U.S. Department
of Transportation

East Building, PHH – 32
1200 New Jersey Avenue, Southeast
Washington, D.C. 20590

Pipeline and Hazardous Materials Safety Administration

**The US Department of Transportation
Competent Authority for the United States**

CLASSIFICATION OF EXPLOSIVES

Based upon a request by Hunting Titan, Inc., 143 HCR 4361, Milford, TX 76670, United States the following items are classed in accordance with Section 173.56, Title 49, Code of Federal Regulations (49 CFR). A copy of your application, all supporting documentation and a copy of this approval must be retained and made available to DOT upon request.

U.N. PROPER SHIPPING NAME AND NUMBER:
Charges, shaped, without detonator, UN0440

U.N. CLASSIFICATION CODE: 1.4D

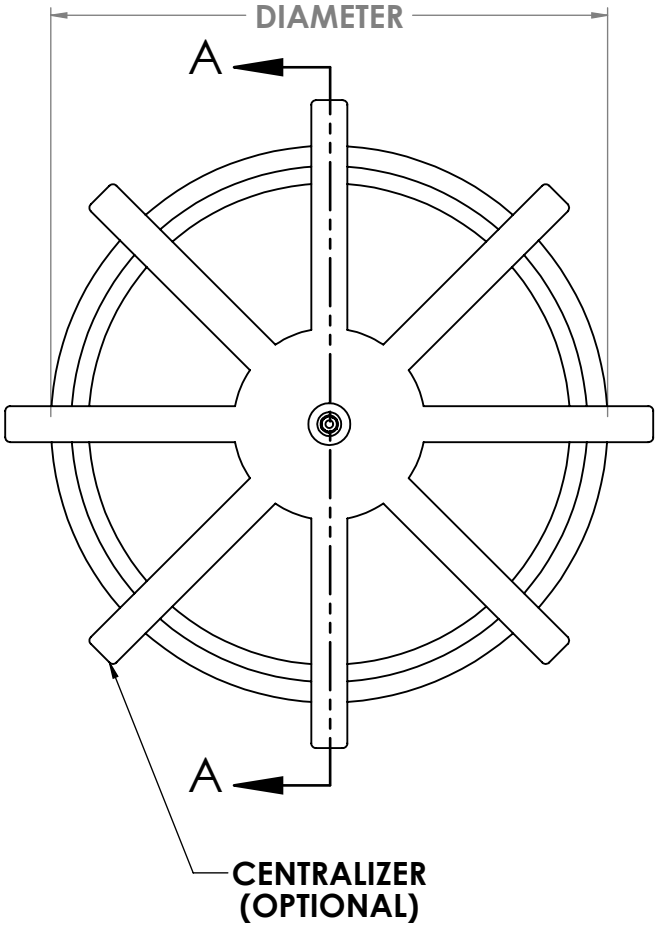
REFERENCE NUMBER	**PRODUCT DESIGNATION/PART NUMBER**
EX2015121683	Family of Casing Cutters, P/N 1305 (D/N: SCP-SERIES PRODUCT #1305, Rev. X)

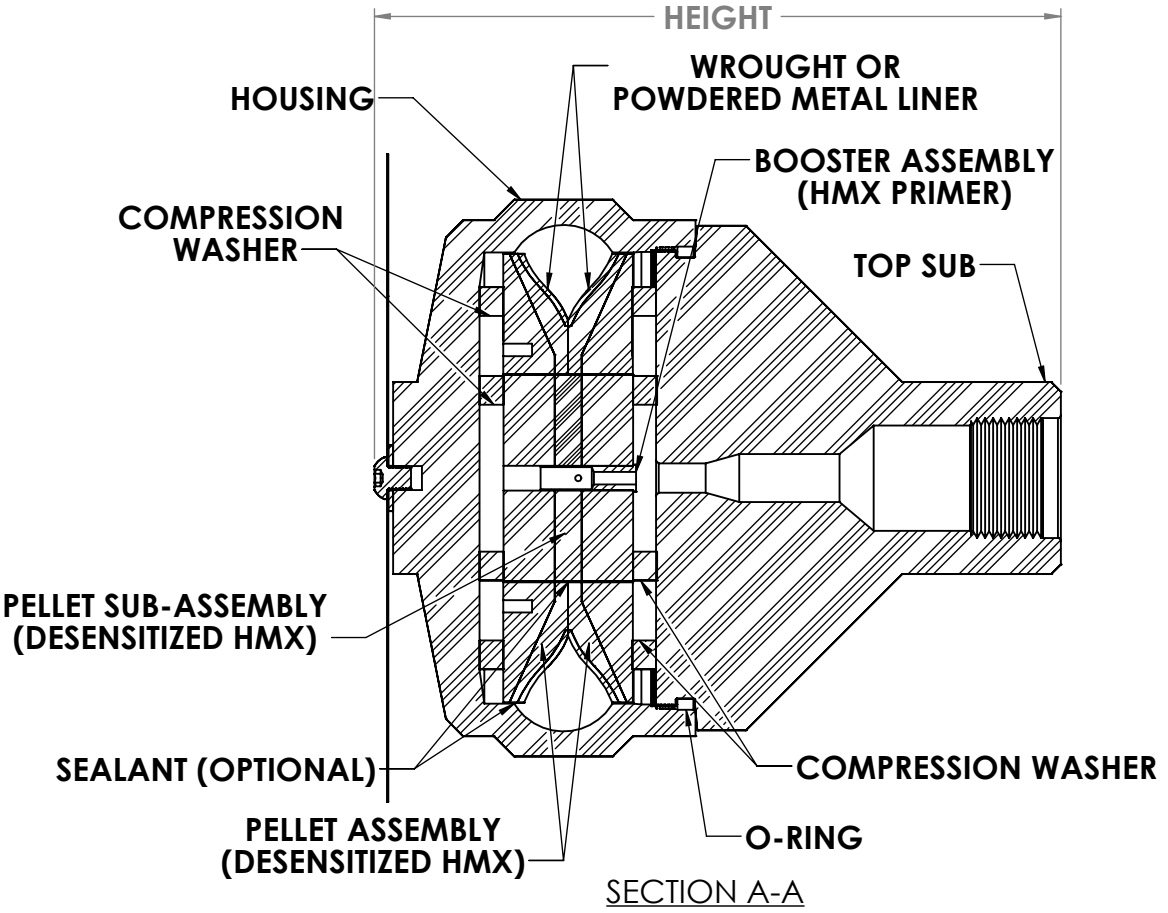
NOTES: This classification is only valid when the Casing Cutters are disassembled with the housing/pellet assembly, pellet/booster assembly, and top assembly separated and when packaged as follows: Inner Packaging - Trays, upper and lower pre-formed foam sections with individual cells, each designed to contain one (1) casing cutter article with the 3 disassembled sections contained in separate cells of the foam tray. Intermediate Packaging - Trays, fiberboard, each containing one (1) inner packaging heat-sealed in an anti-static foil bag. Outer packaging - UN 4G double-wall fiberboard box, each containing one (1) intermediate packaging.

This approval as revised supersedes all previous versions.

DATED: 05/06/2016

For Dr. Magdy El-Sibaie
Associate Administrator for Hazardous Materials Safety





SECTION A-A

RANGE	JET CUTTER HEIGHT	JET CUTTER DIAMETER	PELLET ASSEMBLY (EACH)		PELLET SUB-ASSEMBLY		BOOSTER ASSEMBLY		TOTAL EXPLOSIVE WEIGHT[1]
			EXPLOSIVE WEIGHT[1]	EXPLOSIVE TYPE	EXPLOSIVE WEIGHT[1]	EXPLOSIVE TYPE	EXPLOSIVE WEIGHT[1]	EXPLOSIVE TYPE	
MAXIMUM	10.0"	6.25"	75.0 grams	RDX, HMX, HNS, or PYX desensitized	15.0 grams	RDX, HMX, HNS, or PYX desensitized	3.7 grams	RDX, HMX, HNS, or PYX pure	168.7 grams HMX

NOTE:

1. **EXPLOSIVE WEIGHT TOLERANCE ±0.5 GRAMS.**
2. **CONTENTS WILL BE SHIPPED IN 2 PIECES.**
3. **NO EXPLOSIVE IS CONTAINED IN THE TOP SUB.**

HUNTING

UNLESS OTHERWISE SPECIFIED:

DIMENSIONS ARE IN INCHES
TOLERANCES:
ANGULAR: MACHINE ± 1/4°
ONE PLACE DECIMAL: ± .050
TWO PLACE DECIMAL: ± .015
THREE PLACE DECIMAL: ± .005
FOUR PLACE DECIMAL: ± .0005
COAXIAL DIAMETERS CONCENTRIC WITHIN .005
MACHINED FINISHES 125 MAX.
REMOVE ALL BURRS AND SHARP EDGES MIN. R.010

FINISH	HEAT TREAT
N/A	N/A

DO NOT SCALE DRAWING

	NAME	DATE
DRAWN	ZT	11/10/2015
APPROVED	SW	11/10/2015

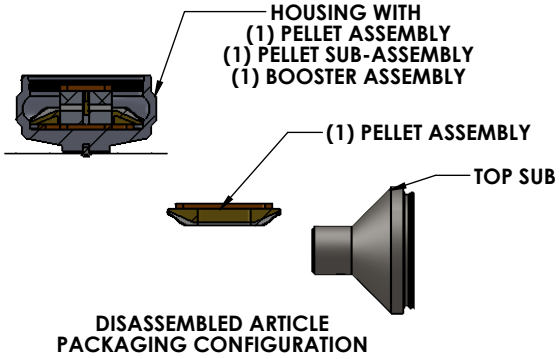
COMMENTS
THIS AREA INTENTIONALLY LEFT BLANK

MATERIAL
N/A

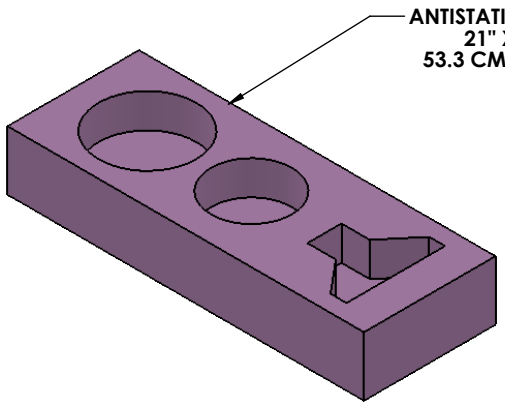
TITLE:
JET CUTTER FAMILY
PRODUCT NUMBER 1305
MAXIMUM 168.7 GRAMS

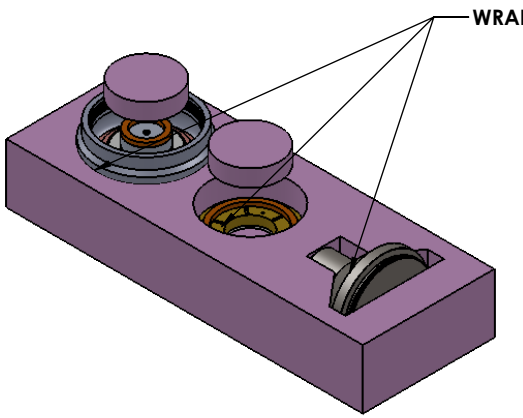
SIZE	DWG. NO.	REV
A	**SCP-SERIES PRODUCT #1305**	X

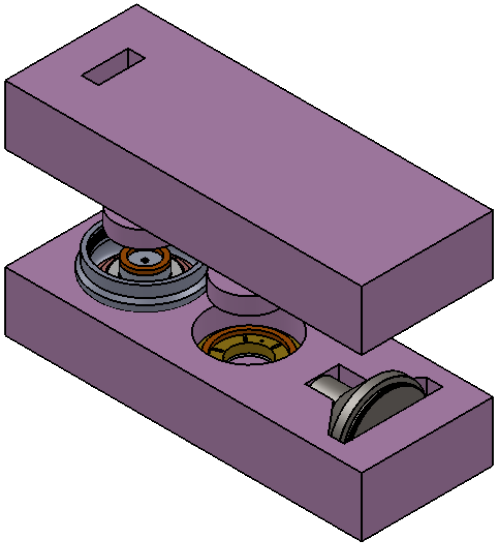
SCALE: NONE | WEIGHT: LBS. | **SHEET 1 OF 1**

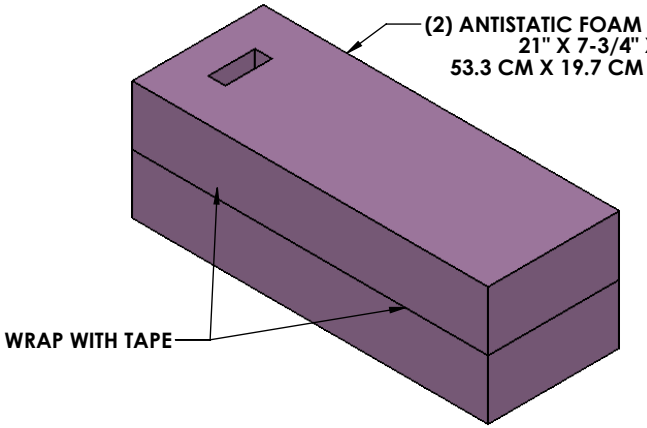


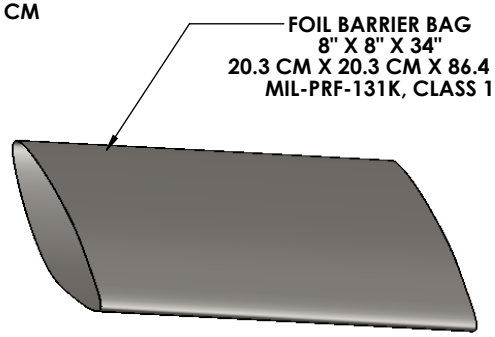
DISASSEMBLED ARTICLE PACKAGING CONFIGURATION











NOTES:
1. MEETS PACKAGING REQUIREMENT OF U.S. D.O.T. 49 CFR
2. PACKAGE MARKS AND LABELS PER 49 CFR REQUIREMENTS
3. QUANTITY PER PACKAGE: 1
4. CLOSE BOX BOTTOM AND TOP WITH 3 EVENLY SPACED PAIRS OF STAPLES

XA

EXACT LABELING & MARKING SIZE, SHAPE, AND LAYOUT MAY VARY.

ALL PACKAGING DIMENSIONS ARE APPROXIMATE.

HUNTING

UNLESS OTHERWISE SPECIFIED:

DIMENSIONS ARE IN INCHES
TOLERANCES:
ANGULAR: MACHINE ± 1/4°
ONE PLACE DECIMAL: ± .050
TWO PLACE DECIMAL: ± .015
THREE PLACE DECIMAL: ± .005
FOUR PLACE DECIMAL: ± .0005
COAXIAL DIAMETERS CONCENTRIC WITHIN .005
MACHINED FINISHES 125 MAX.
REMOVE ALL BURRS AND SHARP EDGES MIN. R.010

FINISH	HEAT TREAT
N/A	N/A

DO NOT SCALE DRAWING

	NAME	DATE
DRAWN	ZT	11/23/2015
APPROVED	NH	11/23/2015

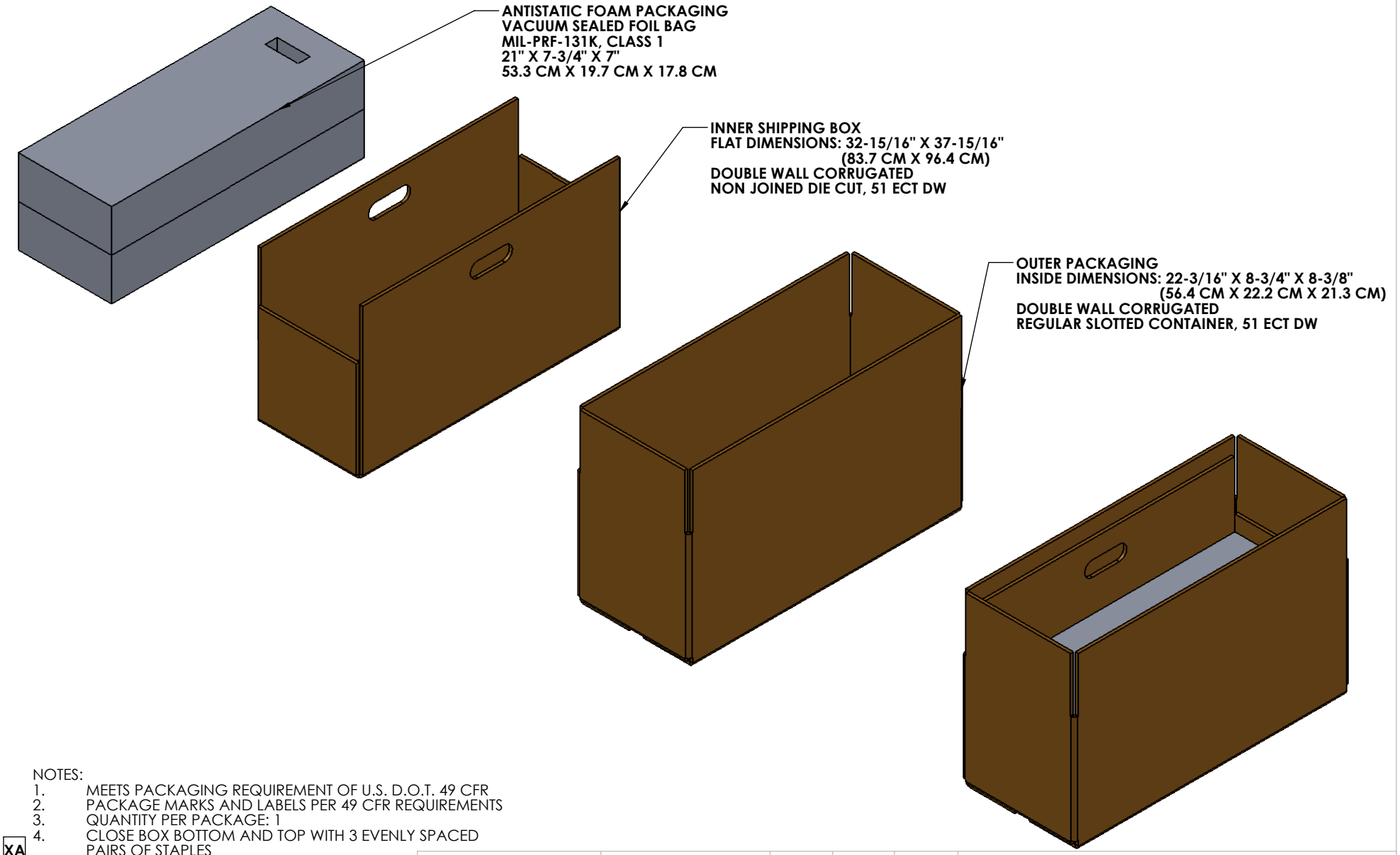
COMMENTS
THIS AREA INTENTIONALLY LEFT BLANK

MATERIAL
NOTED

TITLE:
FAMILY:
JET CUTTER
PRODUCT NUMBER 1305
REGULATORY DRAWING - PACKAGING

SIZE	DWG. NO.	REV
A	1305-PACKAGING	XA

SCALE: NONE | WEIGHT: LBS. | **SHEET 1 OF 2**



NOTES:
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2. PACKAGE MARKS AND LABELS PER 49 CFR REQUIREMENTS
3. QUANTITY PER PACKAGE: 1
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FOUR PLACE DECIMAL: ± .0005
COAXIAL DIAMETERS CONCENTRIC WITHIN .005
MACHINED FINISHES 125 MAX.
REMOVE ALL BURRS AND SHARP EDGES MIN. R.010

FINISH	HEAT TREAT
N/A	N/A

DO NOT SCALE DRAWING

	NAME	DATE
DRAWN	ZT	11/23/2015
APPROVED	NH	11/23/2015

COMMENTS
THIS AREA INTENTIONALLY LEFT BLANK

MATERIAL
NOTED

TITLE:
FAMILY:
JET CUTTER
PRODUCT NUMBER 1305
REGULATORY DRAWING - PACKAGING

SIZE	DWG. NO.	REV
A	1305-PACKAGING	XA

SCALE: NONE | WEIGHT: LBS. | **SHEET 2 OF 2**

U. S. DEPARTMENT OF TRANSPORTATION

Performance Oriented Package Test Report

File # U-6182-16 Report Date: 17 February 2016

Tested by:
gh Package & Product Testing
& Consulting of Arizona, Inc.
21609 N. 12th Ave., Suite 300
Phoenix, AZ 85027
623.869.8008

Tested for:
Hunting Titan, LTD (Energetics)
143 HCR 4361
Milford, TX 76670
Attn: Nick Harrington
972.493.2580

SECTION I

Design Qualification Testing
4G Combination Package for Solids, Packing Group II
Casing Cutters
[UN0440 1.4D Charges, shaped, without detonator***]***
Testing Date(s): 01/28/2016 – 02/02/2016
(Periodic Testing Required By March 2018)

4G/Y11/S/**
USA/***

***year of manufacture*
*****Name and address or symbol of the manufacturer or approval agency certifying compliance*
[49CFR §178.2(e), §178.503(a)(6), and §178.503(a)(8)]

This packaging design was successfully tested as required by 49CFR and is suitable for use for shipments of compatible hazardous materials via surface and Cargo Aircraft transportation only[(1)]. Use of packaging methods or package components other than those documented in this report may invalidate this testing. The shipper is required to insure this packaging design is used in accordance with all requirements of the national & international regulations applicable to the intended commodity and intended mode(s) of transport (49CFR, ICAO/IATA, IMO/IMDG, et. al.).
[(1)]49CFR (§172.101, §173.24(i) & §173.27(f)) & ICAO/IATA may limit the quantities allowed in inner/outer packagings and/or prohibit shipments of specific commodities via aircraft.

Mr. Michael Greer (*Dir. Testing Services*)
gh Package & Product Testing and Consulting of Arizona, Inc.

ATTESTATION D'EXAMEN UE DE TYPE - MODULE B

EU-TYPE EXAMINATION CERTIFICATE - MODULE B

NUMERO D'ENREGISTREMENT : **0080.EXP.16.0009** INDICE : **0**
REGISTRATION NUMBER: *ISSUE:*

NOM DU (DES) PRODUIT(S) : **Casing cutters, CE type 1304 (2 items in the table)**
NAME OF THE PRODUCT(S)

TYPE GÉNÉRIQUE (ET CATÉGORIE) : **Système de découpe pyrotechnique**
GENERIC TYPE (AND CATEGORY): ***Cutting pyrotechnical system***

SOUS-TYPE : **Charge creuse coupe-tube**
SUB-TYPE: ***Casing cutter shaped charge***

TITULAIRE DE L'ATTESTATION : **HUNTING TITAN, Inc.**
HOLDER OF THE CERTIFICATE 143 HCR 4361
Milford, Texas 76670, USA

L'Institut National de l'Environnement Industriel et des Risques (INERIS), notifié sous le numéro d'identification 0080 conformément **à l'article 24 de la directive 2014/28/UE du Parlement Européen et du Conseil du 26 février 2014**, et accrédité par le COFRAC sous le numéro 5-0045 dans le cadre de l'activité de certification de produits et services (portée disponible sur www.cofrac.fr), atteste que le produit désigné ci-avant est reconnu conforme aux exigences essentielles de sécurité telles que définies **en annexe II de la directive 2014/28/UE**. Les procédures de certification sont disponibles sur www.ineris.fr.

The National Institute for Industrial Environment and Risk (INERIS), notified with the identification number 0080 in accordance ***with the article 24 of the directive 2014/28/EU of the European Parliament and of the Council of 26 February 2014****, and accredited by COFRAC under number 5-0045 for certification of products and services (scope available on www.cofrac.fr), testifies that the above named product is recognized to conform to the essential safety requirements as defined* ***in annex II of the directive 2014/28/EU****. The certification procedures are available on www.ineris.fr.*

Toute modification de la composition et/ou de la conception du produit doit être communiquée à l'INERIS.
Any change of the composition and/or the design of the product have to be communicated to INERIS.

Verneuil-en-Halatte, **6 juin 2016**
Le Directeur Général de l'INERIS
The Chief Executive Officer of INERIS
Par délégation, le Délégué Général Certification
By delegation, the Chief Certification Officer

INERIS
Parc Technologique ALATA - B.P. N° 2
F-60550 Verneuil-en-Halatte
Tél. +33 (0)3 44 55 66 77 - Fax+33 (0)3 44 55 66 99
SIRET 381 984 921 00019 - APE 7120B
Institut national de l'environnement industriel et des risques

C. MICHOT

Parc Technologique Alata BP 2 F-60550 Verneuil-en-Halatte
tél +33(0)3 44 55 66 77 fax +33(0)3 44 55 66 99 internet www.ineris.fr
Institut national de l'environnement industriel et des risques
Établissement public à caractère industriel et commercial - RCS Senlis B 381 984 921 - Siret 381 984 921 00019 - APE 7120B

ANNEXE A L'ATTESTATION D'EXAMEN UE DE TYPE - MODULE B

APPENDIX TO THE EU-TYPE EXAMINATION CERTIFICATE - MODULE B

NUMERO D'ENREGISTREMENT : **0080.EXP.16.0009** INDICE : **0**
REGISTRATION NUMBER: *ISSUE:*

A1- LIST OF VARIANTS:

Manufacturer's references	Diameter	Height	Main explosive weight	Booster explosive weight	Total weight
SCP-C3500T302	172.7 mm (6.8")	88.9 mm (3.5")	55 g	0.8 g	2234.7 g
SCP-C4250T302	167.6 mm (6.6")	107.95 mm (4.25")	90 g	0.8 g	3204.0 g

A2- DESCRIPTION OF THE PRODUCT:

General identification:

- main explosive : HMX desensitized (98 % min + graphite + binder)
- booster explosive : HMX pure (99.8 % min)
- diameter : see table above
- height : see table above
- total mass : see table above
- manufacturer's references : see table above

A3- PARTICULAR CONDITIONS FOR HANDLING, ASSEMBLING AND USE:

As specified by the manufacturer for use in oil well industry.

- shelf life : 10 years
- limit temperature for use : 204°C (400°F) for 1 hour max (HMX)
- limit temperature for storage : - 30°C to + 60°C / 90 % RH max

A4- MANUFACTURING SITE(S):

HUNTING TITAN, Inc.
143 HCR 4361
Milford, Texas 76670, USA

A5- ASSOCIATED ASSESSMENT DOCUMENT(S):

Reference	Date
DSC-16-161972-05538A, PNEO-AgCE 5/115	**2016-06-06**

INERIS
Parc Technologique ALATA - B.P. N° 2
F-60550 Verneuil-en-Halatte
Tél. +33 (0)3 44 55 66 77 - Fax+33 (0)3 44 55 66 99
SIRET 381 984 921 00019 - APE 7120B
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Institut national de l'environnement industriel et des risques
Établissement public à caractère industriel et commercial - RCS Senlis B 381 984 921 - Siret 381 984 921 00019 - APE 7120B

Safety Data Sheet

Product Name: Shaped Charges and Tubing/Casing Cutters

* * * Section 1 - Product and Company Identification * * *

Manufacturer Information

Hunting Titan
143 HCR 4361
Milford, TX 76670

Phone: 972-493-2580

Emergency # 800-424-9300 Chemtrec

* * * Section 2 - Hazards Identification * * *

GHS Classification:

Explosives - Division 1.4

GHS LABEL ELEMENTS

Symbol(s)

Signal Word

Danger

Hazard Statements

Fire or projection hazard.

Precautionary Statements

Prevention

Do not subject to grinding/shock/impact/flame/heat/electrostatic energy/friction.
No smoking.
Do not attempt to disassemble.
Do not consume food, drink or tobacco in area where they may become contaminated with these materials.
After handling or other exposure, immediately wash thoroughly with soap and water.

Response

Explosion risk in case of fire. Do NOT fight fire when fire reaches explosives; evacuate area for at least 1500 ft. (460 meters).
Detonation produces hazardous fragments.
Gases produced may contain carbon monoxide and nitrogen oxide.
Clean up should be done only be personnel experienced in handling explosives. Isolate area and remove sources of impact, friction, flame, heat, electrostatic energy, RF energy.
Wear safety glasses, gloves and dust respirator (if area is dusty).
Clean up, sweep up with non-sparking tools.

Storage

Store in accordance with local/regional/national/international regulations.

Disposal

Dispose of contents/container in accordance with local/regional/national/international regulations.

* * * Section 3 – Composition/Ingredient Information * * *

	Shaped Charges, RDX Explosive			Shaped Charges, HMX Explosive		
	OSHA PEL	ACGIH TLV	C.A.S. No.	OSHA PEL	ACGIH TLV	C.A.S. No.
Cyclotrimethylene Trinitramine (RDX)	NE	0.5 mg/m^3	121-82-4	NA	NA	NA
Cyclotetramethylene Tetranitramine (HMX)	NA	NA	2691-41-0	NE	NE	2691-41-0
Desensitizing Wax	NE	NE	NA	NE	NE	NA
Corrosion Resistant Steel	NE	NE	NE	NE	NE	NE
Graphite	15 mppcf	2 mg/m^3	7782-42-5	15 mppcf	2 mg/m^3	7782-42-5
Copper	1 mg/m^3	1 mg/m^3	7440-50-8	1 mg/m^3	1 mg/m^3	7440-50-8
Lead	0.05 mg/m^3	0.05 mg/m^3	7439-92-1	0.05 mg/m^3	0.05 mg/m^3	7439-92-1
Tungsten	NE	5 mg/m^3	7440-33-7	NE	5 mg/m^3	7440-33-7

	Shaped Charges, HNS Explosive			Shaped Charges, PYX Explosive		
	OSHA PEL	ACGIH TLV	C.A.S. No.	OSHA PEL	ACGIH TLV	C.A.S. No.
Hexanitrostilbene (HNS)	NE	NE	20062-22-0	NA	NA	NA
2, 6-Bis (Picrylamino)-3, 5-Dinitropyridine (PYX)	NA	NA	NA	NE	NE	38082-89-2
Desensitizing Wax	NE	NE	NA	NE	NE	NA
Corrosion Resistant Steel	NE	NE	NA	NE	NE	NA
Graphite	15 mppcf	2 mg/m^3	7782-42-5	15 mppcf	2 mg/m^3	7782-42-5
Copper	1 mg/m^3	1 mg/m^3	7440-50-8	1 mg/m^3	1 mg/m^3	7440-50-8
Lead	0.05 mg/m^3	0.05 mg/m^3	7439-92-1	0.05 mg/m^3	0.05 mg/m^3	7439-92-1
Tungsten	NE	5 mg/m^3	7440-33-7	NE	5 mg/m^3	7440-33-7

NE = Not Established NA = Not Applicable m^3 = Cubic Meter mppcf = Million Particles per Cubic Foot

* * * Section 4 - First Aid Measures * * *

First Aid: Eyes

For dust exposure: Immediately flush eyes with plenty of water for at least 15 minutes. If irritation persists get medical attention.

First Aid: Skin

For dust exposure: wash skin with soap and water.

First Aid: Ingestion

Not an expected route of entry under normal product handling conditions.

First Aid: Inhalation

For dust exposure: Remove victim to fresh air.

* * * Section 5 - Fire Fighting Measures * * *

General Fire Hazards

See Section 9 for Flammability Properties.

May detonate with impact, flame or heat. Detonation causes hazardous fragments. Explosion risk in event of fire.

Hazardous Combustion Products

Hazardous gases, including nitrogen oxides, may be produced in fire.

Extinguishing Media

None

Unsuitable Extinguishing Media

None

Fire Fighting Equipment/Instructions

DO NOT FIGHT FIRES! EXPLOSION MAY OCCUR! Isolate area. Evacuate area for at least 1500 ft. (460 meters). Consult U.S. D.O.T. Emergency Response Guide or local emergency response personnel for further details.

* * * Section 6 - Accidental Release Measures * * *

Recovery and Neutralization

None

Materials and Methods for Clean-Up

Clean up should be done only by personnel experienced in handling explosives. Isolate area and remove sources of impact, friction, flame, heat, electrostatic energy. Clean up; sweep up with non-sparking tools.

Emergency Measures

Isolate area. Keep unnecessary personnel away.

Personal Precautions and Protective Equipment

Wear safety glasses, gloves and dust respirator (if area is dusty).

Environmental Precautions

None

Prevention of Secondary Hazards

None

* * * Section 7 - Handling and Storage * * *

Handling Procedures

Keep away from impact, friction, flame, heat, electrical, or electrostatic energy. Do not attempt to disassemble. Do not consume food, drink, or tobacco in area where they may become contaminated with these materials. After handling or other exposure, immediately wash thoroughly with soap and water.

Storage Procedures

Store in accordance with local and safety and regulatory requirements.

Incompatibilities

Acids and alkalis.

* * * Section 8 - Exposure Controls / Personal Protection * * *

Component Exposure Limits

Cyclotrimethylene Trinitramine (RDX) (121-82-4)

ACGIH: 0.5 mg/m^3 TWA
Skin - potential significant contribution to overall exposure by the cutaneous route
OSHA: 1.5 mg/m^3 TWA
Prevent or reduce skin absorption
NIOSH: 1.5 mg/m^3 TWA
3 mg/m^3 STEL
Potential for dermal absorption

Cyclotetramethylenetetranitramine (HMX) (2691-41-0)

ACGIH: Not Established
OSHA: Not Established
NIOSH: Not Established

Hexanitrostilbene (HNS) (20062-22-0)

ACGIH: Not Established
OSHA: Not Established
NIOSH: Not Established

2, 6-Bis (Picrylamino)-3, 5-Dinitropyridine (PYX) (38082-89-2)

ACGIH: Not Established
OSHA: Not Established
NIOSH: Not Established

Lead (7439-92-1)

ACGIH: 0.05 mg/m^3 TWA
OSHA: 30 µg/m^3 Action Level (Poison, See 29 CFR 1910.1025); 50 µg/m^3 TWA
NIOSH: 0.050 mg/m^3 TWA

Tungsten (7440-33-7)

ACGIH: 5 mg/m^3 TWA
10 mg/m^3 STEL
OSHA: 5 mg/m^3 TWA
10 mg/m^3 STEL
NIOSH: 5 mg/m^3 TWA
10 mg/m^3 STEL

Copper (7440-50-8)

ACGIH: 0.2 mg/m^3 TWA (fume)
OSHA: 0.1 mg/m^3 TWA (dust, fume, mist, as Cu)
NIOSH: 1 mg/m^3 TWA (dust and mist); 0.2 mg/m^3 TWA (fume)

Graphite (7782-42-5)

ACGIH: 2 mg/m^3 TWA (all forms except graphite fibers, respirable fraction)

OSHA: 2.5 mg/m^3 TWA (natural, respirable dust); 10 mg/m^3 TWA (synthetic, total dust); 5 mg/m^3 TWA (synthetic, respirable fraction)

NIOSH: 2.5 mg/m^3 TWA (natural, respirable dust)

Engineering Measures

Not required under normal product handling conditions.

Personal Protective Equipment: Respiratory

Not required under normal product handling conditions.

Personal Protective Equipment: Hands

Not required under normal product handling conditions.

Personal Protective Equipment: Eyes

Safety glasses recommended.

Personal Protective Equipment: Skin and Body

Not required under normal product handling conditions. Clothing should not have propensity to build up electrostatic energy.

* * * Section 9 - Physical & Chemical Properties * * *

Appearance:	Explosive shaped charges	**Odor:**	None
Physical State:	Solid	**pH:**	NA
Vapor Pressure:	ND	**Vapor Density:**	ND
Boiling Point:	ND	**Melting Point:**	ND
Solubility (H2O):	ND	**Specific Gravity:**	ND
Evaporation Rate:	ND	**VOC:**	ND
Octanol/H2O Coeff.:	ND	**Flash Point:**	ND
Flash Point Method:	ND	**Upper Flammability Limit (UFL):**	ND
Lower Flammability Limit (LFL):	ND	**Burning Rate:**	ND
Auto Ignition:	ND		

* * * Section 10 - Chemical Stability & Reactivity Information * * *

Chemical Stability

This is a stable material under normal conditions.

Hazardous Reaction Potential

May explode if subjected to shock, impact, friction, heat or rough handling.

Conditions to Avoid

Detonates with impact, friction, flame, heat or electrostatic discharge.

Incompatible Products

Acids and Alkalis.

Hazardous Decomposition Products

Detonation produces hazardous fragments. Gases produced may contain carbon monoxide and nitrogen oxide.

* * * Section 11 - Toxicological Information * * *

Acute Toxicity

A: General Product Information

Shaped charges do not present a health hazard in normal handling and use. However the product is high explosive and detonation may cause severe physical injury, including death.

B: Component Analysis - LD50/LC50

Cyclotrimethylene Trinitramine (RDX) (121-82-4)

Oral LD50 Rat 100 mg/kg

Cyclotetramethylenetetranitramine (HMX) (2691-41-0)

Oral LD50 Rat 6490 mg/kg; Dermal LD50 Rat >5 g/kg; Dermal LD50 Rabbit 630 mg/kg

Hexanitrostilbene (HNS) (20062-22-0)

Not Established

2, 6-Bis (Picrylamino)-3, 5-Dinitropyridine (PYX) (38082-89-2)

Oral LD50 Rat >5 g/kg

Potential Health Effects: Skin Corrosion Property/Stimulativeness

Dust contact with skin may cause minor skin irritation.

Potential Health Effects: Eye Critical Damage/ Stimulativeness

Dust contact with may cause eye irritation.

Potential Health Effects: Ingestion

Not an expected route of entry under normal product use conditions.

Potential Health Effects: Inhalation

Inhalation of powders may cause nervous system irregularities including headaches and dizziness.

Respiratory Organs Sensitization/Skin Sensitization

This product is not reported to have any sensitization effects.

Generative Cell Mutagenicity

This product is not reported to have any mutagenic effects.

Carcinogenicity

A: General Product Information

This product is not reported to have any carcinogenic effects.

B: Component Carcinogenicity

Cyclotrimethylene Trinitramine (RDX) (121-82-4)

ACGIH: A4 - Not Classifiable as a Human Carcinogen

Lead (7439-92-1)

ACGIH: A3 - Confirmed Animal Carcinogen with Unknown Relevance to Humans
OSHA: 30 µg/m3 Action Level (Poison, See 29 CFR 1910.1025); 50 µg/m3 TWA
NTP: Reasonably Anticipated To Be A Human Carcinogen (Possible Select Carcinogen)
IARC: Monograph 87 [2006] (evaluates inorganic lead compounds as Group 2A and organic lead compounds as Group 3) (Group 2A (probably carcinogenic to humans))

Reproductive Toxicity

This product is not reported to have any reproductive toxicity effects.

Specified Target Organ General Toxicity: Single Exposure

This product is not reported to have any specific target organ general toxicity single exposure effects.

Specified Target Organ General Toxicity: Repeated Exposure

This product is not reported to have any specific target organ general toxicity repeat exposure effects.

Aspiration Respiratory Organs Hazard

This product is not reported to have any aspiration hazards.

Other Toxicological Information

Lead poisoning can result in damage to central and peripheral nervous systems, the blood forming organs, leading to anemia. Lead may impair the reproductive system of men and women. There is increasing evidence that lead exposure may affect blood pressure in adults.

* * * Section 12 - Ecological Information * * *

Ecotoxicity

A: General Product Information

No information available for the product.

B: Component Analysis - Ecotoxicity - Aquatic Toxicity

Cyclotrimethylene Trinitramine (RDX) (121-82-4)

Test & Species		Conditions
96 Hr LC50 Lepomis macrochirus	1.9-6.6 mg/L [static]	
96 Hr LC50 Lepomis macrochirus	5.6-10 mg/L [flow-through]	
96 Hr LC50 Oncorhynchus mykiss	5.4-7.4 mg/L [static]	
96 Hr LC50 Pimephales promelas	5-8.7 mg/L [flow-through]	
96 Hr LC50 Pimephales promelas	3.0-5.0 mg/L [static]	

Cyclotetramethylenetetranitramine (HMX) (2691-41-0)

Test & Species		Conditions
96 Hr LC50 Pimephales promelas	8.8-26 mg/L [static]	7 days old
96 Hr LC50 Lepomis macrochirus	>32 mg/L [static]	
96 Hr LC50 Oncorhynchus mykiss	>32 mg/L [static]	

Lead (7439-92-1)

Test & Species		Conditions
96 Hr LC50 Cyprinus carpio	0.44 mg/L [semi-static]	
96 Hr LC50 Oncorhynchus mykiss	1.17 mg/L [flow-through]	
96 Hr LC50 Oncorhynchus mykiss	1.32 mg/L [static]	
48 Hr EC50 water flea	600 µg/L	

Copper (7440-50-8)

Test & Species		Conditions
96 Hr LC50 Pimephales promelas	0.0068 - 0.0156 mg/L	
96 Hr LC50 Pimephales promelas	<0.3 mg/L [static]	
96 Hr LC50 Pimephales promelas	0.2 mg/L [flow-through]	
96 Hr LC50 Oncorhynchus mykiss	0.052 mg/L [flow-through]	

96 Hr LC50 Lepomis macrochirus	1.25 mg/L [static]
96 Hr LC50 Cyprinus carpio	0.3 mg/L [semi-static]
96 Hr LC50 Cyprinus carpio	0.8 mg/L [static]
96 Hr LC50 Poecilia reticulata	0.112 mg/L [flow-through]
72 Hr EC50 Pseudokirchneriella subcapitata	0.0426 - 0.0535 mg/L [static]
96 Hr EC50 Pseudokirchneriella subcapitata	0.031 - 0.054 mg/L [static]
48 Hr EC50 Daphnia magna	0.03 mg/L [Static]

Persistence/Degradability

No information available for the product.

Bioaccumulation

No information available for the product.

Mobility in Soil

No information available for the product.

* * * Section 13 - Disposal Considerations * * *

Waste Disposal Instructions

See Section 7 for Handling Procedures. See Section 8 for Personal Protective Equipment recommendations.

Disposal of Contaminated Containers or Packaging

Dispose of contents/container in accordance with local/regional/national/international regulations.

* * * Section 14 - Transportation Information * * *

US DOT Information

Shipping Name: Charges, Shaped
UN #: 0440 **Hazard Class:** 1.4D **Packing Group:** II

* * * Section 15 - Regulatory Information * * *

Regulatory Information

US Federal Regulations

A: Component Analysis

None of the components in this article contain chemicals required to be identified under SARA Section 302 (40 CFR 355 Appendix A), SARA Section 313 (40 CFR 372.65) and/or CERCLA (40 CFR 302.4).

B: Component Marine Pollutants

None of the components in this article contain chemicals required by US DOT to be identified as marine pollutants.

State Regulations

Component Analysis - State

The following components appear on one or more of the following state hazardous substances lists:

Component	CAS	CA	MA	MN	NJ	PA	RI
Cyclotrimethylene Trinitramine (RDX)	121-82-4	Yes	Yes	Yes	Yes	Yes	No
Cyclotetramethylenetetranitramine (HMX)	2691-41-0	No	No	No	Yes	No	No
Lead	7439-92-1	Yes	Yes	Yes	Yes	Yes	No
Tungsten	7440-33-7	Yes	Yes	Yes	Yes	Yes	No
Copper	7440-50-8	Yes	Yes	Yes	Yes	Yes	No
Graphite	7782-42-5	Yes	Yes	Yes	Yes	Yes	No

The following statement(s) are provided under the California Safe Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65):

WARNING! This product contains a chemical known to the state of California to cause cancer.
WARNING! This product contains a chemical known to the state of California to cause reproductive/developmental effects.

Component Analysis - WHMIS IDL

The following components are identified under the Canadian Hazardous Products Act Ingredient Disclosure List:

Component	CAS #	Minimum Concentration
Lead	7439-92-1	0.1 %
Tungsten	7440-33-7	1 %
Copper	7440-50-8	1 %

Additional Regulatory Information

Component Analysis - Inventory

Component	CAS #	TSCA	CAN	EEC
Cyclotrimethylene Trinitramine (RDX)	121-82-4	Yes	DSL	EINECS
Hexanitrostilbene (HNS)	20062-22-0	Yes	NDSL	EINECS
Cyclotetramethylenetetranitramine (HMX)	2691-41-0	Yes	DSL	EINECS
2, 6-Bis (Picrylamino)-3, 5-Dinitropyridine (PYX)	38082-89-2	Yes	NDSL	No
Lead	7439-92-1	Yes	DSL	EINECS
Tungsten	7440-33-7	Yes	DSL	EINECS
Copper	7440-50-8	Yes	DSL	EINECS
Graphite	7782-42-5	Yes	DSL	EINECS

* * * Section 16 - Other Information * * *

Key/Legend

EPA = Environmental Protection Agency; TSCA = Toxic Substance Control Act; ACGIH = American Conference of Governmental Industrial Hygienists; IARC = International Agency for Research on Cancer; NIOSH = National Institute for Occupational Safety and Health; NTP = National Toxicology Program; OSHA = Occupational Safety and Health Administration., NJTSR = New Jersey Trade Secret Registry.

Literature References

None

End of Sheet