SAFETY DATA SHEET

According to OSHA HCS 29 CFR 1910.1200 (USA) and Hazardous Products Regulations/WHMIS 2015 (Canada)

SECTION 1. IDENTIFICATION.

Product identifier used on the label:	APD Boosters
Other means of identification:	Not applicable.
Recommended use(s):	DEATH or SEVERE INJURY may result if ENAEX's Boosters are used by any person who is not properly trainer, qualified, and experienced in the use of the Booster. All users must be aware of the inherent risks involved in the use of explosives, otherwise "DON'T TOUCH".
Restrictions on use(s):	No smoking. Keep away from heat/sparks/ open flames/hot surfaces. Do not subject to grinding/shock/friction. Explosion risk in case of fire. Evacuate area. Do NOT fight fire when fire reaches explosives. Store and Dispose of contents/container in accordance with local/regional/national/ international regulation as applicable.
Name of the supplier:	Davey Bickford USA, Inc.
Adddress of the supplier:	428 E Winchester St, Suite 202. Salt Lake City, Utah 84107 USA.
Telephone of the supplier:	(801) 562-3045
E-mail:	enaex@enaex.com
Emergency phone number:	CHEMTEL (USA & CANADA) T. +1 (800) 255 3924 International Emergency T. +1 (813) 248 0585 International Emergency

SECTION 2. HAZARD(S) IDENTIFICATION.

Classification of the chemical

Classification of the chemical in accordance with 29CFR §1910.1200 (USA)/Hazardous Product Regulations (Canada)
Explosive, Division 1.1
Acute toxicity - oral, cat. 3.
Acute toxicity - dermal, cat. 3.
Acute toxicity - inhalation, cat. 3.
STOT RE, cat. 2.

Symbol(s):

Signal word:
DANGER

Hazard statement(s):
H201 Explosive; mass explosion hazard.
H301 Toxic if swallowed.
H311 Toxic in contact with skin.
H331 Toxic if inhaled.
H373 May cause damage to liver, eyes, nervous system and circulatory system through prolonged or repeated exposure.

Precautionary statement(s):
P210 Keep away from heat/sparks/open flames/hot surfaces. — No smoking.
P234 Keep only in original packaging.
P240 Ground/bond container and receiving equipment.
P250 Do not subject to grinding/shock/heat/friction.
P260 Do not breathe dust/fume/gas/mist/vapours/spray.
P264 Wash hands thoroughly after handling
P270 Do no eat, drink or smoke when using this product.
P271 Use only outdoors or in a well-ventilated area.
P280 Wear protective gloves/protective clothing/eye protection/face protection.
P301+P310 IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician.
P330 Rinse mouth.
P302+P352 IF ON SKIN: Wash with plenty of soap and water.
P312 Call a POISON CENTER or doctor/physician if you feel unwell.
P361+P364 Take off immediately all contaminated clothing and wash it before reuse.
P304+P340 IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.
P311 Call a POISON CENTER or doctor/physician.
P370+P372+P380+P373 In case of fire: Explosion risk. Evacuate area. DO NOT fight fire when fire reaches explosives.
P401 Store in accordance with federal explosives regulations at 27 CFR, Part 555.
P403+P233 Store in a well-ventilated place. Keep container tightly closed.
P501 Dispose of contents/container in accordance to local, state and federal regulations.

Other hazards	Toxic to aquatic life with long lasting effects.

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS.

Chemical name	1,3-Propanediol, 2,2-bis[(nitrooxy)methyl]-, 1,3-dinitrate	Benzene, 2-methyl-1,3,5-trinitro-
Common name/synonyms	Pentaerithrityl tetranitrate (PETN)	2,4,6-trinitrotoluene (TNT)
Concentration	70-30%	30-70%
CAS Number	78-11-5	118-96-7

SECTION 4. FIRST-AID MEASURES.

Description of first aid measures

General information:	No special measures required.
In case of inhalation:	Remove victim to fresh air and keep at rest in a position comfortable for breathing. Call a POISON CENTER or doctor/physician.
In case of skin contact:	Take off immediately all contaminated clothing and wash it before reuse. Wash skin with plenty of soap and water. Call a POISON CENTER or doctor/physician if you feel unwell.
In case of eye contact:	Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Call a POISON CENTER or doctor/physician.
In case of ingestion:	Rinse mouth. Immediately call a POISON CENTER or doctor/physician.
Most important symptoms/effects, acute and delayed:	Product may produce physical injury if mishandled. Symptoms of exposure to TNT may include headache, weakness, anemia, toxic hepatitis, cyanosis, dermatitis, jaundice, purpura, liver injury, conjunctivitis, irritation of the respiratory tract, constriction in the chest, lack of appetite, nausea, vomiting, diarrhea, petechial hemorrhages in the skin, oliguria, albuminuria, casts in urine, papular dermatitis, and yellow-orange discoloration of the hands, nails, face

	and hair. The acute effects of exposure to PETN are similar to those of nitroglycerin. Hypotension and increased respiratory rate may both occur, but to a lesser degree than is observed with nitroglycerin. In contrast to nitroglycerin, little reflex tachycardia is observed with PETN. Dyspnea and convulsions have also been reported.
Indication of immediate medical attention and special treatment needed, if necessary:	The acute effects of exposure to PETN are similar to those of nitroglycerin.

SECTION 5. FIRE-FIGHTING MEASURES.

Suitable extinguishing media:	DO NOT fight fire when fire reaches explosives. Withdraw to a safe distance and allow the fire to burn out.
Unsuitable extinguishing media:	DO NOT fight fire when fire reaches explosives. Withdraw to a safe distance and allow the fire to burn out.
Specific hazards arising from the chemical:	Explosive. DO NOT fight fire. May explode and throw fragments 1600 meters (1 mile) or more if fire reaches cargo. ISOLATE for 1600 meters (1 mile) in all directions; also, initiate evacuation including emergency responders for 1600 meters (1 mile) in all directions. Fire may produce irritating, corrosive and/or toxic gases. Do not move cargo or vehicle if cargo has been exposed to heat. TIRE or VEHICLE Fire: Use plenty of water - FLOOD it! If water is not available, use CO_2, dry chemical or dirt. If possible, and WITHOUT RISK, use unmanned hose holders or monitor nozzles from maximum distance to prevent fire from spreading to cargo area. Pay special attention to tire fires as re-ignition may occur. Stand by, at a safe distance, with extinguisher ready for possible re-ignition.
Special protective equipment and precautions for fire-fighters:	Wear positive pressure self-contained breathing apparatus and full protective gear.
Additional information:	Evacuate area. Fight fire remotely due to the risk of explosion

SECTION 6. ACCIDENTAL RELEASE MEASURES.

Personal precautions, protective equipment, and emergency procedures:	Product may produce physical injury if mishandled. Evacuate area. Wear protective clothing. ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area). Protect from grinding/shock/heat/friction. All equipment used when handling the product must be grounded. Do not touch or walk through spilled material. Do not operate radio transmitters within 100 meters (330 feet) of electric detonators. Isolate spill or leak area immediately for at least 500 meters (1/3 mile) in all directions. LARGE SPILL: Consider initial evacuation for 800 meters (1/2 mile) in all directions. Do not breathe dust/fume/gas/mist/vapours/spray. Ventilate closed spaces before entering.
Methods and materials for containment and cleaning up:	Avoid release to the environment. Collect spillage using non-sparking tools and implements and place in suitable container under supervision of a specialist. Dispose as indicated in section 13.

SECTION 7. HANDLING AND STORAGE.

Precautions for safe handling:	Handle with care. Keep away from heat/sparks/open flames/hot surfaces. — No smoking. Ground/bond container and receiving equipment. Do not subject to grinding/shock/heat/friction. Do not breathe dust/fume/gas/mist/vapours/spray. Wash hands thoroughly after handling. Do no eat, drink or smoke when using this product.

Conditions for safe storage, including any incompatibilities:	Wear protective gloves/protective clothing/eye protection/face protection. Use only outdoors or in a well-ventilated area. Store in accordance with federal explosives regulations at 27 CFR, Part 555. Keep away from heat/sparks/open flames/hot surfaces. Store in a well-ventilated place. Keep container tightly closed. Higly reactive with reducing agents.

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION.

OSHA permissible exposure limit (PEL)	TNT	TWA 1.5 mg/m^3 [skin]
American Conference of Governmental Industrial Hygienists (ACGIH) Threshold Limit Value (TLV)	TNT	TWA: 0,1 mg/m^3
National Institute for Occupational Safety and Health (NIOSH)	TNT	TWA: 0,1 mg/m^3 [skin]
Occupational Exposure Limits for Alberta Workplaces	TNT	TWA: 0,1 mg/m^3
Occupational Exposure Limits for British Columbia Workplaces	TNT	TWA: 0,1 mg/m^3 [skin]
Occupational Exposure Limits for Manitoba Workplaces	TNT	TWA: 0,1 mg/m^3
Occupational Exposure Limits for New Brunswick Workplaces	TNT	TWA: 0,1 mg/m^3
Occupational Exposure Limits for Newfoundland and Labrador Workplaces	TNT	TWA: 0,1 mg/m^3
Occupational Exposure Limits for Northwest Territories Workplaces	TNT	TWA: 0,1 mg/m^3 STEL: 0,3 mg/m^3
Occupational Exposure Limits for Nova Scotia Workplaces	TNT	
Occupational Exposure Limits for Nunavut Workplaces	TNT	TWA: 0,1 mg/m^3 STEL: 0,3 mg/m^3
Occupational Exposure Limits for Ontario Workplaces	TNT	TWA: 0,1 mg/m^3 [skin]
Occupational Exposure Limits for Prince Edward Island Workplaces	TNT	TWA: 0,1 mg/m^3
Occupational Exposure Limits for Quebec Workplaces	TNT	TWAEV: 0,5 mg/m^3
Occupational Exposure Limits for Saskatchewan Workplaces	TNT	TWA: 0,1 mg/m^3 STEL: 0,3 mg/m^3
Occupational Exposure Limits for Yukon Workplaces	TNT	TWAEV: 0,5 mg/m^3
Appropriate engineering controls:	Use only outdoors or in a well-ventilated area.	
Individual protection measures		
Eye/Face protection:	Use safety glasses with lateral protection.	
Hand protection:	Use gloves (cotton) and cotton workwear.	
Respiratory protection:	Not required under normal conditions of use.	

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES.

Appearance:	Solid, crystalline, yellowish.
Odor:	Not available.
Odor threshold:	Not available.
pH:	6-7
Melting point/freezing point:	Not available for the mixture.
Initial boiling point and boiling range:	Not available for the mixture.
Flash point:	Not available for the mixture.

Evaporation rate:	Not available for the mixture.
Flammability:	Explosive; mass explosion hazard.
Upper/lower flammability or explosive limits:	Not applicable.
Vapor pressure:	Not available for the mixture.
Vapor density:	Not available for the mixture.
Relative density:	1,62
Solubility(ies):	Not soluble in water. Soluble in acetone.
Partition coefficient: n-octanol/water:	TNT log Kow 1.60. PETN log Kow 2.4.
Auto-ignition temperature:	Not available for the mixture.
Decomposition temperature:	> 120 °C.
Viscosity:	Not applicable.

SECTION 10. STABILITY AND REACTIVITY.

Reactivity:	Reacts with acids and alkalis (corrosives).
Chemical stability:	Stable under recommended handling and storage conditions. Does not polymerize.
Possibility of hazardous reactions:	Explosive; mass explosion hazard. May explode when subjected to extreme heat or shock, specially under confinement.
Conditions to avoid:	Do not subject to grinding/shock/heat/friction. Keep away from heat/sparks/open flames/hot surfaces.
Incompatible materials:	Alkalis, ammonia, acids, corrosives, combustible materials, heat.
Hazardous decomposition products:	Carbon monoxide, carbon dioxide, nitrogen oxides.

SECTION 11. TOXICOLOGICAL INFORMATION.

Likely routes of exposure:	Dermal.	
Symptoms related to the physical, chemical and toxicological characteristics:	Toxic if swallowed, in contact with skin and if inhaled.	
Information on toxicological effects from short and long term exposure		
Acute toxicity		
No studies available for the product itself. Based on acute toxicity estimates:		
Oral (LD50)	50 – 300 mg/kg	Toxic if swallowed.
Dermal (LD50)	200 – 1000 mg/kg	Toxic in contact with skin.
Inhalation (LC50)	0,5 – 1,0 mg/L	Toxic if inhaled.
Skin corrosion/irritation	No studies available for the product itself. Based on the classification of the ingredients, the product is not classified in this hazard class.	
Serious eye damage/irritation	No studies available for the product itself. Based on the classification of the ingredients, the product is not classified in this hazard class.	
Respiratory or skin sensitization	No studies available for the product itself. Based on the classification of the ingredients, the product is not classified in this hazard class.	
Germ cell mutagenicity / Genotoxicity	No studies available for the product itself. Based on the classification of the ingredients, the product is not classified in this hazard class.	
Carcinogenicity	IARC: TNT group 3 (Not classifiable as to its carcinogenicity to humans). OSHA: PETN and TNT are not listed. NTP: PETN and TNT are not listed. TNT is listed as a chemical known to cause cancer to the State of California (Prop.65).	
Reproductive toxicity	No studies available for the product itself. Based on the classification of the ingredients, the product is not classified in this hazard class.	
Specific target organ toxicity (single exposure)	No studies available for the product itself. Based on the classification of the ingredients, the product is not classified in this hazard class.	
Specific target organ toxicity	May cause damage to liver, eyes, nervous system and circulatory	

(repeated exposure)	system through prolonged or repeated exposure. STOT. RE. Cat. 2.
Aspiration hazard	Not applicable.

SECTION 12. ECOLOGICAL INFORMATION.

Ecotoxicity	Toxic to aquatic life with long lasting effects. Aquatic Chronic Toxicity, Cat. 2.
Persistence and degradability:	Microbial cultures isolated from soil and sewage sludge were capable of utilizing PETN as a sole nitrogen source, suggesting that PETN may biodegrade in the terrestrial environment. Microbial cultures isolated from river water and sewage sludge were capable of utilizing PETN as a sole nitrogen source, suggesting that PETN may biodegrade in the aquatic environment. PETN and TNT are expected to partially exist in the particulate phase and the vapor phase in the ambient atmosphere. TNT is readily reduced under anaerobic conditions.
Bioaccumulative potential:	TNT log Kow: 1.60. BCF 3.4. This BCF suggests the potential for bioconcentration in aquatic organisms is low. PETN potential for bioconcentration in aquatic organisms is low.
Mobility in soil:	PETN and TNT expected to have low mobility in soil. Volatilization of PETN and TNT from moist soil surfaces is not expected to be an important fate process. PETN and TNT are not expected to volatilize from dry soil surfaces. PETN and TNT are expected to adsorb to suspended solids and sediment. TNT is expected to be essentially nonvolatile from water surfaces.
Other adverse effects:	Not available.

SECTION 13. DISPOSAL CONSIDERATIONS.

Description of waste residues:	It is responsibility of the waste generator to determine the toxicity and physical properties of the material generated to determine proper waste identification and disposal method in compliance with applicable regulations (eg. Resource Conservation and Recovery Act (RCRC) 40 CFR 261). A solid waste containing PETN/TNT may become characterized as a hazardous waste when subjected to testing for reactivity as stipulated in 40 CFR 261.23, and if so characterized, must be managed as a hazardous waste.
Information on their safe handling and methods of disposal:	It is recommended to detonate, if safely possible, all remaining product. If not possible, dispose according to local, state and federal regulations. Do not dispose with household waste.

SECTION 14. TRANSPORT INFORMATION.

UN number	0042
UN proper shipping name	BOOSTERS, without detonator.
Transport hazard class(es)	1.1D
Packing group	-
Environmental hazards (marine pollutant)	YES
Transport in bulk (according to Annex II of MARPOL 73/78 and the IBC Code)	Not applicable.
Special precautions	**-**

SECTION 15. REGULATORY INFORMATION.

Safety, health and environmental regulations specific for the product

USA
Chemical Facility Anti-Terrorism Standards (CFATS)
Appendix A to Part 27. – DHS Chemicals of Interest
PETN
Release: Min Conc.: ACG. STQ: 5000 pounds. Explosive.
Theft: Min Conc.: ACG. STQ: 400 pounds. EXP/IEDP.
TNT
Release: Min Conc.: ACG. STQ: 5000 pounds. Explosive.
Theft: Min Conc.: ACG. STQ: 400 pounds. EXP/IEDP.
SARA Regulations Sections 313 and 40 CFR 372
No reportable components present.
TSCA Inventory
All ingredients are listed (PETN and TNT).
ATF Bureau of alcohol, tobacco, firearms and explosives
Explosives regulation 27 CFR, Part 555
Explosive product.
USA STATE REGULATIONS
PETN
New Jersey Right-to-Know
PETN is listed on the 2010 New Jersey Environmental Hazardous Substance List.
New Jersey Department of Health Hazard Right-to-Know Program Hazardous Substance List, December 1989. Special Health Hazard Code(s): None Common Name(s): PENTAERYTHRITE TETRANITRATE; PENTAERYTHRITOL, TETRANITRATE
State of Rhode Island Right-to-Know
PETN is listed on the Rhode Island Hazardous Substance List. Listed name(s): TEN.
TNT
California Proposition 65 Carcinogens and Reproductive Toxins
Listed Name(s): 2,4,6-Trinitrotoluene (TNT). Health Hazard Code(s): Chemicals known to the state to cause cancer. STATUS: Adopted in 27 CCR Section 25305(b)(1). First Listed: 19 Dec 2008.
Massachusetts Right-to-Know
Massachusetts Substance List for Right-to-Know Law (Apr 93). General Law C.111F, Chapter 30A (28 Jun 84); 105 CMR 670.000, Appendix A Listed Name(s): Trinitrotoluene; 2,4,6-Trinitrotoluene; TNT. First Listed: Apr 1993.
New Jersey Right-to-Know
TNT is listed on the 2010 New Jersey Environmental Hazardous Substance List.
New Jersey Department of Health Hazard Right-to-Know Program Hazardous Substance List, December 1989. Special Health Hazard Code(s): F4 (Flammable, Fourth Degree); R4 (Reactive, Fourth Degree) Common Name(s): 2,4,6-TRINITROTOLUENE; BENZENE, 2-METHYL-1,3,5-TRINITRO-
Pennsylvania Right-to-Know
Pennsylvania Department of Labor and Industry Hazardous Substance List 1989. Listed Name(s): BENZENE, 2-METHYL-1,3,5-TRINITRO-
State of Illinois Right-to-Know Toxic Substances List
List discontinued per Illinois Department of Labor, Safety Inspection and Education Division (01 Jul 1997). Illinois Register, Section 205, Table A, Toxic Substances List (1991) Listed Name(s): 2,4,6-Trinitrotoluene.
Minnesota Right-to-Know
TNT is listed on Minnesota's Chemicals of High Concern List.
TNT is listed on the Minnesota Hazardous Substances List.
TNT substance is listed on the Minnesota Hazardous Substances List Listed Name(s): 2,4,6-Trinitrotoluene-skin; TNT.
State of Rhode Island Right-to-Know
TNT is listed on the Rhode Island Hazardous Substance List.

CANADA
WHMIS 2015 Classification
Acute toxicity - oral, cat. 3.
Acute toxicity - dermal, cat. 3.
Acute toxicity - inhalation, cat. 3.

STOT RE, cat. 2. (Explosives hazard class have been adopted in Canada by the HPR) **Domestic Substances List** CAS 78-11-5 (PETN): The substance is specified on the DSL. CAS 118-96-7 (TNT): The substance is specified on the DSL.

SECTION 16. OTHER INFORMATION.

Abbreviations/Acronyms	ACG: A commercial grade. IARC: International Agency for Research on Cancer. NTP: National Toxicology Program. OSHA: Occupational Safety and Health Administration. STEL: Short term exposure limit. STQ: Screening Threshold Quantity.
References European Chemicals Agency – C&L Inventory. U.S. National Library of Medicine HSDB – Hazardous Substances Database.	
Date of preparation	02-10-2017
Supersedes	-
Indication of changes	-

This document has been prepared in accordance with the SDS requirements of the OSHA Hazard Communication Standard 29 CFR 1910.1200 and Hazardous Products Regulations/WHMIS 2015 (Canada).

End of safety data sheet