SAFETY DATA SHEET

SMALL CALIBER AMMUNITION

Centerfire rifle cartridge with inert projectiles

PDM nr. 104424

Safety Data Sheet according to Regulation (EC) No. 1907/2006 (REACH)

REVISION DATE: April 1st 2021

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SECTION 1: IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

1.1 Product identifier

Centerfire rifle and pistol cartridge, inert projectile, contains NC-propellant

1.2 Relevant identified uses

Small arms ammunition.

1.3 Details of the supplier of the safety data sheet

Company / Manufacturer: Nammo Lapua Oy
Company address: P.O. Box 5, FIN-62101 Lapua Finland
Telephone number: Int. +358 10 5233 800
Telefax number: Int. +358 6 4310 244
E-mail address (competent person): safetydata.lapua@nammo.com

1.4 *Emergency telephone number*

Use your national or local emergency number.
(In Finland, Poison information center +358-9-471 977)

SECTION 2: HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture

Classification according to CLP-regulation (EC) no. 1272/2008 [CLP]

Expl. 1.4; H204
Repr. 1A; H360DF
Lact. H362

2.2 Label elements

Labelling according to Regulation (EC) No 1272/2008 [CLP]

Hazard pictograms:

GHS01, GHS08

Signal word: **Danger**

Hazard statements:
H204: Fire or projection hazard
H360DF: May damage the unborn child. May damage fertility.
H362: May cause harm to breast-fed children.

Precautionary statements:
P102: Keep out of reach of children.
P210: Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
P280: Wear protective gloves/ protective clothing/eye protection/ hearing protection.
P401 Store in accordance with national/international regulations as applicable.
P501: Dispose of contents/ container in accordance with local/national/international regulation.

Contains: Lead

2.3 Other hazards

The product is composed of finished metal parts which completely seal the cartridge. Do not disassemble, break or destroy the cartridge by violence. This article contains hazardous substances or mixtures not intended to be released under normal or reasonably foreseeable conditions of use. These include very toxic compounds. When the ammunition is fired, a small amount of particles will be generated and they may be slightly irritating to the eyes and respiratory tract. The particles may contain trace amounts of substances like copper, zinc and lead. Gases like COx and NOx are also generated. When shooting indoors, good ventilation that extracts gases forward from the shooter is required. The dismantling of this article is prohibited.

SECTION 3: COMPOSITION / INFORMATION ON INGREDIENTS

3.1 Substances

Not applicable

3.2 Mixtures

The product is comprised of four components. Typically, in rifle ammunition, case corresponds to 50 %, bullet 40 %, powder 10% and primer 1 % of the weight. So the minor elements of powder and primer make up a very small fraction of the compounds in the loaded cartridge. The hazardous ingredients contained in each are listed:

1. **Projectile**: Copper, Zinc, Lead, Antimony, Aluminium
2. **Case** (Brass): Copper, Zinc
3. **Propellant**: Nitrocellulose, Nitroglycerin, 3-methyl-1,1-diphenylurea, Diphenylamine, 1,3-diethyldiphenylurea, Graphite, Centralite I, Potassium Bitartrate, Tributycitrate, Diisoamyl Phtalate
4. **Primer**: Copper, Zinc, Lead Styphnate, Antimony (III) sulphide, Barium nitrate, Lead dioxide, Aluminium, Nitrocellulose, Nitroglycerin, Tetrazene.

Substances:

Components	% approx. by weight	CAS and EC numbers	Classification according to Regulation (EC) No 1272/2008 (CLP)
Copper (solid metal)	40 - 75	7440-50-8 231-159-6	Aquatic Chronic 2 H411 (in granulated form)*
Zinc (solid metal)	10 - 15	7440-66-6 231-175-3	Zinc powder: Pyr. Sol. 1 H250, Water-react. 1 H260, Aquatic Acute 1 H400, Aquatic Chronic 1 H410*
Nitrocellulose (Cellulose nitrate)	1 - 15	9004-70-0 682-719-5	Expl. 1.1 H201*
Nitroglycerin (Glycerol trinitrate)	0 – 4	55-63-0 200-240-8	Unst. Expl. H200, Acute Tox. 2 H300, Acute Tox. 1 H310, Acute Tox. 2 H330, STOT RE 2 H373, Aquatic Chronic 2 H411*
Aluminium [1)] (solid metal)	0 – 15	7429-90-5	Flam. Sol. 1 H228, Water-react. 2 H261
Lead (solid metal)	0 – 65	7439-92-1 231-100-4	Repr. 1A H360DF, Lact. H362, (Lead powder: Aquatic Acute 1 H400, Aquatic Chronic 1 H410)*
Antimony (solid metal)	0 – 2	7440-36-0 231-146-5	Aquatic Chronic 3 H412, STOT RE 2, H373, Carc.2 H351
Lead Styphnate	< 0.1	15245-44-0 239-290-0	Expl. 1.1 H201, Acute Tox. 4 H302, Acute Tox. 4 H332, STOT RE 2 H373, Repr. 1A H360Df, Aquatic Acute 1 H400, Aquatic Chronic 1 H410*
Barium Nitrate	< 0.1	10022-31-8 233-020-5	None

1) Aluminium only in 7.62x39 and 7.62 KIV ALS ammunitions
* Harmonised classification.
For products with solid copper bullet there is a separate SDS (e.g. Naturalis).
See full text of H-phrases in chapter 16.

SECTION 4: FIRST AID MEASURES

4.1 Description of first aid measures

Inhalation
If inhaling vapors from fire: Fresh air, rest. Get medical attention. In case of irritation from the gases and particles during normal use of product: Fresh air, rest. In case of unconsciousness, keep the person in side-lying position for transport to the hospital.

Skin contact
In case of contact with the product´s interior components, take off contaminated clothing. Wash skin with soap and water. Call a POISON CENTER/doctor/physician if you feel unwell.

Eye contact
In case of contact with the product´s interior components, rinse with water. Remove contact lenses, if present and easy to do. Get medical attention if irritation persists.

Ingestion
Rinse mouth. Do not induce vomiting. Call a poison center or doctor.

4.2 Most important symptoms and effects, both acute and delayed

Can cause headache, dizziness, nausea, and hypotension. Interior components are toxic. Lead is classified as category 1A reproductive toxicant. It may damage the unborn child, it may damage fertility, and it may cause harm to breast-fed children.

4.3 Indication of any immediate medical attention and special treatment needed

Treat symptomatically.

SECTION 5: FIRE FIGHTING MEASURES

5.1 Extinguishing media

Extinguishing media:	Water, water spray
Unsuitable extinguishing media:	None known.

5.2 Special hazards arising from the substance or mixture

DO NOT fight fires involving explosives. Burning produces gases containing carbon monoxide and nitro fumes. Risk of lung damage during continuous exposure. In case of a fire, high risk of splinters.

5.3 Advice for firefighters

Extinguish with water from a protected position. Flame resistant fully covered clothing. Do not breathe fumes from fires or vapours from decomposition. Fire fighters should use a self contained breathing apparatus, a fully protective suit and necessary protective equipment. DO NOT fight fire when fire reaches explosives. Evacuate area.

SECTION 6: ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures

Not applicable for a complete sealed cartridge. Avoid skin and eye contact. Do not breathe dust or fumes. Evacuate danger area. Do not allow product to spread into the environment. Use appropriate personal protection equipment (PPE).

6.2 Environmental precautions

Hazardous waste due to potential risk of explosion. Prevent from entering sewers or the immediate environment (groundwater).

6.3 Methods and material for containment and cleaning up

Contain and collect as any solid. Collect using non-sparking tools. Reuse if undamaged. Otherwise keep for disposal by experts. Remove all sources of ignition.

6.4 Reference to other sections

For information on safe handling see section 7, the protective equipment section, and for waste disposal see section 13.

SECTION 7: HANDLING AND STORAGE

7.1 Precautions for safe handling

Avoid formation of dust. Ensure good ventilation at the workplace. Avoid all exposure. Wear recommended personal protective equipment. Wash hands and other exposed areas with mild soap and water before eating, drinking, or smoking and again when leaving work. Contaminated work clothing should not be allowed out of the workplace. Do not eat, drink or smoke when using this product. Wash contaminated clothing before reuse. No smoking, flames, sparks or welding. Prevent static electricity. Use power tools and appliances rated for explosives. Use tools that prevent sparking. Avoid striking the primer of unfired/misfired cartridges or shocking during handling, storage, or use. If possible, keep eye washes nearby. A bullet of the fired cartridge has a long range and can cause serious injury or death. Always be sure of the backstop, and practice always safe muzzle control. Avoid firing at surfaces that could result in ricochet, such as water, rocks or any other hard or flat surfaces. Avoid breathing fumes during the firing.

7.2 Conditions for safe storage, including any incompatibilities

Store in original package in a cool and dry room at a safe distance from sources of ignition. No smoking. Protect against static electricity, shock, and friction. Keep only in facilities intended for explosives. Keep out of reach of children. Store locked up. Product is incompatible with ammonia and amines.

7.3 Specific end use(s)

Uses according to section 1.2.

SECTION 8: EXPOSURE CONTROLS / PERSONAL PROTECTION

8.1 Control parameters

EU:
Lead: 0.15 mg/m3
Nitroglycerin: Long-Term: 0.095 mg/m3, 0.01 ppm, Short-term: 0.19 mg/m3, 0.02 ppm.

8.2 Exposure controls

<u>Personal protective equipment</u>
Respiratory Protection: In case of dust use particle filter mask P2.
Ventilation: Local exhaust ventilation is recommended if significant dusting occurs. During shooting, burning powder and primer produce harmful compounds, such as, e.g., lead, copper, zinc, carbon monoxide and NO_x. Risk is especially high in poorly ventilated indoor shooting ranges. Use protective clothing.

Hand protection:	Homologated chemically resistant gloves.
Eye protection:	Safety glasses with side protection.
Hearing protection:	Hearing protection needed during shooting.
General Hygiene:	Do not eat, drink or smoke while using this product. Wash hands thoroughly after use.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

Appearance:	Cartridge shaped, metallic solid body
Odour:	None
Melting point: :	Not available
Boiling point:	Not available
Flash point:	Not available
Ignition temp:	Approximately 170^{o} C
Relative density(g/m^{3}):	Not available
Solubility in water:	Insoluble in original packaging or as a complete cartridge. Damaged cartridge can leak water-soluble components.

9.2 Other information:

-

SECTION 10: STABILITY AND REACTIVITY

10.1 Reactivity

The product might react to friction, heat and/or strong shocks.

10.2 Chemical stability

The product is stable at normal handling and storage (room temperature) conditions. Do not expose to heat, or ignition sources as this could cause an explosion.

10.3 Possibility of hazardous reactions

The product is combustible. Risk of explosion.

10.4 Conditions to avoid

Avoid heat, flames, static electricity and other ignition sources. Avoid strong shocks.

10.5 Incompatible materials

Oxidizing agents, acids, alkalis, ammonia and amines.

10.6 Hazardous decomposition products

Toxic gases and fumes generated in case of fire, including nitrous gases and carbon monoxide among others.

SECTION 11: TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects

Acute toxicity:	No toxicological effects from the complete cartridge. Damaged cartridge can leak components that are fatal (oral, skin) or toxic (inhalation).

Skin corrosion/irritation:	Not classified. Damaged cartridge can leak components or dust that can cause irritation.
Serious eye damage/irritation:	Not classified. Damaged cartridge can leak components or dust that can cause eye irritation.
Respiratory or skin sensitisation:	Not classified.
Germ cell mutagenicity:	Not classified.
Carcinogenicity:	Not classified.
Reproductive toxicity:	May damage fertility or the unborn child.
Specific target organ toxicity - single exposure:	Not classified.
Specific target organ toxicity – repeated exposure:	Not classified.
Aspiration hazard:	Not classified.

Nitroglycerin
Propellant inside the cartridge may contain a significant amount of Nitroglycerin which has acute toxicity and can be fatal by inhalation, ingestion or skin contact. Nitroglycerin causes acute and chronic effects on the vascular grinding regulation system. The substance is addictive. Studies (A & H 1985:31) show an increased risk for heart disease after many years of exposure (> 20 years). Nitroglycerin react rapidly during shooting to non-toxic products.

Lead
Lead is slowly absorbed by ingestion and inhalation and poorly absorbed through the skin. If absorbed, it will accumulate in the body with low rates of excretion, leading to long-term build up. There is some evidence that inorganic lead compounds may have a carcinogenic effect, and they have been classified by IARC as probably carcinogenic to humans (Group 2A). However, this classification is not considered applicable to lead in articles, given the very low bioavailability of metallic lead. Carcinogenicity studies of lead metal powder have been negative. There is not enough evidence for the carcinogenicity of lead powder (metallic lead) according to IARC. Epidemiology studies of workers exposed to inorganic lead compounds have found a limited association with stomach cancer.

Exposure to high levels of inorganic lead compounds may cause adverse effects on male and female fertility, including adverse effects on sperm quality. Prenatal exposure to inorganic lead compounds is also associated with adverse effects on the development of the unborn child. There is evidence that neurobehavioural development in children is affected by exposure to lead. Lead is classified as Category 1A reproductive toxicant.

Studies in humans and experimental animals have evaluated impacts of lead upon sexual maturation and semen quality, pregnancy outcome, and neurobehavioural effects of pre and post-natal lead exposure upon child development. If reported neurological effects on children are determined to represent evidence of developmental toxicity then there is clear evidence that the human data support designation of lead monoxide as a category Repr. 1A reproductive toxicant. Moreover, given that aberrant sperm morphology, decreased sperm count and decreased sperm density have all been demonstrated in workers exposed to high levels of lead in the workplace

there is justification that lead compounds also meet the criteria for classification as Repro 1A for fertility effects. In exceptional circumstances it is possible that potentially harmful levels of lead may be transmitted in breast milk of mothers exposed to lead/lead compounds to nursing infants. It is therefore proposed that the hazard statement “May cause harm to breast fed children” be applied. The harmonized classification of lead (for both massive and powder form) is Repr. 1A, H360DF and Lact., H362.

Antimony
According to ECHA, the combined animal and human exposure data support a carcinogenicity category 2 via inhalation classification for Sb trioxide. Based on physical form/particle size, water solubility, and Sb speciation/valency, the same classification can be applied to Sb metal and Sb trisulfide. However, this applies only to antimony in powder form and not massive antimony-containing articles. Powder form antimony can also damage lungs (STOT RE 2, H373). In this product, antimony is dissolved in lead metal and not present in powder form.

SECTION 12: ECOLOGICAL INFORMATION

12.1 Toxicity

No toxicological effects from the complete cartridge. Damaged cartridge can leak components that can cause eco toxicological effects. Information on individual constituents are as follows;

Copper:
For granulated copper, the classification is Aquatic Chronic 2, H411. International Copper Association has prepared technical guidance for the classification of copper metal (2020). The concentration of copper ions released in 7-day T/D testing of copper massive measured at a mass loading rate of 100 mg/L and a pH of 6 (100 µg/L) exceeds the acute copper ERV at pH 6 (12 µg/L), so copper massive is classified as an Acute Aquatic Toxicity Category 3 hazard. Notably, this acute aquatic toxicity hazard category does not exist in the European Union's environmental hazard classification scheme. Copper massive is not classified as a chronic aquatic toxicity hazard under the GHS because (1) copper metal is considered both rapidly removable from the water column and non-bioaccumulative, and (2) the copper ion release from 28-day T/D testing of copper massive measured at a mass loading rate of 1 mg/L and a pH of 6 (3.4 µg/L) is lower than the chronic copper ERV at pH 6 (13 µg Cu/L).

Nitroglycerin: Classified as Aquatic Chronic 2, H411: Toxic to aquatic life with long lasting effects. (ECHA harmonized classification).

Zinc:
Zinc dust is classified as Aquatic Acute 1, H400 and Aquatic Chronic 1 H410. There is not harmonized classification of massive zinc metal and ECHA’s registration data for massive zinc states that data is conclusive but not sufficient for classification. The following concentrations of zinc have been reported as lethal to fish:

Rainbow trout fingerlings: 0,13mg/l, 12 – 24 hours.
Bluegill sunfish: 6 hours TLM = 1,9 – 3,6 mg/l (soft water, 30ºC).
Rainbow trout: 4 mg/l (hard water) 3 days.
Sticklebacks: 1mg/l (soft water) 24 hours.

The presence of copper appears to have a synergistic effect on the toxicity of zinc in fish.

Lead:
Harmonised classification of Lead powder is Aquatic Acute 1 H400, Aquatic Chronic 1 H410. For massive lead the classification criteria are not met.

Antimony
Antimony has not harmonized classification. In massive form, there is not sufficient data for classification. Aquatic Chronic 3 H412 is suggested in registration data for antimony powder with arsenic and lead impurities.

12.2 Persistence and degradability
Not applicable.

12.3 Bioaccumulative potential
Not applicable.

12.4 Mobility in soil
Not applicable.

12.5 Results of PBT and vPvB assessment
Not applicable.

12.6 Other adverse effects
No harmful effects are expected if used properly. The contained ingredients can be harmful for the environment, but they are enclosed in the article and cannot be released. The product should not be allowed to enter drains or water-sources.

SECTION 13: DISPOSAL CONSIDERATIONS

13.1 Waste treatment methods
The waste must be disposed of in accordance with Directive 2008/98/EC and other national and local regulations. May not be mixed with other waste. Waste must be classified as hazardous. Proposal for waste code: 16 04 01* discarded ammunition.

SECTION 14: TRANSPORT INFORMATION

14.1. UN number

UN 0012

14.2. UN proper shipping name

CARTRIDGES FOR WEAPONS, INERT PROJECTILE or CARTRIDGES, SMALL ARMS.

14.3. Transport hazard class(es)
Class 1.
1.4S

14.4. Packing group
II

14.5. Environmental hazards
-

14.6. Special precautions for user
LQ: 5 kg.
Tunnel: E

14.7. Transport in bulk according to Annex II of Marpol and the IBC Code
-

SECTION 15: REGULATORY INFORMATION

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture
This product is classified and labeled according to European Union regulations or respective national laws.
Regulation (EC) No. 1272/2008. on Classification, labeling and packaging of substances and mixtures (CLP)
EC regulation 1907/2006 concerning Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH)
Waste Framework Directive 2008/98/EC

Restrictions on the manufacture, placing on the market and use of certain dangerous substances, mixtures and articles listed in Annex XVII under REACH:
63: Lead. (Lead in jewellery articles)

Candidate list of substances of very high concern (Article 59(10) of the REACH Regulation:
Lead

15.2 Chemical safety assessment
A chemical safety assessment has not been conducted on this product.

SECTION 16: OTHER INFORMATION

This SDS has been compiled and is solely intended for this product. Do not disassemble, break or destroy the cartridge by violence. This information is based upon the present state of our knowledge.

Revision date: See first page

Revision comments: Revised classification. Modifications to all sections.

Used literature:

- ECHA database for chemicals and their registration data. Available at: https://echa.europa.eu/fi/home (Accessed 3.11.2020).
- Regulation (EC) No. 1272/2008. on Classification, labeling and packaging of substances and mixtures (CLP).
- EC regulation 1907/2006 concerning Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH)
- International Copper Association (ICA), 21.1.2020. Technical Guidance for the Classification of Copper Metal Under the Globally Harmonized System for Classification and Labelling of Chemicals (GHS). Available at: https://copperghs.org/wp-content/uploads/2020/01/Hazard-Classification-of-Copper_Report_Condensed_FINAL.pdf (Accessed 3.11.2020).

Classifications:

- Acute Tox. 1: Acute toxicity, category 1
- Acute Tox. 2: Acute toxicity, category 2
- Acute Tox. 4: Acute toxicity, category 4
- Aquatic Acute 1: Short-term (acute) aquatic hazard, category 1
- Aquatic Chronic 1: Long-term (chronic) aquatic hazard, category 1
- Aquatic Chronic 2: Long-term (chronic) aquatic hazard, category 2
- Aquatic Chronic 3: Long-term (chronic) aquatic hazard, category 3
- Carc.2: Carcinogenicity, category 2
- Expl. 1.1 Explosives, division 1.1
- Expl. 1.4: Explosives, division 1.4
- Flam. Sol. 1: Flammable Solids, category 1
- Lact.: Effects on or via lactation
- Pyr. Sol. 1: Pyrophoric solids, category 1
- Repr. 1A: Reproductive toxicant, category 1A
- STOT RE 2: Specific target organ toxicity after repeated exposure, category 2
- Unst. Expl.: Unstable explosive
- Water-react. 1: Substances and mixtures which in contact with water emit flammable gases, category 1
- Water-react. 2: Substances and mixtures which in contact with water emit flammable gases, category 2.

Hazard statements:

- H200: Unstable explosive
- H201: Explosive; mass explosion hazard
- H204: Fire or projection hazard
- H228: Flammable solid
- H250: Catches fire spontaneously if exposed to air
- H260: In contact with water releases flammable gases which may ignite spontaneously
- H261: In contact with water releases flammable gas
- H300: Fatal if swallowed
- H300+H310: Fatal if swallowed or in contact with skin
- H302: Harmful if swallowed
- H310: Fatal in contact with skin
- H330: Fatal if inhaled
- H331: Toxic if inhaled
- H332: Harmful if inhaled
- H341: Suspected of causing genetic defects
- H350: May cause cancer
- H351: Suspected of causing cancer
- H360: May damage fertility or the unborn child
- H360DF: May damage the unborn child. May damage fertility.
- H362: May cause harm to breast-fed children.
- H373: May cause damage to organs through prolonged or repeated exposure
- H400: Very toxic to aquatic life
- H410: Very toxic to aquatic life with long-lasting effects
- H411: Toxic to aquatic life with long-lasting effects
- H412: Harmful to aquatic life with long-lasting effects

Precautionary statements:

- P102: Keep out of reach of children.

- P210: Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
- P280: Wear protective gloves/ protective clothing/eye protection.
- P401 Store in accordance with national/international regulations as applicable.
- P501: Dispose of contents/ container in accordance with local/national/international regulation

Liability statement

The information in this SDS is correct to the best of our knowledge, belief, and belief at the date of its publication. The information applies only to this product and should only be used as a guide for safe handling, use, transport and disposal. The information must not be used as a guarantee or as a basis for quality assurance.