitro-m-terphenyl

Molecular Weight: 635.28

Formula: C₁₈H₅N₉O₁₈

Holston SDS Number: 6903

Synonyms: NONA

1.2. Intended Use of the Product

Use of the substance/mixture: This is an experimental military explosive.

1.3. Name, Address, and Telephone of the Responsible Party

Company

ORDNANCE SYSTEMS INC [KINGSPORT]

Holston Army Ammunition Plant

4509 West Stone Drive

Kingsport, TN 37660

E-mail contact information: OSIREACHInfo@baesystems.com

1.4. Emergency Telephone Number

Emergency Number : FOR EMERGENCY CALL CHEMTREC® DAY OR NIGHT, WITHIN USA AND CANADA: 1-800-424-9300, outside USA and Canada: +1 703-741-5970 (collect calls accepted), For more information about this SDS, call OSI Safety (423) 578-6000 or (423) 578-6318

SECTION 2: HAZARDS IDENTIFICATION

2.1. Classification of the Substance or Mixture

Classification (GHS-US)

Expl. 1.1 H201

Full text of H-phrases: see section 16

2.2. Label Elements

GHS-US Labeling

Hazard Pictograms (GHS-US)



Signal Word (GHS-US)

: Danger

Hazard Statements (GHS-US)

: H201 - Explosive; mass explosion hazard.

Precautionary Statements (GHS-US)

: P210 - Keep away from heat, hot surfaces, open flames, sparks. - No smoking.
P230 - Keep wetted with water.
P240 - Ground/bond container and receiving equipment.
P250 - Do not subject to friction, grinding, shock.
P280 - Wear eye protection, protective clothing, protective gloves.
P370+P380 - In case of fire: Evacuate area.
P372 - Explosion risk in case of fire.
P373 - DO NOT fight fire when fire reaches explosives.
P401 - Store in accordance with as defined in the provisions of the Bureau of Alcohol, Tobacco and Firearms regulations contained in 27 CFR Part 555.
P501 - Dispose of contents/container in accordance with local, regional, national, and international regulations.

2.3. Other Hazards

Exposure may aggravate those with pre-existing eye, skin, or respiratory conditions. Accidental firing or explosion is likely to cause severe injury or death. Electrostatic charges generated by emptying package in or near flammable vapor may cause flash fire.

2.4. Unknown Acute Toxicity (GHS-US)

100% of the mixture consists of ingredients of unknown acute toxicity.

NONA

Safety Data Sheet

According to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

3.1. Substance

Name	Product Identifier	%	Classification (GHS-US)
2,2',2'',4,4',4'',6,6',6''-Nonanitro-m-terphenyl	(CAS No) 51460-84-5	94-100	Expl. 1.1, H201

Full text of H-phrases: see section 16

SECTION 4: FIRST AID MEASURES

4.1. Description of First Aid Measures

First-aid Measures General: Never give anything by mouth to an unconscious person. If you feel unwell, seek medical advice (show the label if possible).

First-aid Measures After Inhalation: Remove person to fresh air and keep comfortable for breathing. Obtain medical attention if breathing difficulty persists.

First-aid Measures After Skin Contact: Remove contaminated clothing. Drench affected area with water or soap and water for at least 15 minutes. Wash contaminated clothing before reuse. Obtain medical attention if irritation develops or persists.

First-aid Measures After Eye Contact: Rinse cautiously with water for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Obtain medical attention.

First-aid Measures After Ingestion: Do NOT induce vomiting. Rinse mouth. Immediately call a POISON CENTER or doctor/physician.

4.2. Most important symptoms and effects, both acute and delayed

Symptoms/Injuries: The health hazards for this particular product are unknown. Similar substances have the following symptoms listed below.

Symptoms/Injuries After Inhalation: May cause respiratory irritation. Excessive exposure may cause central nervous system effects may include headache, dizziness, loss of balance and coordination, unconsciousness, coma, respiratory failure, and death.

Symptoms/Injuries After Skin Contact: Harmful in contact with skin. Symptoms may include: Redness, pain, swelling, itching, burning, dryness, and dermatitis.

Symptoms/Injuries After Eye Contact: Direct contact with the eyes is likely irritating.

Symptoms/Injuries After Ingestion: Harmful if swallowed. Weakness. Dizziness. Headache. Nausea. Convulsions.

Chronic Symptoms: Chronic exposure to some explosive dusts has been reported to cause convulsions or unconsciousness. Chronic local and systemic effects are not fully known. Inhalation and ingestion can result in systemic poisoning, usually affecting the bone marrow (blood-cell-producing system) and the liver. Avoid inhalation and ingestion of dust.

4.3. Indication of Any Immediate Medical Attention and Special Treatment Needed

If you feel unwell, seek medical advice (show the label where possible).

SECTION 5: FIRE-FIGHTING MEASURES

5.1. Extinguishing Media

Suitable Extinguishing Media: DO NOT FIGHT FIRES INVOLVING EXPLOSIVES. Water may be applied through fixed extinguishing system (sprinklers) as long as people need not be present for the system to operate.

Unsuitable Extinguishing Media: DO NOT FIGHT FIRES INVOLVING EXPLOSIVES. Attempts to smother a fire involving this product will be ineffective as it is its own oxygen source. Smothering this product could lead to decomposition and explosion. This product is more sensitive to detonation if contaminated with organic or oxidizable material or if heated while confined. Unless the mass of product on fire is flooded with water, re-ignition is possible.

5.2. Special Hazards Arising From the Substance or Mixture

Fire Hazard: Substance may explode when in contact with flammable or organic substances and confined during a fire. In case of fire involving explosives: Evacuate area. DO NOT fight fires involving explosives. Consult the most current Emergency Response Guidebook (ERG), Guide 112 for additional information. Extreme risk of explosion from shock, friction, fire or other sources of ignition.

Explosion Hazard: This product is an explosive with mass detonation hazard.

Reactivity: Stable under normal temperature and pressure. NONA is an experimental military high explosive.

5.3. Advice for Firefighters

Precautionary Measures Fire: This product is an explosive with mass detonation hazard. DO NOT FIGHT FIRES INVOLVING EXPLOSIVE MATERIALS.

Firefighting Instructions: DO NOT ATTEMPT TO FIGHT FIRE. Immediately evacuate all personnel from the area to a safe distance. Guard against re-entry. Thermal decomposition can lead to release of irritating gases and vapors.

Protection During Firefighting: When controlling fire before involvement of explosives, fire-fighters should wear positive pressure self-containing breathing apparatus (SCBA) and full turnout gear.

Other Information: Refer to Section 9 for flammability properties.

NONA

Safety Data Sheet

According to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

SECTION 6: ACCIDENTAL RELEASE MEASURES

6.1. Personal Precautions, Protective Equipment and Emergency Procedures

General Measures: Do not get in eyes, on skin, or on clothing. Do not breathe dust or fumes. Keep away from heat, sparks, open flames, hot surfaces – No smoking. Eliminate every possible source of ignition. Evacuate danger area.

6.1.1. For Non-emergency Personnel

Protective Equipment: Use appropriate personal protection equipment (PPE).

Emergency Procedures: Evacuate danger area.

6.1.2. For Emergency Responders

Protective Equipment: Equip cleanup crew with proper protection.

Emergency Procedures: Upon arrival at the scene, a first responder is expected to recognize the presence of dangerous goods, protect oneself and the public, secure the area, and call for the assistance of trained personnel as soon as conditions permit.

6.2. Environmental Precautions

Prevent entry to sewers and public waters. Hazardous waste due to potential risk of explosion.

6.3. Methods and Material for Containment and Cleaning Up

For Containment: Absorb and/or contain spill with inert material, then place in suitable container.

Methods for Cleaning Up: Follow local, state and federal regulations. Clean up spills immediately using a soft bristle brush and a rubber or plastic pan or shovel. Avoid pinching material, metal to metal contact, impact with sharp objects, friction or other situations which may initiate the explosive. Avoid sand, glass, grit, and metal fragments which may sensitize the material to impact and/or friction. Wet with water to desensitize.

6.4. Reference to Other Sections

See heading 8, Exposure Controls and Personal Protection. Concerning disposal elimination after cleaning, see item 13.

SECTION 7: HANDLING AND STORAGE

7.1. Precautions for Safe Handling

Additional Hazards When Processed: Must not be confined if burning. Confinement can cause deflagration or transition to detonation with extremely violent results. Explosives may be retained in fissures, cracks, and crevices of structures, equipment and containers which have been exposed to explosives. Property which may be contaminated by explosives must not be subjected to heat, sparks, or flame. Detonation can occur. Thermal decontamination under controlled conditions is the recommended method for complete decontamination. Thermal decontamination must be preceded by washing/steaming and chemical neutralization or dissolution. Contaminated property must not be buried. During decomposition toxic oxides of nitrogen are emitted. Explosives must be tested for compatibility with any materials which they contact. Materials include other explosives, solvents, adhesives, metals, plastics, paints, cleaning compound, floor and table coverings, packing materials, and other similar materials and equipment. Keep container closed. Wash thoroughly after handling. Wash contaminated clothing before reuse. Extreme care should be exercised during maintenance of explosive contaminated equipment. Decontamination procedures include washing/steaming, chemical decontamination, and thermal decontamination. Decontamination should be performed prior to welding, cutting or grinding metal parts. Penetrating oil should be used liberally on nuts, bolts, and all threaded connections to aid in desensitizing hidden explosives prior to disassembly.

Hygiene Measures: This product is an explosive and should only be used under the supervision of trained and licensed personnel. Handle in accordance with good industrial hygiene and safety procedures. Wash hands and other exposed areas with mild soap and water before eating, drinking, or smoking and again when leaving work.

7.2. Conditions for Safe Storage, Including Any Incompatibilities

Technical Measures: Store as defined in the provisions of the Bureau of Alcohol, Tobacco and Firearms regulations contained in 27 CFR Part 555.

Storage Conditions: Store under moderate temperatures recommended by a technical services representative. Store under dry conditions in a well ventilated magazine that has been approved for either detonator storage or explosive storage. Do NOT store explosives in a detonator magazine or detonators in an explosive magazine. Keep away from heat, spark and flames. Keep containers closed. Explosives should be kept well away from initiating explosives; protected from physical damage; separated from oxidizing materials, combustibles, and sources of heat. Isolate from incompatibles. Ideal storage temperature: 10-27°C (50-80°F).

Incompatible Products: Avoid alkalis, particularly at elevated temperatures. Avoid strong acids and physical sensitizers such as glass, sand, and metal fragments.

Incompatible Materials: Oxidizable materials, metal powder, bronze & copper alloys, fuels (e.g. lubricants, machine oils), fluorocarbon lubricants, acids, corrosive liquids, chlorate, sulfur, sodium nitrite, charcoal, coke and other finely divided combustibles. Strong oxidizing and reducing agents.

NONA

Safety Data Sheet

According to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

Storage Area: High explosives should be stored in approved explosives magazines in accordance with AMCR 385-100. Storage and handling must be carried out in accordance with appropriate Safety Agency regulations concerning quantity distance, barricading, personnel exposure and material handling equipment. Recycle or dispose of used containers in accordance with appropriate Safety Agency regulations. In buildings and locations where explosives with spark energies for initiation not greater than 0.02 Joules are handled, the relative humidity should be 50% or greater. Dust generated by handling must be cleaned up on a continuing basis.

Special Rules on Packaging: Keep only in original container.

7.3. Specific End Use(s)

This is an experimental military explosive.

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1. Control Parameters

For substances listed in section 3 that are not listed here, there are no established exposure limits from the manufacturer, supplier, importer, or the appropriate advisory agency including: ACGIH (TLV), NIOSH (REL), or OSHA (PEL).

8.2. Exposure Controls

Appropriate Engineering Controls

: Proper grounding procedures to avoid static electricity should be followed. Emergency eye wash fountains and safety showers should be available in the immediate vicinity of any potential exposure. Product to be handled in a closed system and under strictly controlled conditions. Ensure adequate ventilation, especially in confined areas. Ensure all national/local regulations are observed.

Personal Protective Equipment

: Gloves. Protective clothing. Protective goggles. Insufficient ventilation: wear respiratory protection.



Materials for Protective Clothing

: For explosive-handling workers, caps and coveralls for full body (arms and legs) protection are recommended. Cotton coveralls, underwear, socks and conductive shoes are recommended to avoid human static discharge.

Hand Protection

: Wear chemically resistant protective gloves.

Eye Protection

: Chemical safety goggles.

Skin and Body Protection

: Wear suitable protective clothing. Wear long sleeves.

Respiratory Protection

: Cartridge type respirators are ineffective with nitric acid fumes, aerosols or oxides of nitrogen. If exposure limit is exceeded or levels are unknown, approach with a NIOSH approved full-face SCBA (in positive pressure mode).

Environmental Exposure Controls

: Avoid contamination of soil, drains, and water during handling.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

9.1. Information on Basic Physical and Chemical Properties

Physical State	: Solid
Appearance	: Pale yellow fine
Odor	: No odor
Odor Threshold	: No data available
pH	: No data available
Evaporation Rate	: No data available
Melting Point	: >360 °C (>680 °F)
Freezing Point	: No data available
Boiling Point	: No data available
Flash Point	: No data available
Auto-ignition Temperature	: No data available
Decomposition Temperature	: No data available
Flammability (solid, gas)	: No data available
Vapor Pressure	: No data available
Relative Vapor Density at 20 °C	: No data available
Relative Density	: No data available

NONA

Safety Data Sheet

According to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

Specific Gravity	: 1.78
Solubility	: Insoluble
Partition Coefficient: N-Octanol/Water	: No data available
Viscosity	: No data available
Explosive Properties	: Class 1.1 - Explosives (with a mass explosion hazard) 49 CFR 173.21

9.2. Other Information

No additional information available

SECTION 10: STABILITY AND REACTIVITY

10.1. Reactivity: Stable under normal temperature and pressure. NONA is an experimental military high explosive.

10.2. Chemical Stability: This is a military high explosive. It has been assigned the United Nations Organization Classification of Class 1, Division 1 (mass detonating) based on the Department of Defense Explosives Hazard Classification Procedures, Army Technical Bulletin 700-2.

10.3. Possibility of Hazardous Reactions: Hazardous polymerization will not occur.

10.4. Conditions to Avoid: Avoid shock, heat, electrostatic discharge, impact, impingement and friction. High explosive will detonate when exposed to sufficient energy level.

10.5. Incompatible Materials: Avoid alkalis, particularly at elevated temperatures. Avoid strong acids and physical sensitizers such as glass, sand, and metal fragments.

10.6. Hazardous Decomposition Products: Nitrogen oxides. Carbon oxides (CO, CO₂).

SECTION 11: TOXICOLOGICAL INFORMATION

11.1. Information On Toxicological Effects

Acute Toxicity: Not classified

Skin Corrosion/Irritation: Not classified

Serious Eye Damage/Irritation: Not classified

Respiratory or Skin Sensitization: Not classified

Germ Cell Mutagenicity: Not classified

Carcinogenicity: Not classified

Reproductive Toxicity: Not classified

Specific Target Organ Toxicity (Single Exposure): Not classified

Specific Target Organ Toxicity (Repeated Exposure): Not classified

Aspiration Hazard: Not classified

Symptoms/Injuries After Inhalation: May cause respiratory irritation. Excessive exposure may cause central nervous system effects may include headache, dizziness, loss of balance and coordination, unconsciousness, coma, respiratory failure, and death.

Symptoms/Injuries After Skin Contact: Harmful in contact with skin. Symptoms may include: Redness, pain, swelling, itching, burning, dryness, and dermatitis.

Symptoms/Injuries After Eye Contact: Direct contact with the eyes is likely irritating.

Symptoms/Injuries After Ingestion: Harmful if swallowed. Weakness. Dizziness. Headache. Nausea. Convulsions.

Chronic Symptoms: Chronic exposure to some explosive dusts has been reported to cause convulsions or unconsciousness. Chronic local and systemic effects are not fully known. Inhalation and ingestion can result in systemic poisoning, usually affecting the bone marrow (blood-cell-producing system) and the liver. Avoid inhalation and ingestion of dust.

SECTION 12: ECOLOGICAL INFORMATION

12.1. Toxicity

No additional information available

12.2. Persistence and Degradability

No additional information available

12.3. Bioaccumulative Potential

No additional information available

12.4. Mobility in Soil

No additional information available

12.5. Other Adverse Effects

Other Information : Avoid release to the environment.

NONA

Safety Data Sheet

According to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

SECTION 13: DISPOSAL CONSIDERATIONS

13.1. Waste treatment methods

Waste Treatment Methods: Hazardous waste due to potential risk of explosion. Dispose of waste material in accordance with all local, regional, national, and international regulations.

Waste Disposal Recommendations: Disposal should comply with all federal, state and local regulations. Waste is considered hazardous waste for reactivity characteristic (United States EPA D003 hazardous waste classification). Explosives should be destroyed by open burning, by burning in an approved incinerator, or by chemical treatment with caustics. The disposal site should be located to provide adequate quantity-distance protection for adjacent facilities and personnel. Explosives should not be burned in containers. The explosives should be ignited remotely.

SECTION 14: TRANSPORT INFORMATION

14.1. In Accordance with DOT

Proper Shipping Name : SUBSTANCES, EXPLOSIVE, N.O.S., (2,2',2'',4,4',4'',6,6',6''-Nonanitro-m-terphenyl)

Hazard Class : 1.1D



Identification Number : UN0475

Label Codes : 1.1D

Packing Group : II

14.2. In Accordance with IMDG

Proper Shipping Name : SUBSTANCES, EXPLOSIVE, N.O.S., (2,2',2'',4,4',4'',6,6',6''-Nonanitro-m-terphenyl)

Hazard Class : 1

Identification Number : UN0475

Packing Group : II

Label Codes : 1.1D

EmS-No. (Fire) : F-B

EmS-No. (Spillage) : S-Y

MFAG Number : 112



14.3. In Accordance with IATA

Proper Shipping Name : SUBSTANCES, EXPLOSIVE, N.O.S., (2,2',2'',4,4',4'',6,6',6''-Nonanitro-m-terphenyl)

Packing Group : II

Identification Number : UN0475

Hazard Class : 1

Label Codes : 1.1D

ERG Code (IATA) : 1L



SECTION 15: REGULATORY INFORMATION

15.1 US Federal Regulations

NONA (2,4,6,2',4',6',2'',4'',6''-Nonanitro-[1,1';3',1'']terphenyl or 2,4,6,2',4',6',2'',4'',6''-Nonanitro-m-terphenyl)	
SARA Section 311/312 Hazard Classes	Immediate (acute) health hazard Sudden release of pressure hazard Fire hazard

15.2 US State Regulations

Neither this product nor its chemical components appear on any US state lists.

SECTION 16: OTHER INFORMATION, INCLUDING DATE OF PREPARATION OR LAST REVISION

Revision Date : 05/12/2015

Other Information : This document has been prepared in accordance with the SDS requirements of the OSHA Hazard Communication Standard 29 CFR 1910.1200.

GHS Full Text Phrases:

Expl. 1.1	Explosive Category 1.1
H201	Explosive; mass explosion hazard

This information is based on our current knowledge and is intended to describe the product for the purposes of health, safety and environmental requirements only. It should not therefore be construed as guaranteeing any specific property of the product.