



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
THIRTEENTH REVISION

Based upon a request by Hunting Titan, Inc., 143 HCR 4361, Milford, TX 76670, US, 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.

An EX approval is non-transferable in any merger, acquisition, sale of assets, or other business transaction. For more information, please visit:

[<https://www.phmsa.dot.gov/registration/faq-mergers-acquisitions-and-legal-status-changes-pdf>]

U.N. PROPER SHIPPING NAME AND NUMBER:

Detonators, electric, for blasting, UN0255

U.N. CLASSIFICATION CODE: 1.4B

REFERENCE NUMBER:

EX2008020283

PRODUCT DESIGNATION/PART NUMBER:

Product 1351 and Product 1352 Families of Electric
Detonators
(D/N's: Family Drawing 1351 Rev A, CFA Family
1352 Rev D)

NOTES:

This classification is only valid when all the electric detonators in the family have been previously approved as Division 1.1B or Division 1.4B, and when repackaged as follows:

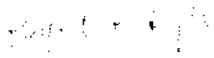
Inner Packaging - Tubes, fiberboard with a wall thickness not less than 1/8 inch and of sufficient length to completely surround the detonator, optionally overpacked in a static-resistant barrier bag.

Intermediate Packaging - Tray, foamed plastic, each containing not more than five (5) inner packagings uniformly segregated apart.

Outer Packaging - UN 4G fiberboard box, each containing one (1) intermediate packaging. The packaging may contain detonators of the same or different types within a specified family.

This approval as revised supersedes all previous versions.

DATED: February 27, 2020


for William Schoonover
Associate Administrator for Hazardous Materials Safety



U.S. Department
of Transportation

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CLASSIFICATION OF EXPLOSIVES

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U.N. PROPER SHIPPING NAME AND NUMBER:

Detonators, electric for blasting, UN0456

U.N. CLASSIFICATION CODE: 1.4S

REFERENCE NUMBER

EX2014120649

PRODUCT DESIGNATION/PART NUMBER

CFA Family of Detonators with maximum 480mg
RDX, HNS, or PYX, P/N: 1355

NOTES: This classification is only valid when the detonator assemblies are packaged as follows:

Inner Packaging – Dividers, chipboard not less than 0.32 inches thick, such as to contain no more than fifty (50) detonators in separate cells, and with double-wall fiberboard pads above and below.

Intermediate packaging – Bags, plastic, each containing one (1) inner packaging with chipboard pad below.

Outer Packaging – UN 4G fiberboard box, each containing one (1) intermediate packaging.

This classification meets UN 6(d) criteria.

DATED: 05/14/2015

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



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of Transportation

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1200 New Jersey Avenue, Southeast
Washington, D.C. 20590

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CLASSIFICATION OF EXPLOSIVES

Based upon a request by Hunting Titan, Inc., 143 HCR 4361, Milford, TX 76670-1234, US, 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.

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[<https://www.phmsa.dot.gov/registration/faq-mergers-acquisitions-and-legal-status-changes-pdf>]

U.N. PROPER SHIPPING NAME AND NUMBER:

Detonators, electric, for blasting, UN0255

U.N. CLASSIFICATION CODE: 1.4B

REFERENCE NUMBER:

EX2019062444

PRODUCT DESIGNATION/PART NUMBER:

Family of CFA Detonators, P/N: 1355,
D/N: CFA Family 1355 Rev. B

NOTES: This classification is only valid when the detonator assemblies are packaged as follows:

Inner Packaging - Dividers, chipboard not less than 0.32 inches thick, such as to contain not more than fifty (50) detonators in separate cells, and with double-wall fiberboard pads above and below.

Intermediate packaging - Bags, plastic, each containing one (1) inner packaging with chipboard pad below.

Outer Packaging - UN 4G fiberboard box, each containing one (1) intermediate packaging.

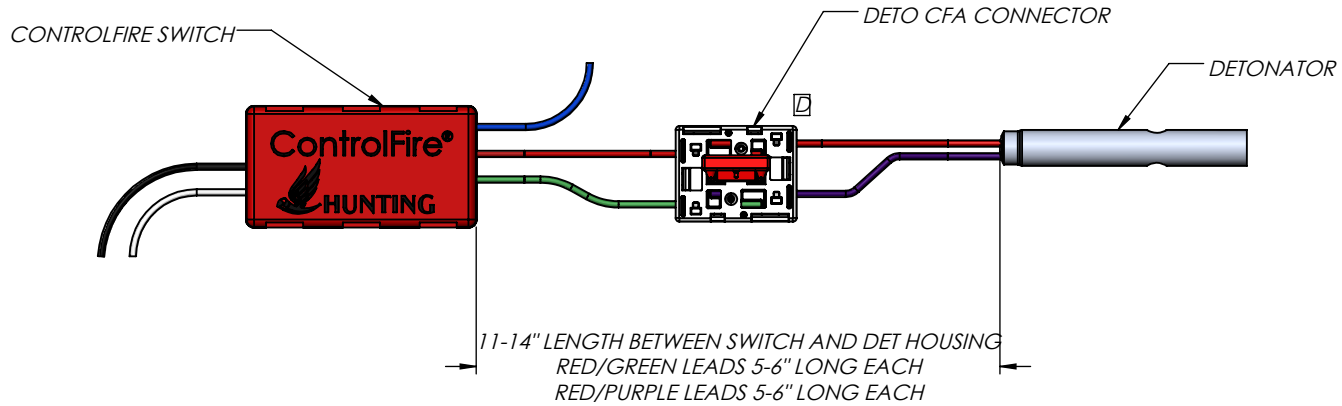
DATED: August 02, 2019

for William Schoonover
Associate Administrator for Hazardous Materials Safety

FAMILY: Detonators, Electric; Product 1352
Explosive Type: RDX, HMX, or HNS
Explosive Load: 0.972 grams max
Length: 1" to 4"



REVISIONS					
REV.	DESCRIPTION	BY	ECO/DCN #	DATE APPROVED	APPROVED BY
X	PROTO	JDH		4/14/2011	
XA	ADDED DETO IEH CONNECTOR			7/14/2011	
XB	SWITCH CASE WAS MAROON & ADD A-140F			8/22/2011	
XC	ADDED DETO-CFA-A140S-T			10/6/2011	
D	ADDED MAX LIMITS INSTEAD OF P/N LIST & CHANGED CONNECTOR	DM	ECO 1698E	1/20/2020	ZT



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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

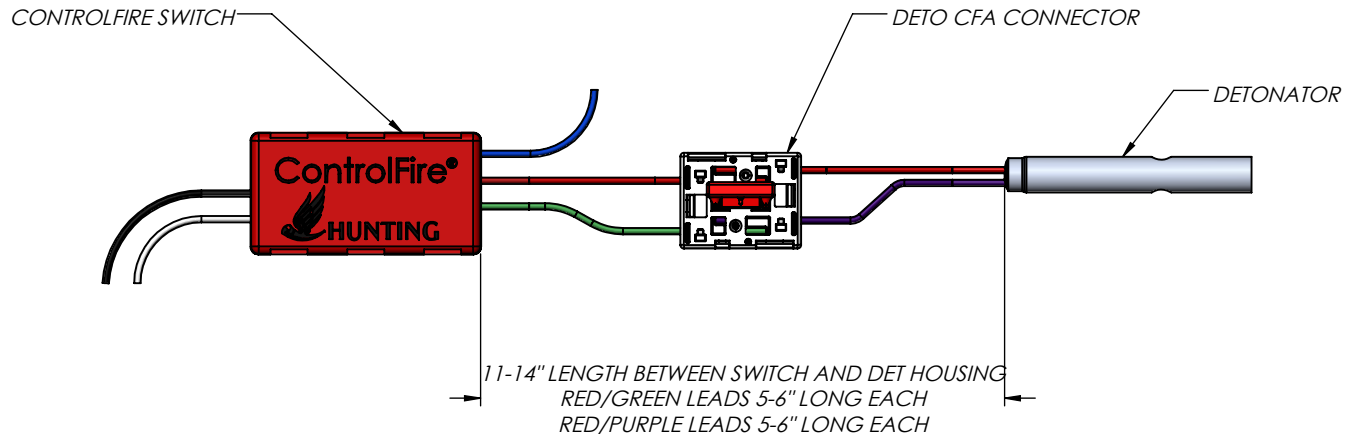

FINISH HEAT TREAT

DO NOT SCALE DRAWING

NAME	DATE
JDH	6/14/2011
ZT	1/20/2020
COMMENTS	
THIS AREA INTENTIONALLY LEFT BLANK	
MATERIAL	
NA	

TITLE:			
CONTROLFIRE ASSEMBLY DETONATORS, ELECTRIC PRODUCT NUMBERS 1352			
SIZE	DWG. NO.	REV	
A	CFA FAMILY 1352	D	
SCALE: NONE	WEIGHT: LBS.	SHEET 1 OF 1	

FAMILY: Detonators, Electric; Product 1355
Explosive Type: RDX, HMX, HNS, or PYX
Explosive Load: 0.500 grams max
Length: 1" to 4"

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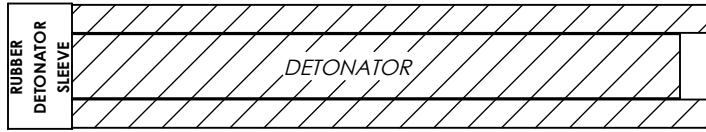
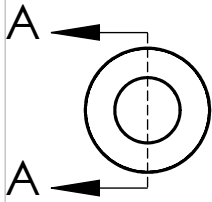
UNLESS OTHERWISE SPECIFIED:

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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
DO NOT SCALE DRAWING	

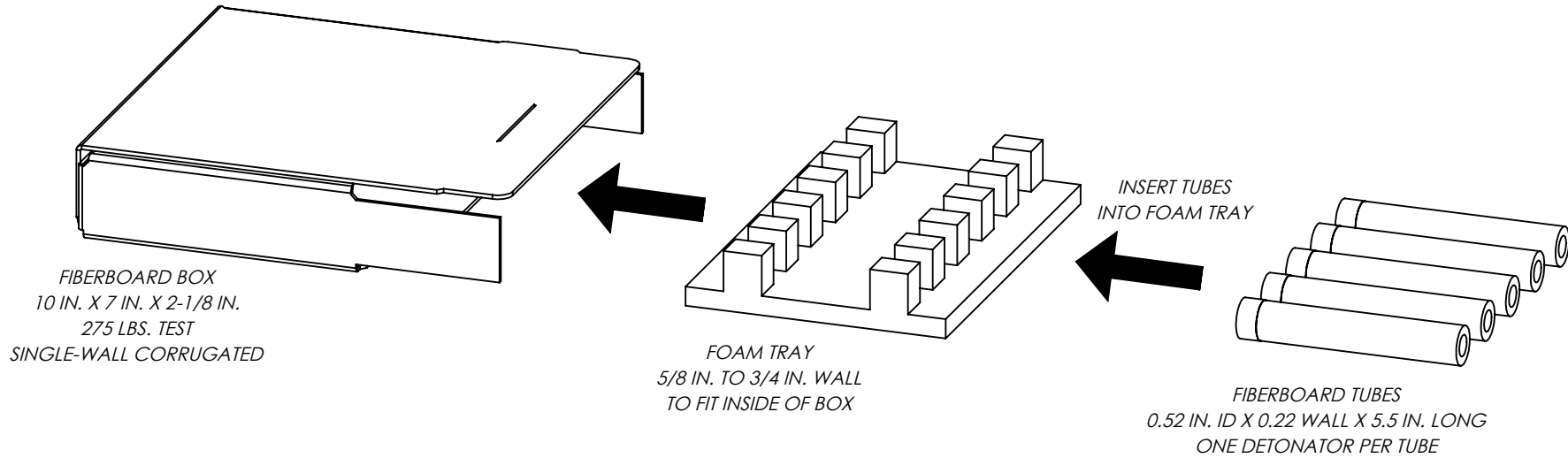
NAME	DATE
DRAWN DM	4/6/2016
APPROVED CS	5/1/2019
COMMENTS	
THIS AREA INTENTIONALLY LEFT BLANK	
MATERIAL	
NA	

TITLE:		CONTROLFIRE ASSEMBLY DETONATORS, ELECTRIC PRODUCT NUMBERS 1355	
SIZE	DWG. NO.	REV	
A	CFA FAMILY 1355	B	
SCALE: NONE	WEIGHT: LBS.	SHEET 1 OF 1	



DETONATOR SHOWN INSTALLED IN FIBERBOARD TUBE
 OPTIONAL: INSTALL TUBE & DETONATOR INTO BARRIER BAG TO SEAL

REVISIONS					
REV.	DESCRIPTION	BY	ECO/DCN #	DATE APPROVED	APPROVED BY
A		TGG			
B	CLASS WAS 1.4S & UN WAS 0456	DM	1472E	7/26/2016	CS



THIS DRAWING IS SUPPLIED FOR CERTIFICATION BY REGULATORY AGENCIES.

DESCRIPTION:
 DETONATOR USED IN OIL AND GAS WELLS TO INITIATE CUTTERS USED TO CUT TUBING AND CASING, AND SHAPED CHARGES.

TOTAL EXPLOSIVE WEIGHT:
 1.4 GRAM MAS. / DETONATOR; 7.0 GRAM MAX / BOX

CLASSIFICATION:
 DETONATORS, ELECTRIC

CLASS 1.4B
UN 0255

PACKAGING:
 5 DETONATORS PER BOX

PRODUCT 1351 & 1352 OF DETONATORS, ELECTRIC EXPLOSIVE LOAD 1.4 GRAMS OR LESS
EXPLOSIVE TYPE: RDX, HMX, OR HNS
EXPLOSIVE LOAD: 1.4 GRAMS MAX. 0 GRAMS MIN.



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 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

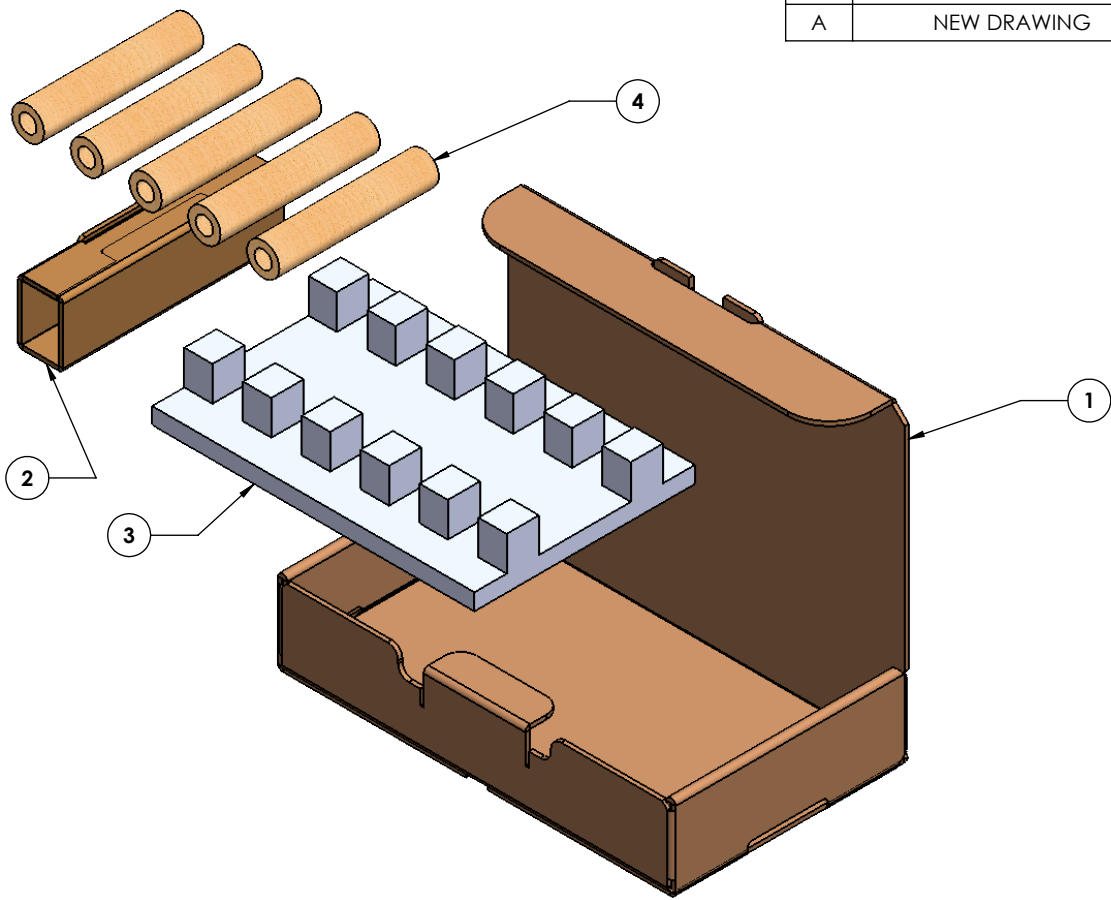
FINISH: N/A HEAT TREAT: N/A

DO NOT SCALE DRAWING


NAME	TGG	DATE	02/18/2003
APPROVED	CS	DATE	7/26/2016
COMMENTS	THIS AREA INTENTIONALLY LEFT BLANK		
MATERIAL			

TITLE: CLASSIFICATION DRAWING DETONATOR PACKAGING QUANTITY: 5 PER BOX			
SIZE	DWG. NO.	REV	
A	1351 & 1352 - 5	B	
SCALE: NONE	WEIGHT: LBS.	SHEET 1 OF 1	

REVISIONS					
REV.	DESCRIPTION	BY	ECO/DCN #	DATE APPROVED	APPROVED BY
A	NEW DRAWING	DM	ECO 1578E	11/14/2017	CS



ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	PKG-DETO-101(OPEN)	FIBERBOARD BOX OUTER PACKAGING 275# B/F KRAFT	1
2	PKG-DETO-103	SPACER 275# B/F KRAFT	1
3	DETO-FOAM_INSERT_FCFA	FOAM TRAY WITH FIBERBOARD BACKING	1
4	PKG-TUBE F-DETO C0026-P	WOUND KRAFT PAPER TUBES	5



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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
NONE	NONE

DO NOT SCALE DRAWING

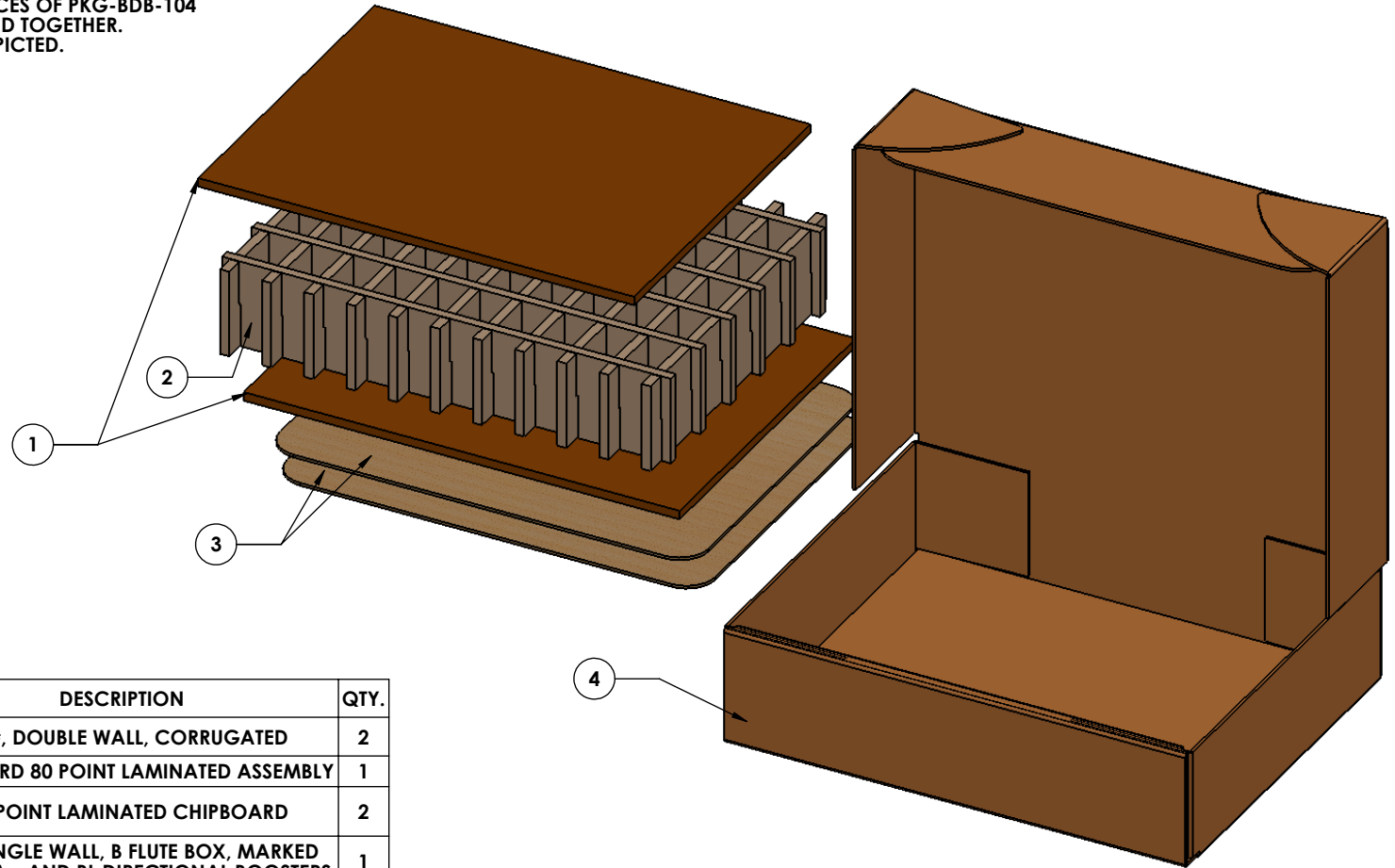
NAME	DATE
DM	10/25/2017
APPROVED	CS 11/14/2017
COMMENTS	
THIS AREA INTENTIONALLY LEFT BLANK	
MATERIAL	
SEE NOTES	

TITLE: **PACKAGING ASSEMBLY 5 COUNT DETONATOR**

SIZE	DWG. NO.	REV
A	BOX-DETO-100	A
SCALE: NONE	WEIGHT: LBS.	SHEET 1 OF 1

REVISIONS					
REV.	DESCRIPTION	BY	ECO/DCN #	DATE APPROVED	APPROVED BY
A	NEW DRAWING	LMA	1330E	6/19/2015	BC
B	CHANGED MATERIAL DESCRIPTIONS, ADDED NOTE 2	LMA	1356E	8/13/2015	BC

- NOTE:
- ITEM NO. 3 CONSISTS OF 2 PIECES OF PKG-BDB-104 GLUED OR OTHERWISE FASTENED TOGETHER.
 - B SHIP ASSEMBLED IN ORDER DEPICTED.



ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	PKG-BDB-101	450#, DOUBLE WALL, CORRUGATED	2
2 B	PKG-CFA-INT-ASSEMB	CHIPBOARD 80 POINT LAMINATED ASSEMBLY	1
3	PKG-BDB-104	100 POINT LAMINATED CHIPBOARD	2
4 B	PKG-AUXILIARY-BOX-1	275# SINGLE WALL, B FLUTE BOX, MARKED FOR C.F.A.s AND BI-DIRECTIONAL BOOSTERS	1



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 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 N/A HEAT TREAT N/A

DO NOT SCALE DRAWING

	NAME	DATE
DRAWN	DM	9/12/2014
APPROVED	LMA	6/4/2015

COMMENTS
 THIS AREA INTENTIONALLY LEFT BLANK

MATERIAL
 NOTED

TITLE:		SIZE	DWG. NO.	REV
PACKAGING ASSEMBLY FOR C.F.A. DETONATORS		A	PKG-AUXILIARY-BOX-3	B
SCALE: NONE		WEIGHT: LBS.		SHEET 1 OF 1

UN APPROVALS CERTIFICATE

CERTIFICATE NUMBER: UN USA/M4999 – Detonator Transport Box, 4 and 5 Cell
REFERENCE: TEST REPORT 20-0062

PACKAGE PERFORMANCE TESTS

- DESCRIPTION OF PACKAGING:** Hunting Titan outer packaging identification: PKG-BOX DETO SHIPPING; Fiberboard Box (9-7/8" x 1-7/8" x 6-7/8" interior dimensions) for Five Detonator/ControlFire Assembly Packaging and Four Detonator Packaging, used in the oil industry
- UN TYPE PACKAGING CODE:** 4G
- TESTS PERFORMED:**

Design Qualification Testing [49 CFR Sec. 178.601(c)(1) and 178.601(d)]:

Test Description	UN Ref. No.	CFR 49	Intensity	Results
Drop Test	Chap 6.1.5.3	178.603 Gp II (1.2 m)	1.2 m	Passed
Stacking Test	Chap 6.1.5.6	178.606 3 m	45.5 kg	Passed
COBB Test	Chap 6.1.4.12	178.516(b)(1)	155 gm/m ²	Passed
Vibration Test		178.608	4.2 Hz	Passed

Periodic Retesting [49 CFR 178.601(c)(2) and 178.601(e)]:

Test Description	UN Ref. No.	49 CFR	Intensity	Results
Drop Test	Chap 6.1.5.3	178.603 Gp II (1.2 m)	1.2 m	Passed
Stacking Test	Chap 6.1.5.6	178.606 3 m	3 m	Passed

CERTIFICATION

Under the provisions of Title 49, CFR, Sec 178.601(b) and 107.403, Hunting Titan Energetics Division, certifies that the samples of the packaging tested under our September 28, 2020 Test Report, have successfully met and PASSED all performance testing requirements. The tests have been performed with standard good laboratory practices and in accordance with the United Nations Recommendations for the Transport of Dangerous Goods, the International Civil Aviation Organizations Technical Instructions for the Safe Transport of Dangerous Goods by Air, the International Maritime Dangerous Goods Code and the Code of Federal Regulations (CFR) 49. The packaging represented by the samples tested and the Packaging Specifications may therefore bear the following Certification Reference Number:



Debra C
McDonald

Digitally signed by Debra C McDonald
DN: cn=Debra C McDonald, o=Hunting
Inc, ou,
email=Debra.McDonald@hunting-
intl.com, c=US
Date: 2020.10.01 10:21:55 -05'00'

October 1, 2020

Debra McDonald
Compliance Control Coordinator

Date

** Asterisks are replaced by the last two digits of the year of packaging manufacture.

UN APPROVALS CERTIFICATE
CERTIFICATE NUMBER: UN USA/M4999 – Detonator Transport Box, Larger 5 Count
REFERENCE: TEST REPORT 21-0094

PACKAGE PERFORMANCE TESTS

1. DESCRIPTION OF PACKAGING:

Hunting Titan identification: BOX-DETO-100; Fiberboard Box (10-15/16" x 1-7/8" x 6-5/8" interior dimensions) for detonators used in the oil industry.

2. UN TYPE PACKAGING CODE: 4G

3. TESTS PERFORMED:

Design Qualification Testing [49 CFR Sec. 178.601(c)(1) and 178.601(d)]:

Test Description	UN Ref. No.	CFR 49	Intensity	Results
Drop Test	Chap 6.1.5.3	178.603 Gp II (1.2 m)	1.2 m	Passed
Stacking Test	Chap 6.1.5.6	178.606 3 m	3 m	Passed
COBB Test	Chap 6.1.4.12	178.516(b)(1)	155 gm/m ²	Passed
Vibration Test		178.608	1.1g @ 254 RPM	Passed

Periodic Retesting [49 CFR 178.601(c)(2) and 178.601(e)]:

Test Description	UN Ref. No.	49 CFR	Intensity	Results
Drop Test	Chap 6.1.5.3	178.603 Gp II (1.2 m)	1.2 m	Passed
Stacking Test	Chap 6.1.5.6	178.606 3 m	3 m	Passed

CERTIFICATION

Under the provisions of Title 49, CFR, Sec 178.601(b) and 107.403, Hunting Titan Energetics Division, certifies that the samples of the packaging tested under our November 30, 2021 Test Report, have successfully met and PASSED all performance testing requirements. The tests have been performed with standard good laboratory practices and in accordance with the United Nations Recommendations for the Transport of Dangerous Goods, the International Civil Aviation Organizations Technical Instructions for the Safe Transport of Dangerous Goods by Air, the International Maritime Dangerous Goods Code and the Code of Federal Regulations (CFR) 49. The packaging represented by the samples tested and the Packaging Specifications may therefore bear the following Certification Reference Number:



4G/Y0.6/S/**
USA/M4999

**Debra C
McDonald**

Digitally signed by Debra C McDonald
DN: cn=Debra C McDonald, o=Hunting Inc,
ou, email=Debra.McDonald@hunting-
intl.com, c=US
Date: 2021.12.01 14:48:33 -06'00'

December 1, 2021

Debra McDonald
Compliance Coordinator

Date

** Asterisks are replaced by the last two digits of the year of packaging manufacture.

UN APPROVALS CERTIFICATE
CERTIFICATE NUMBER: UN USA/M4999 CFA Detonator
REFERENCE: TEST REPORT 21-0018

Hunting Titan
143 HCR 4361
Milford, Texas 76670
USA

Tel 972 493 2580
Fax 972 493 2300
www.hunting-intl.com

PACKAGE PERFORMANCE TESTS

1. DESCRIPTION OF PACKAGING:

Hunting Titan identification:

PKG-AUXILIARY-BOX-1

Description of Packaging:

Fiberboard Box 16-1/4" x 12-3/4" x 4" for ControlFire Assembly Detonator Packaging

Combination Packaging:

Outer Packaging

Material Description: (Style, Test, Flute): Dimensions (LxWxD):	Singlewall Corrugated Fiberboard 275#, B Flute 15.75" x 12.63" x 3.88" Inside; 16.25" x 12.75" x 4.0" Outside
Mfg. Joint: Closure:	Glued Inside Folded friction fit with locking tabs

Inner Packaging – Design Type A

Chipboard Partition:

Material Description: Dimensions (LxWxD):	Chipboard, 80pt. Laminated 15.438" x 11.413" x 3.0"
--	--

Chipboard Pad (2 Required):

Material Description: Dimensions (LxWxD):	Chipboard, 100pt. Laminated 14.75" x 11.25" x 0.10"
--	--

Fiberboard Pad (2 Required):

Material Description: (Style, Test, Flute): Dimensions (LxW):	Doublewall Corrugated Fiberboard 450#, B/C Flute 15.5" x 11.5" x 0.30"
---	--

Anti-Static Bag (Film Barrier):

Dimensions (LxW): Markings:	22.75" x 17.875" (thickness 0.1 mm) MIL-PRF-1311, Type 1, Class 1
--------------------------------	--

2. UN TYPE PACKAGING CODE: 4G

Test Sample Contents:

Typical Gross Weight:

Maximum Capacity:

Specific Gravity:

UN Packaging Group No. II

Inert load, steel rods

6 kg. (13.2 lbs.)

6 kg. (13.2 lbs.)

N/A

3. TESTS PERFORMED:

Design Qualification Testing [49 CFR Sec. 178.601(c)(1) and 178.601(d)]:

Test Description	UN Ref. No.	CFR 49	Intensity	Results
Drop Test	Chap 6.1.5.3	178.603	1.2 m	Passed
Stacking Test	Chap 6.1.5.6	178.606	181.44 kg	Passed
COBB Test	Chap 6.1.4.12	178.516(b)(1)	129 gm/m ²	Passed
Vibration Test		178.608	1.1g @ 4Hz	Passed

Periodic Retesting [49 CFR 178.601(c)(2) and 178.601(e)]:

Test Description	UN Ref. No.	49 CFR	Intensity	Results
Drop Test	Chap 6.1.5.3	178.603	1.2 m	Passed
Stacking Test	Chap 6.1.5.6	178.606	181.44 kg	Passed

CERTIFICATION

Under the provisions of Title 49, CFR, Sec 178.601(b) and 107.403, Hunting Titan Energetics Division, certifies that the samples of the packaging tested under the test report 19-0041 from March 29, 2019 have successfully met and PASSED all performance testing requirements. The tests have been performed with standard good laboratory practices and in accordance with the United Nations Recommendations for the Transport of Dangerous Goods, the International Civil Aviation Organizations Technical Instructions for the Safe Transport of Dangerous Goods by Air, the International Maritime Dangerous Goods Code and the Code of Federal Regulations (CFR) 49. The packaging represented by the samples tested and the Packaging Specifications may therefore bear the following Certification Reference Number:



**Debra C
McDonald**

Digitally signed by Debra C McDonald
DN: cn=Debra C McDonald, o=Hunting
Inc, ou,
email=Debra.McDonald@hunting-
intl.com, c=US
Date: 2021.04.07 16:05:59 -05'00'

April 7, 2021

Debra McDonald
Compliance Coordinator

Date

** Asterisks are replaced by the last two digits of the year of packaging manufacture.



NATIONAL INSTITUTE FOR INDUSTRIAL ENVIRONMENT AND RISK
- decree nr 90-1089, 7 December 1990 -
- order from the Minister of Ecology, Energy, Sustainable Development and Sea, 4 May 2010 -

EXPLOSIVES FOR CIVIL USES

1 - ADDITION C1 TO EC TYPE-EXAMINATION CERTIFICATE:

2 - **0080.EXP.12.0031**

3 - This certificate is relating to the following product:

Controlfire® detonators type 1352 (7 items referenced in the table)

4 - This product is manufactured by:

HUNTING TITAN, Inc.
143 HCR 4361
MILFORD, TEXAS 76670 (USA)

The applicant for the examination is:

HUNTING TITAN, Inc.
143 HCR 4361
MILFORD, TEXAS 76670 (USA)

Represented in European Union by:

SPECIAL CARGO SERVICES BV
Breguetlaan 7, Sky Park, Oude Meer
P.O. Box 75709
1118 ZT Schiphol Airport (NETHERLANDS)
Attn: Mr. Hubert den Dikken
Phone: 31 (0) 20-655 6262

5 - The above named product is specified in the enclosed appendix.

6 - The National Institute for Industrial Environment and Risk (INERIS), notified with the identification number 0080 in accordance with the article 6.2 of the Council Directive 93/15/EEC, 5 April 1993, 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 model is recognized to conform to the essential safety requirements as defined in annex I of that Directive.

7 - In addition to the EC type-examination (module B) defined in annex II of the Directive, the applicant has retained the assessment of the production quality assurance (module D) defined in the same annex. In compliance with paragraph 3.3 of this module, the decision for the assessment has been notified to the manufacturer.

8 - **This addition is to be attached to the certificate 0080.EXP.12.0031 dated June 11, 2012.**

Verneuil-en-Halatte, January 28, 2014

The Chief Executive Officer of INERIS
By delegation, the Chief Certification Officer


C. MICHOT

INERIS

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Institut national de l'environnement industriel et des risques



Appendix to addition C1 to the EC type-examination certificate nr 0080.EXP.12.0031

- A1 - PRODUCT NAME : Controlfire® detonators type 1352
- A2 - PRODUCT DESCRIPTION:
- general identification:
- family : electric detonator
 - sub-family : addressable, radio frequency safe electronic detonator
 - explosive casing : aluminum shell with antistatic sleeve and spark gap protect against static electricity
 - diameter : see table
 - height : see table
 - leading wires : not applicable
 - primary explosive : none
 - secondary explosive : RDX (see table)
 - total weight : see table
 - manufacturer's references : see table
- characteristics:
- total resistance : 51 to 66 Ω
 - no fire intensity : not applicable
 - all fire intensity : not applicable
 - isolation resistance : not applicable
 - Max RF : 100 Volt/meter at 1000 MHz
 - Max Stray voltage : 500 Volts
 - Max ESD : human-borne
- general conditions:
- shelf life : 5 years
 - limit temperature for use : 238°C / 1 h (460°F / 1 h)
 - limit temperature for storage : - 18°C to 52°C (0°F to 125°F)
 - resistance to electrostatic discharges : satisfactory, to be adapted to the use
 - resistance of wires to abrasion, to tensile strength : not applicable
 - resistance to shocks : satisfactory, to be adapted to the use
- A3 - DOCUMENTATION:
- | | reference | date |
|-----------------------------|--|------------|
| - examination report | : DCE-12-131271-06636A, PNEO-AgCE 5/78 | 2012-06-11 |
| - decision on certification | : DSC-14-144466-01022A, PNEO-AgCE 5 | 2014-01-28 |
- A4 - PARTICULAR CONDITIONS FOR HANDLING, ASSEMBLING AND USE:
As specified by the manufacturer for use in oil well industry.
National regulations for use may also apply.
- A5 - MARKING:
- CE and number of Notified Body : in conformity with para 1 of module D in annex II of the Directive
 - others : batch number, certificate number





INERIS

NATIONAL INSTITUTE FOR INDUSTRIAL ENVIRONMENT AND RISK

- decree nr 90-1089, 7 December 1990 -

- order, from the Minister of Ecology, Energy, Sustainable Development and Sea, 4 May 2010 -

Appendix to addition C1 to the EC type-examination certificate nr 0080.EXP.12.0031

Product Name	Product Number / Manufacturer's Reference	Explosives		Diameter		Height		Total mass (g)	Limit Pressure & temperature for use		
		Type	Mass (g)	mm	in.	mm	in.		PSI	°C	Max. Hours
Detonator controlfire® with A85	DETO-CFA-A85-T	RDX	0.480	8.7	0.34	64.0	2.5	42	100	177	1
Detonator controlfire® with A96L	DETO-CFA-A96L-T	RDX	0.454	7.5	0.29	61.0	2.4	42	15000	163	1
Detonator controlfire® with A105	DETO-CFA-A105-T	RDX	0.972	8.5	0.33	90.0	3.5	46	15000	163	1
Detonator controlfire® with A105100	DETO-CFA-A105100-T	RDX	0.972	8.5	0.33	90.0	3.5	46	100	163	1
Detonator controlfire® with A140	DETO-CFA-A140-T	RDX	0.325	7.1	0.28	32.0	1.25	35	100	177	1
Detonator controlfire® with A140F	DETO-CFA-A140F-T	RDX	0.325	7.1	0.28	49.0	1.93	35	100	177	1
Detonator controlfire® with A140S	DETO-CFA-A140S-T	RDX	0.325	7.1	0.28	32.0	1.25	35	100	177	1

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This certificate may be reproduced only in its entirety.

(IM-1773-AA dated 04/11/2013) Folio 3/3

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Établissement public à caractère industriel et commercial RCS Sentlis B 381 984 921 Siret 381 984 921 00019 - APE 7120B



HUNTING

Safety Data Sheet

Product Name: Detonator, Electric

***** Section 1 – Product and Company Identification *****

Manufacturer Information

Hunting Titan
 143 HCR 4361
 Milford, TX 76670
 Phone: 972-493-2580

Hunting Energy Services
 Level 25, 108 St. Georges Terrace
 Perth, WA 6000
 Phone: 0428 877 632

Chemtrec Emergency #: 800-424-9300

International Chemtrec Emergency #:

Argentina	54-1159839431	Mexico	800-681-9531 (Toll Free)
Australia	61-290372994	Netherlands	31-858880596
Brazil	55-2139581449 0800 892 0479 (Toll Free)	New Zealand	64-98010034
Chile	56 2 2581 4934	Nigeria	234 1 227 8883
China	4001-204937	Peru	51-17071295
Colombia	01800-710-2151 (Toll Free)	Philippines	+63 2 8395 3308 1-800-1-116-1020 (Toll Free)
Costa Rica	506-40003869	Poland	48-223988029
Czech Republic	420-228880039	Romania	40-37-6300026
Denmark	45-69918573	Russia	8-800-100-6346 (Toll Free)
Dominican Republic	1 (829) 956-7588	Saudi Arabia	966-8111095861
France	33-975181407	Singapore	65-31581349 800-101-2201 (Toll Free)
Germany	49-69643508409 0800-181-7059 (Toll Free)	South Africa	0-800-983-611 (Toll Free)
India	000-800-100-7141 (Toll Free)	Thailand	001-800-13-203-9987 (Toll Free)
Indonesia	001-803-017-9114 (Toll Free)	Trinidad and Tobago	1-868-224-5716
Italy	39-0245557031 800-789-767 (Toll Free)	Turkey	90-212-7055340
Japan	81-345209637	Ukraine	380-947101374
Malaysia	60-392125794 1-800-815-308 (Toll Free)	United Kingdom	44-870-8200418 44-2038073798



HUNTING Safety Data Sheet

Product Name: Detonator, Electric

***** 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/RF energy.

Keep lead wires shunted until wiring into circuit.

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 lead fumes.

Clean up should be done only by 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 *****

CAS #	Component
121-82-4	Cyclotrimethylene Trinitramine (RDX)
20062-22-0	Hexanitrostilbene (HNS)
7429-90-5	Aluminum
15245-44-0	Lead Styphnate
13424-46-9	Lead Azide
7440-50-8	Copper



HUNTING
Safety Data Sheet

Product Name: Detonator, Electric

***** 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 when subjected to flame, heat, impact, friction, electric currents, electrostatic or radio frequency energy. Avoid static charge build up. Keep lead wires shunted until wiring into circuit.

Hazardous Combustion Products

Gases produced may contain carbon monoxide and lead fumes.

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, RF 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.



HUNTING Safety Data Sheet

Product Name: Detonator, Electric

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/m³ TWA
Skin - potential significant contribution to overall exposure by the cutaneous route

OSHA: 1.5 mg/m³ TWA
Prevent or reduce skin absorption

NIOSH: 1.5 mg/m³ TWA
3 mg/m³ STEL
Potential for dermal absorption

Hexanitrostilbene (HNS) (20062-22-0)

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

Aluminum (7429-90-5)

ACGIH: 1 mg/m³ TWA (respirable fraction)
OSHA: 15 mg/m³ TWA (total dust); 5 mg/m³ TWA (respirable fraction)
NIOSH: 10 mg/m³ TWA (total dust); 5 mg/m³ TWA (respirable dust)

Copper (7440-50-8)

ACGIH: 0.2 mg/m³ TWA (fume)
OSHA: 0.1 mg/m³ TWA (dust, fume, mist, as Cu)
NIOSH: 1 mg/m³ TWA (dust and mist); 0.1 mg/m³ TWA (fume)

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 and Chemical Properties * * *

Appearance:	Metal shell containing explosive components.	Odor:	None
Physical State:	Solid	pH:	NA
Vapor Pressure:	ND	Vapor Density:	ND
Boiling Point:	ND	Melting Point:	ND



HUNTING
Safety Data Sheet

Product Name: Detonator, Electric

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 and Reactivity Information *****

Chemical Stability

This is a stable material under normal conditions.

Hazardous Reaction Potential

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

Conditions to Avoid

Detonates with impact, friction, flame, heat, electrostatic discharge or RF energy. Do not exceed 475°F (246°C) for > 1 hour.

Incompatible Products

Acids and Alkalis.

Hazardous Decomposition Products

Detonation produces hazardous fragments. Gases produced may contain carbon monoxide and lead fumes.

***** Section 11 – Toxicological Information *****

Acute Toxicity

A: General Product Information

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

B: Component Analysis - LD50/LC50

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

Oral LD50 Rat 100 mg/kg

Hexanitrostilbene (HNS) (20062-22-0)

Not Established

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.



HUNTING Safety Data Sheet

Product Name: Detonator, Electric

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

Hexanitrostilbene (HNS) (20062-22-0)

Not Established

Aluminum (7429-90-5)

ACGIH: A4 - Not Classifiable as a Human Carcinogen

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 single 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

96 Hr LC50 Lepomis macrochirus	1.9-6.6 mg/L [static]	Conditions
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]	

Hexanitrostilbene (HNS) (20062-22-0)

Not Established

Copper (7440-50-8)

Test & Species

96 Hr LC50 Pimephales promelas	0.0068 - 0.0156 mg/L	Conditions
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]	



HUNTING Safety Data Sheet

Product Name: Detonator, Electric

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: Detonators, Electric

UN #: 0255 **Hazard Class:** 1.4B

UN #: 0456 **Hazard Class:** 1.4S

***** Section 15 – 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
Lead Styphnate	15245-44-0	No	Yes	No	Yes	No	No
Lead Azide	13424-46-9	No	Yes	No	No	No	No
Aluminum	7429-90-5	Yes	Yes	Yes	Yes	Yes	No
Copper	7440-50-8	Yes	Yes	Yes	Yes	Yes	No



HUNTING Safety Data Sheet

Product Name: Detonator, Electric

Component Analysis - WHMIS IDL

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

Component	CAS #	Minimum Concentration
Aluminum	7429-90-5	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
Lead Styphnate	15245-44-0	Yes	DSL	EINECS
Lead Azide	13424-46-9	Yes	DSL	EINECS
Aluminum	7429-90-5	Yes	DSL	EINECS
Copper	7440-50-8	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



Fiche de données de sécurité

Nom du produit : Détonateur, électrique

***** Section 1 – Identification du produit et de la société *****

Informations sur le fabricant

Hunting Titan
143 HCR 4361
Milford, TX 76670
Téléphone : 972-493-2580

Hunting Energy Services
Level 25, 108 St. Georges Terrace
Perth, WA 6000
Téléphone : 0428 877 632

Numéro d'urgence Chemtrec : 800-424-9300

Numéro d'urgence international Chemtrec :

Argentina	54-1159839431	Mexico	800-681-9531 (Toll Free)
Australia	61-290372994	Netherlands	31-858880596
Brazil	55-2139581449 0800 892 0479 (Toll Free)	New Zealand	64-98010034
Chile	56 2 2581 4934	Nigeria	234 1 227 8883
China	4001-204937	Peru	51-17071295
Colombia	01800-710-2151 (Toll Free)	Philippines	+63 2 8395 3308 1-800-1-116-1020 (Toll Free)
Costa Rica	506-40003869	Poland	48-223988029
Czech Republic	420-228880039	Romania	40-37-6300026
Denmark	45-69918573	Russia	8-800-100-6346 (Toll Free)
Dominican Republic	1 (829) 956-7588	Saudi Arabia	966-8111095861
France	33-975181407	Singapore	65-31581349 800-101-2201 (Toll Free)
Germany	49-69643508409 0800-181-7059 (Toll Free)	South Africa	0-800-983-611 (Toll Free)
India	000-800-100-7141 (Toll Free)	Thailand	001-800-13-203-9987 (Toll Free)
Indonesia	001-803-017-9114 (Toll Free)	Trinidad and Tobago	1-868-224-5716
Italy	39-0245557031 800-789-767 (Toll Free)	Turkey	90-212-7055340
Japan	81-345209637	Ukraine	380-947101374
Malaysia	60-392125794 1-800-815-308 (Toll Free)	United Kingdom	44-870-8200418 44-2038073798



Fiche de données de sécurité

Nom du produit : Détonateur, électrique

*** Section 2 – Identification des dangers ***

Classification SGH :

Explosifs - Section 1.4

ÉLÉMENTS D'ÉTIQUETAGE SGH

Symbole(s)



Terme d'avertissement

Danger

Risques mentionnés

Risque d'incendie ou de projection.

Mises en garde

Prévention

N'exposer à aucun(e) broyage/choc/impact/flamme/chaleur/énergie électrostatique/friction/énergie RF.

Laisser les fils conducteurs en dérivation jusqu'au câblage dans le circuit.

Interdiction de fumer.

Ne pas tenter de démonter.

Ne pas manger, boire ou fumer dans des zones pouvant être contaminées par ces matières.

Après manipulation ou exposition, immédiatement bien se laver à l'eau et au savon.

Réponse

Risque d'explosion en cas d'incendie. Ne PAS combattre l'incendie quand celui-ci atteint les explosifs. Évacuer une zone d'au moins 460 mètres (1 500 pieds).

La détonation produit des fragments dangereux.

Les gaz émis peuvent contenir du monoxyde de carbone et des vapeurs de plomb.

Le nettoyage ne doit être effectué que par du personnel avec l'expérience de la manipulation d'explosifs. Isoler la zone et éliminer toutes sources d'impact, de friction, de flamme, de chaleur, d'énergie électrostatique et RF.

Porter des lunettes de sécurité, des gants et un masque anti-poussières (si la zone est poussiéreuse).

Nettoyer et balayer avec des outils ne provoquant pas d'étincelles.

Stockage

Stocker selon la réglementation locale/régionale/nationale/internationale.

Élimination

Éliminer le contenu/contenant selon la réglementation locale/régionale/nationale/internationale.

*** Section 3 – Composition / informations sur les composants ***

N° CAS	Composant
121-82-4	Cyclo-triméthylène-trinitramine (RDX)
20062-22-0	Hexanitrostilbène (HNS)
7429-90-5	Aluminium
15245-44-0	Styphnate de plomb
13424-46-9	Azoture de plomb
7440-50-8	Cuivre



Fiche de données de sécurité

Nom du produit : Détonateur, électrique

*** Section 4 – Premiers soins ***

Premiers soins : Yeux

En cas d'exposition à la poussière : rincer immédiatement les yeux à grande eau pendant au moins 15 minutes. Si l'irritation persiste, consulter un médecin.

Premiers soins : Peau

En cas d'exposition à la poussière : laver la peau à l'eau et au savon.

Premiers soins : Ingestion

N'est pas une voie d'administration attendue dans des conditions normales de manutention du produit.

Premiers soins : Inhalation

En cas d'exposition à la poussière : évacuer la victime et lui faire respirer de l'air frais.

*** Section 5 – Mesures de lutte contre l'incendie ***

Principaux risques d'incendie

Cf. Section 9 pour les Propriétés d'inflammabilité.

Peut exploser en cas de flamme, de chaleur, d'impact, de friction, de courants électriques, d'énergie électrostatique ou radiofréquences. Éviter la constitution de charge statique. Laisser les fils conducteurs en dérivation jusqu'au câblage dans le circuit.

Produits de combustion dangereux

Les gaz émis peuvent contenir du monoxyde de carbone et des vapeurs de plomb.

Moyens d'extinction

Aucune

Moyens d'extinction inappropriés

Aucune

Matériel et instructions pour la lutte contre l'incendie

NE PAS COMBATTRE L'INCENDIE ! IL EXISTE UN RISQUE D'EXPLOSION ! Isoler la zone. Évacuer une zone d'au moins 460 mètres (1 500 pieds). Pour plus de détails, consulter le Guide des mesures d'urgence de l'U.S.D.O.T. ou le personnel d'intervention d'urgence local.

*** Section 6 – Mesures à prendre en cas de déversement accidentel ***

Récupération et neutralisation

Aucune

Équipements et méthodes pour le nettoyage

Le nettoyage ne doit être effectué que par du personnel avec l'expérience de la manipulation d'explosifs. Isoler la zone et éliminer toutes sources d'impact, de friction, de flamme, de chaleur, d'énergie électrostatique et RF. Nettoyer et balayer avec des outils ne provoquant pas d'étincelles.

Mesures d'urgence

Isoler la zone. Éloigner le personnel non indispensable.

Précautions personnelles et équipement de protection

Porter des lunettes de sécurité, des gants et un masque anti-poussières (si la zone est poussiéreuse).

Précautions environnementales

Aucune

Prévention de dangers secondaires

Aucune



Fiche de données de sécurité

Nom du produit : Détonateur, électrique

*** Section 7 – Manutention et stockage ***

Procédures de manutention

Tenir éloigné de tout impact, friction, flamme, chaleur, énergie électrique ou électrostatique. Ne pas tenter de démonter. Ne pas manger, boire ou fumer dans des zones pouvant être contaminées par ces matières. Après manipulation ou exposition, immédiatement bien se laver à l'eau et au savon.

Procédures de stockage

Stocker conformément à la réglementation locale and matière de sécurité.

Incompatibilités

Acides and alcalis.

*** Section 8 – Contrôle de l'exposition/protection individuelle ***

Limites d'exposition des composants

Cyclo-triméthylène-trinitramine (RDX) (121-82-4)

ACGIH : 0,5 mg/m³ TWA
Peau : contribution significative potentielle à l'exposition globale par la voie cutanée
OSHA : 1,5 mg/m³ TWA
Prévenir ou réduire l'absorption cutanée
NIOSH : 1,5 mg/m³ TWA
3 mg/m³ STEL
Potentielle absorption cutanée

Hexanitrostilbène (HNS) (20062-22-0)

ACGIH : Non établi
OSHA : Non établi
NIOSH : Non établi

Aluminium (7429-90-5)

ACGIH : 1 mg/m³ TWA (fraction respirable)
OSHA : 15 mg/m³ TWA (poussière totale); 5 mg/m³ TWA (fraction respirable)
NIOSH : 10 mg/m³ TWA (poussière totale); 5 mg/m³ TWA (poussière respirable)

Cuivre (7440-50-8)

ACGIH : 0,2 mg/m³ TWA (fumée)
OSHA : 0,1 mg/m³ TWA (poussière, fumée, vapeur comme Cu)
NIOSH : 1 mg/m³ TWA (poussière et vapeur); 0,1 mg/m³ TWA (fumée)

Mesures techniques

Non nécessaire dans des conditions normales de manutention du produit.

Équipement de protection individuelle : Respiratoire

Non nécessaire dans des conditions normales de manutention du produit.

Équipement de protection individuelle : Mains

Non nécessaire dans des conditions normales de manutention du produit.

Équipement de protection individuelle : Yeux

Lunettes de protection recommandées.

Équipement de protection individuelle : Peau et corps

Non nécessaire dans des conditions normales de manutention du produit. Les vêtements ne doivent pas avoir une propension à créer de l'énergie électrostatique.



Fiche de données de sécurité

Nom du produit : Détonateur, électrique

*** Section 9 – Propriétés physiques et chimiques ***

Aspect :	Enveloppe de métal contenant des composants explosifs.	Odeur :	Aucune
État physique :	Solide	pH :	Sans objet
Pression de vapeur :	Sans objet	Densité de vapeur :	Sans objet
Point d'ébullition :	Sans objet	Point de fusion :	Sans objet
Solubilité (H₂O) :	Sans objet	Densité relative :	Sans objet
Taux d'évaporation :	Sans objet	COV :	Sans objet
Coefficient octanol/H₂O :	Sans objet	Point d'éclair :	Sans objet
Méthode de point d'éclair :	Sans objet	Limite supérieure d'inflammabilité (LSI) :	Sans objet
Limite inférieure d'inflammabilité (LII) :	Sans objet	Vitesse de combustion :	Sans objet
Auto-inflammation :	Sans objet		

*** Section 10 – Informations sur la stabilité chimique et la réactivité ***

Stabilité chimique

Ce produit est stable dans des conditions normales.

Réaction dangereuse potentielle

Peut exploser si sujet à un choc, impact, friction, énergie RF ou manipulation brutale.

Conditions à éviter

Explose en cas d'impact, friction, flamme, chaleur, décharge électrostatique ou énergie RF. Ne pas dépasser 475°F (246°C) pendant > 1 heure.

Produits incompatibles

Acides and alcalis.

Produits de décomposition dangereux

La détonation produit des fragments dangereux. Les gaz émis peuvent contenir du monoxyde de carbone et des vapeurs de plomb.

*** Section 11 – Données toxicologiques ***

Toxicité aiguë

A : Informations générales sur le produit

Dans des conditions normales d'utilisation et de stockage, les détonateurs ne présentent aucun danger pour la santé. Cependant, ce produit est extrêmement explosif et une détonation peut causer des blessures graves.

B : Analyse des composants - LD50/LC50

Cyclo-triméthylène-trinitramine (RDX) (121-82-4)

LD50 (rat, orale) 100 mg/kg

Hexanitrostilbène (HNS) (20062-22-0)

Non établi

Effets potentiels sur la santé : Propriété de corrosion de la peau/effet stimulant

Un contact cutané avec la poussière peut causer une irritation cutanée mineure.

Effets potentiels sur la santé : Dommages critiques aux yeux/effet stimulant

Un contact avec la poussière peut causer une irritation oculaire.



Fiche de données de sécurité

Nom du produit : Détonateur, électrique

Effets potentiels sur la santé : Ingestion

N'est pas une voie d'administration attendue dans des conditions normales d'utilisation du produit.

Effets potentiels sur la santé : Inhalation

Une inhalation des poussières peut causer des irrégularités du système nerveux comme des maux de tête et des vertiges.

Sensibilisation des organes respiratoires et de la peau

Aucun effet de sensibilisation n'a été signalé pour ce produit.

Mutagénicité de la cellule générative

Aucun effet mutagène n'a été signalé pour ce produit.

Carcinogénicité

A : Informations générales sur le produit

Aucun effet carcinogène n'a été signalé pour ce produit.

B : Carcinogénicité des composants

Cyclo-triméthylène-trinitramine (RDX) (121-82-4)

ACGIH : A4 : inclassable quant à sa cancérogénicité pour l'Homme

Hexanitrostilbène (HNS) (20062-22-0)

Non établi

Aluminium (7429-90-5)

ACGIH : A4 : inclassable quant à sa cancérogénicité pour l'Homme

Effets toxiques sur la reproduction

Aucun effet toxique sur la reproduction n'a été signalé pour ce produit.

Toxicité générale pour un organe cible : Exposition unique

Aucune toxicité générale pour un organe cible lors d'une exposition répétée n'a été signalée pour ce produit.

Toxicité générale pour un organe cible : Exposition répétée

Aucune toxicité générale pour un organe cible lors d'une exposition répétée n'a été signalée pour ce produit.

Risque d'aspiration pour les organes respiratoires

Aucun risque d'aspiration n'a été signalé pour ce produit.

Autres informations toxicologiques

Un empoisonnement au plomb peut causer des dommages aux systèmes nerveux centraux et périphériques et aux organes hématopoïétiques, créant ainsi une anémie. Le plomb peut nuire au système reproducteur masculin et féminin. De plus en plus d'éléments montrent que l'exposition au plomb peut affecter la pression artérielle chez l'adulte.

* * * Section 12 – Données écologiques * * *

Écotoxicité

A : Informations générales sur le produit

Aucunes informations disponibles pour ce produit.

B : Analyses des composants - Écotoxicité - Toxicité aquatique

Cyclo-triméthylène-trinitramine (RDX) (121-82-4)

Test et espèces

96 Hr LC50 Lepomis macrochirus	1,9-6,6 mg/L [statique]	Conditions
96 Hr LC50 Lepomis macrochirus	5,6-10 mg/L [écoulement]	
96 Hr LC50 Oncorhynchus mykiss	5,4-7,4 mg/L [statique]	
96 Hr LC50 Pimephales promelas	5-8,7 mg/L [écoulement]	
96 Hr LC50 Pimephales promelas	3,0-5,0 mg/L [statique]	



Fiche de données de sécurité

Nom du produit : Détonateur, électrique

Hexanitrostilbène (HNS) (20062-22-0)

Non établi

Cuivre (7440-50-8)

Test et espèces

	Conditions
96 Hr LC50 Pimephales promelas	0,0068 - 0,0156 mg/L
96 Hr LC50 Pimephales promelas	<0,3 mg/L [statique]
96 Hr LC50 Pimephales promelas	0,2 mg/L [écoulement]
96 Hr LC50 Oncorhynchus mykiss	0,052 mg/L [écoulement]
96 Hr LC50 Lepomis macrochirus	1,25 mg/L [statique]
96 Hr LC50 Cyprinus carpio	0,3 mg/L [semistatique]
96 Hr LC50 Cyprinus carpio	0,8 mg/L [statique]
96 Hr LC50 Poecilia reticulata	0,112 mg/L [écoulement]
72 Hr EC50 Pseudokirchneriella subcapitata	0,0426 - 0,0535 mg/L [statique]
96 Hr EC50 Pseudokirchneriella subcapitata	0,031 - 0,054 mg/L [statique]
48 Hr EC50 Daphnia magna	0,03 mg/L [statique]

Persistance/dégradabilité

Aucunes informations disponibles pour ce produit.

Bioaccumulation

Aucunes informations disponibles pour ce produit.

Mobilité dans le sol

Aucunes informations disponibles pour ce produit.

*** Section 13 – Élimination ***

Instructions relatives à l'élimination des déchets

Cf. Section 7 pour les Procédures de manutention. Cf. Section 8 pour les recommandations relatives à l'équipement de protection individuelle.

Élimination des contenants ou emballages contaminés

Éliminer le contenu/contenant selon la réglementation locale/régionale/nationale/internationale.

*** Section 14 – Informations relatives au transport ***

Informations relatives à l'US DOT

Nom d'expédition : Détonateurs, électriques

N ° UN : 0255 **Classe de risque** : 1.4B

N ° UN : 0456 **Classe de risque** : 1.4S

*** Section 15 – Informations réglementaires ***

Réglementation fédérale des États-Unis

A : Analyse des composants

Aucun composant de cet article ne contient de produits chimiques requis pour être identifié sous l'article 302 de la LEP (40 CFR 355 appendice A), article 313 de la LEP (40 CFR 372.65) et/ou CERCLA (40 CFR 302.4).

B : Polluants marins des composants

Aucun composant de cet article ne contient de produits chimiques requis par l'US DOT pour être identifié comme polluant marin.



Fiche de données de sécurité

Nom du produit : Détonateur, électrique

Réglementation fédérale

Analyse des composants - État

Les composants suivants apparaissent dans au moins l'une des listes fédérales de substances dangereuses suivantes :

Composant	CAS	CA	MA	MN	NJ	PA	RI
Cyclo-triméthylène-trinitramine (RDX)	121-82-4	Oui	Oui	Oui	Oui	Oui	Non
Styphnate de plomb	15245-44-0	Non	Oui	Non	Oui	Non	Non
Azoture de plomb	13424-46-9	Non	Oui	Non	Non	Non	Non
Aluminium	7429-90-5	Oui	Oui	Oui	Oui	Oui	Non
Cuivre	7440-50-8	Oui	Oui	Oui	Oui	Oui	Non

Analyse des composants - SIMDUT LDI

Les composants suivants figurent sur la Liste de divulgation des ingrédients de la loi canadienne :

Composant	CAS	Concentration minimale
Aluminium	7429-90-5	1 %
Cuivre	7440-50-8	1 %

Informations réglementaires supplémentaires

Analyse des composants - Inventaire

Composant	CAS	TSCA	CAN	EEC
Cyclo-triméthylène-trinitramine (RDX)	121-82-4	Oui	DSL	EINECS
Hexanitrostilbène (HNS)	20062-22-0	Oui	NDSL	EINECS
Styphnate de plomb	15245-44-0	Oui	DSL	EINECS
Azoture de plomb	13424-46-9	Oui	DSL	EINECS
Aluminium	7429-90-5	Oui	DSL	EINECS
Cuivre	7440-50-8	Oui	DSL	EINECS

* * * Section 16 – Autres informations * * *

Sigles/légende

EPA = Environmental Protection Agency (Agence pour la protection de l'environnement) ; TSCA = Toxic Substance Control Act (Loi relative au contrôle des substances toxiques) ; ACGIH = American Conference of Governmental Industrial Hygienists (Association américaine des hygiénistes industriels du gouvernement); CIRC = Centre international de recherche sur le cancer; NIOSH = National Institute for Occupational Safety and Health (Institut américain pour la sécurité et l'hygiène professionnelles); NTP = National Toxicology Program (Programme de toxicologie national des États-Unis); OSHA = Occupational Safety and Health Administration. (Administration de la sécurité et de la santé au travail), NJTSR = New Jersey Trade Secret Registry.

Références bibliographiques

Aucune



Sikkerhetsdatablad

Produktnavn: Tenner, elektrisk

***** 1. Identifikasjon av stoffet / stoffblandingen og selskapet / foretaket *****

Identifikasjon av selskap/foretak

Hunting Titan
143 HCR 4361
Milford, TX 76670
Telefon: +1 972 493 2580

Hunting Energy Services
Level 25, 108 St. Georges Terrace
Perth, WA 6000
Telefon: 0428 877 632

Chemtrec Nødnummer + 1 800 424 9300

Internasjonal Chemtrec Nødnummer #:

Argentina	54-1159839431	Mexico	800-681-9531 (Toll Free)
Australia	61-290372994	Netherlands	31-858880596
Brazil	55-2139581449 0800 892 0479 (Toll Free)	New Zealand	64-98010034
Chile	56 2 2581 4934	Nigeria	234 1 227 8883
China	4001-204937	Peru	51-17071295
Colombia	01800-710-2151 (Toll Free)	Philippines	+63 2 8395 3308 1-800-1-116-1020 (Toll Free)
Costa Rica	506-40003869	Poland	48-223988029
Czech Republic	420-228880039	Romania	40-37-6300026
Denmark	45-69918573	Russia	8-800-100-6346 (Toll Free)
Dominican Republic	1 (829) 956-7588	Saudi Arabia	966-8111095861
France	33-975181407	Singapore	65-31581349 800-101-2201 (Toll Free)
Germany	49-69643508409 0800-181-7059 (Toll Free)	South Africa	0-800-983-611 (Toll Free)
India	000-800-100-7141 (Toll Free)	Thailand	001-800-13-203-9987 (Toll Free)
Indonesia	001-803-017-9114 (Toll Free)	Trinidad and Tobago	1-868-224-5716
Italy	39-0245557031 800-789-767 (Toll Free)	Turkey	90-212-7055340
Japan	81-345209637	Ukraine	380-947101374
Malaysia	60-392125794 1-800-815-308 (Toll Free)	United Kingdom	44-870-8200418 44-2038073798

Produktnavn: Tenner, elektrisk

***** 2. Fareidentifikasjon *****

GHS-klassifisering:

Eksplosive varer – undergruppe 1.4

GHS-ETIKETTELEMENTER

Symbol(er)



Signalord

Fare

Faresetninger

Fare for brann eller utkast av fragmenter.

Sikkerhetssetninger

Forebygging

Må ikke utsettes for sliping / støt / slag / ild / varme / statisk elektrisitet / friksjon / RF-energi.

Shunt ledningene sammen til de skal kobles til kretsen.

Røyking forbudt.

Må ikke demonteres.

Mat, drikke eller tobakk må ikke inntas/benyttes på områder der de kan bli forurenset av disse stoffene. Vask hender grundig med såpe og vann etter bruk eller annen eksponering.

Tiltak

Eksplosjonsfarlig ved brann. IKKE bekjemp brannen når den når eksplosive varer. Evakuer området, og hold minst 460 meters avstand.

Detonasjon forårsaker farlige fragmenter.

Gassene som dannes, kan inneholde karbonmonoksid og blydamp.

Opprydding må bare gjøres av personell med erfaring i å håndtere eksplosive varer. Isoler området, og fjern kilder til slag, friksjon, ild, varme, statisk elektrisitet og RF-energi.

Bruk vernebriller, hansker og åndedrettsvern (hvis området er støvete).

Opprydding: Fei med redskaper som ikke genererer gnister.

Lagring

Må lagres i samsvar med lokale/regionale/nasjonale/internasjonale regler.

Disponering

Innholdet/holderen må disponeres i samsvar med lokale/regionale/nasjonale/internasjonale regler.

***** 3. Sammensetning / opplysninger om bestanddeler *****

CAS-nr.	Komponent
121-82-4	Cyklotetrametylentetranitramin (RDX)
20062-22-0	Heksanitrostilben (HNS)
7429-90-5	Aluminum
15245-44-0	Blystyfnat
13424-46-9	Blyazid
7440-50-8	Kobber

Produktnavn: Tenner, elektrisk

***** 4. Førstehjelpstiltak *****

Førstehjelp: Kontakt med øynene

Ved eksponering for støv: Skyll umiddelbart øynene med mye vann i minst 15 minutter. Ved vedvarende irritasjon: Søk legehjelp.

Førstehjelp: Hudkontakt

Ved eksponering for støv: Vask med såpe og vann.

Førstehjelp: Svelging

Ikke en ventet opptaksvei ved normal bruk av produktet.

Førstehjelp: Innånding

Ved eksponering for støv: Flytt personen til frisk luft.

***** 5. Brannsløkkingstiltak *****

Generell brannfare

Se avsnitt 9 for opplysninger om antennelighet.

Kan detonere når utsatt for ild, varme, slag, friksjon, elektrisitet, statisk elektrisitet eller radiofrekvensenergi.

Unngå oppbygning av statisk elektrisitet. Shunt ledningene sammen til de skal kobles til kretsen.

Farlige brennbare produkter

Gassene som dannes, kan inneholde karbonmonoksid og blydamp.

Slokkingsmidler

Ingen

Uegnede slokkingsmidler

Ingen

Råd til brannmannskaper

IKKE BEKJEMP BRANN! EKSPLOSJON KAN FOREKOMME! Isoler området. Evakuer området, og hold minst 460 meters avstand. Se det amerikanske samferdselsdepartementets veiledning for nødsituasjoner (U.S. DOT Emergency Response Guide), eller kontakt lokale nødteater for nærmere informasjon.

***** 6. Tiltak ved utilsiktede utslipp *****

Gjenvinning og nøytralisering

Ingen

Metoder og materialer for oppsamling og opprydding

Opprydding må bare gjøres av personell med erfaring i å håndtere eksplosive varer. Isoler området, og fjern kilder til slag, friksjon, ild, varme, statisk elektrisitet og RF-energi. Opprydding: Fei med redskaper som ikke genererer gnister.

Nødtiltak

Isoler området. Hold unødvendig personell borte.

Personlige forholdsregler og personlig verneutstyr

Bruk vernebriller, hansker og åndedrettsvern (hvis området er støvete).

Miljømessige forholdsregler

Ingen

Forebygging av sekundære farer

Ingen

***** 7. Håndtering og lagring *****

Prosedyrer for håndtering

Må holdes borte fra slag, friksjon, varme og elektrisitet eller statisk elektrisitet. Må ikke demonteres. Mat, drikke eller tobakk må ikke inntas/benyttes på områder der de kan bli forurenset av disse stoffene. Vask hender grundig med såpe og vann etter bruk eller annen eksponering.

Produktnavn: Tenner, elektrisk

Prosedyrer for lagring

Må lagres i samsvar med lokale, sikkerhetsmessige og regelverksmessige krav.

Inkompatible forhold

Syrer og alkalier.

***** 8. Eksponeringskontroll / personlig beskyttelse *****

Komponentenes grenseverdier for eksponering

Cyklotetrametylentetranitramin (RDX) (121-82-4)

ACGIH: 0,5 mg/m³ TWA
Hud – mulig betydelig bidrag til samlet eksponering via huden
OSHA: 1,5 mg/m³ TWA
Forhindre eller reduser absorpsjon via huden
NIOSH: 1,5 mg/m³ TWA
3 mg/m³ STEL
Mulighet for absorpsjon via huden

Heksanitrostilben (HNS) (20062-22-0)

ACGIH: Ikke fastslått
OSHA: Ikke fastslått
NIOSH: Ikke fastslått

Aluminium (7429-90-5)

ACGIH: 1 mg/m³ TWA (pustbar del)
OSHA: 15 mg/m³ TWA (samlet støv); 5 mg/m³ TWA (pustbar del)
NIOSH: 10 mg/m³ TWA (samlet støv); 5 mg/m³ TWA (pustbart støv)

Kobber (7440-50-8)

ACGIH: 0,2 mg/m³ TWA (damp)
OSHA: 0,1 mg/m³ TWA (støv, damp, tåke, som Cu)
NIOSH: 1 mg/m³ TWA (støv og tåke); 0,1 mg/m³ TWA (damp)

Tekniske kontroller

Ikke nødvendig ved normal bruk av produktet.

Personlig verneutstyr: Åndedrettsvern

Ikke nødvendig ved normal bruk av produktet.

Personlig verneutstyr: Håndvern

Ikke nødvendig ved normal bruk av produktet.

Personlig verneutstyr: Øye-/ansiktsvern

Vernebriller anbefales.

Personlig verneutstyr: Hud og kropp

Ikke nødvendig ved normal bruk av produktet. Klær må ikke ha en tendens til å bygge opp statisk elektrisitet.

***** 9. Fysiske og kjemiske egenskaper *****

Utseende:	Metallhylse som inneholder eksplosive komponenter	Lukt:	Ingen
Fysisk tilstand:	Fast stoff	pH:	IA
Damptrykk:	Ikke fastslått	Damptetthet:	Ikke fastslått
Kokepunkt:	Ikke fastslått	Smeltepunkt:	Ikke fastslått
Løselighet (H₂O):	Ikke fastslått	Egenvekt:	Ikke fastslått

Produktnavn: Tenner, elektrisk

Fordampningshastighet: Ikke fastslått

VOC: Ikke fastslått

Oktanol/H₂O-koeff.: Ikke fastslått

Flammepunkt: Ikke fastslått

Flammepunktmetode: Ikke fastslått

Øvre antennelighetsgrense (UFL): Ikke fastslått

Nedre antennelighetsgrense (LFL): Ikke fastslått

Brannhastighet: Ikke fastslått

Selvantennelse: Ikke fastslått

* * * 10. Stabilitet og reaktivitet * * *

Kjemisk stabilitet

Dette er et stabilt stoff under normale forhold.

Mulighet for farlige reaksjoner

Kan eksplodere hvis utsatt for støt, slag, friksjon, RF-energi eller røff håndtering.

Forhold som skal unngås

Detonerer ved slag, friksjon, ild, varme, elektrostatisk utladning eller RF-energi. Ikke overstig 246 °C > 1 time.

Stoffer som skal unngås

Syrer og alkalier.

Farlige nedbrytningsprodukter

Detonasjon forårsaker farlige fragmenter. Gassene som dannes, kan inneholde karbonmonoksid og blydamp.

* * * 11. Toksikologiske opplysninger * * *

Akutt toksisitet

A: Generelle produktopplysninger

Tennere utgjør ingen helsefare ved normal håndtering og bruk. Produktet er imidlertid svært eksplosivt, og detonasjon kan føre til alvorlige personskader.

B: Komponentanalyse – LD50/LC50

Cyklotetramyletetranitramin (RDX) (121-82-4)

LD50 oral, rotte 100 mg/kg

Heksanitrostilben (HNS) (20062-22-0)

Ikke fastslått

Mulige helsevirkninger: Etsende/irriterende for huden

Støv som kommer i kontakt med huden, kan forårsake mindre hudirritasjon.

Mulige helsevirkninger: Alvorlig øyeskade / øyeirritasjon

Støv som kommer i kontakt med øyne, kan forårsake øyeirritasjon.

Mulige helsevirkninger: Svelging

Ikke en ventet opptaksvei ved normal bruk av produktet.

Mulige helsevirkninger: Innånding

Innånding av krutt kan forårsake uregelmessigheter i nervesystemet, inkludert hodepine og svimmelhet.

Sensibilisering av luftveier/hud

Det er ikke kjent at dette produktet har sensibiliserende virkning.

Kjønnsцелеmutagenitet

Det er ikke kjent at dette produktet har arvestoffskadelig virkning.

Kreftfremkallende egenskaper

A: Generelle produktopplysninger

Det er ikke kjent at dette produktet har kreftfremkallende virkning.

Produktnavn: Tenner, elektrisk

B: Kreftfremkallende egenskaper i komponenter

Cyklotetrametylentetranitramin (RDX) (121-82-4)

ACGIH: A4 – ikke klassifisert som kreftfremkallende hos mennesker

Heksanitrostilben (HNS) (20062-22-0)

Ikke fastslått

Aluminium (7429-90-5)

ACGIH: A4 – ikke klassifisert som kreftfremkallende hos mennesker

Reproduksjonstoksisitet

Det er ikke kjent at dette produktet har reproduksjonstoksisk virkning.

Spesifikk målorgantoksisitet: Enkelteksponering

Det er ikke kjent at dette produktet har spesifikk målorgantoksisk virkning ved enkelteksponering.

Spesifikk målorgantoksisitet: Gjentatt eksponering

Det er ikke kjent at dette produktet har spesifikk målorgantoksisk virkning ved enkelteksponering.

Aspirasjonsfare

Det er ikke kjent at dette produktet utgjør noen aspirasjonsfare.

Andre toksikologiske opplysninger

Blyforgiftning kan medføre til skade på det sentrale og perifere nervesystemet samt bloddannende organer, noe som kan føre til anemi. Bly kan skade forplantningssystemet hos menn og kvinner. Det er økende bevis på at eksponering for bly kan påvirke blodtrykket hos voksne.

***** 12. Økologiske opplysninger *****

Økotoksisitet

A: Generelle produktopplysninger

Ingen informasjon tilgjengelig for produktet.

B: Komponentanalyse – økotoksisitet – akvatisk toksisitet

Cyklotetrametylentetranitramin (RDX) (121-82-4)

Test og dyrearter

		Forhold
96 timer LC50 Lepomis macrochirus	1,9–6,6 mg/L [statisk]	
96 timer LC50 Lepomis macrochirus	5,6-10 mg/L [gjennomstrømning]	
96 timer LC50 Oncorhynchus mykiss	5,4–7,4 mg/L [statisk]	
96 timer LC50 Pimephales promelas	5-8,7 mg/L [gjennomstrømning]	
96 timer LC50 Pimephales promelas	3,0–5,0 mg/L [statisk]	

Heksanitrostilben (HNS) (20062-22-0)

Ikke fastslått

Kobber (7440-50-8)

Test og dyrearter

		Forhold
96 timer LC50 Pimephales promelas	0,0068–0,0156 mg/L	
96 timer LC50 Pimephales promelas	< 0,3 mg/L [statisk]	
96 timer LC50 Pimephales promelas	0,2 mg/L [gjennomstrømning]	
96 timer LC50 Oncorhynchus mykiss	0,052 mg/L [gjennomstrømning]	
96 timer LC50 Lepomis macrochirus	1,25 mg/L [statisk]	
96 timer LC50 Cyprinus carpio	0,3 mg/L [semistatisk]	
96 timer LC50 Cyprinus carpio	0,8 mg/L [statisk]	
96 timer LC50 Poecilia reticulata	0,112 mg/L [gjennomstrømning]	
72 timer EC50 Pseudokirchneriella subcapitata	0,0426–0,0535 mg/L [statisk]	



HUNTING

Sikkerhetsdatablad

Produktnavn: Tenner, elektrisk

96 timer EC50 Pseudokirchneriella subcapitata 0,031–0,054 mg/L [statisk]
48 timer EC50 Daphnia magna 0,03 mg/L [statisk]

Persistens/nedbrytbarhet

Ingen informasjon tilgjengelig for produktet.

Bioakkumulering

Ingen informasjon tilgjengelig for produktet.

Mobilitet i jord

Ingen informasjon tilgjengelig for produktet.

*** 13. Instruksjoner ved disponering ***

Instruksjoner ved avfallsdisponering

Se avsnitt 7 for prosedyrer for håndtering. Se avsnitt 8 for anbefalinger om personlig verneutstyr.

Disponering av forurensede beholdere eller forurenset emballasje

Innholdet/beholderen må disponeres i samsvar med lokale/regionale/nasjonale/internasjonale regler.

*** 14. Transportopplysninger ***

Informasjon fra U.S. DOT (amerikanske samferdselsdepartementet)

Varenavn: Tennere, elektriske

UN-nr.: 0255 Fareklasse: 1.4B

UN-nr.: 0456 Fareklasse: 1.4S

*** 15. Regelverksmessige opplysninger ***

Amerikanske føderale regler

A: Komponentanalyse

Ingen av komponentene i denne artikkelen inneholder kjemikalier som må identifiseres i henhold til SARA Section 302 (40 CFR 355 Appendix A), SARA Section 313 (40 CFR 372.65) og/eller CERCLA (40 CFR 302.4).

B: Marint forurensende stoffer i komponenter

Ingen av komponentene i denne artikkelen inneholder kjemikalier som U.S. DOT krever skal identifiseres som marint forurensende stoffer.

Delstatsregler

Komponentanalyse – delstatsnivå

Følgende komponenter finnes på en eller flere av følgende delstaters lister over farlige stoffer:US

Komponent	CAS-nr.	California	Massac husetts	Minne sota	New Jersey	Pennsy Ivania	Rhode Island
Cyklotetrametylentetranitramin (RDX)	121-82-4	Ja	Ja	Ja	Ja	Ja	Nei
Blystyfnat	15245-44-0	Nei	Ja	Nei	Ja	Nei	Nei
Blyazid	13424-46-9	Nei	Ja	Nei	Nei	Nei	Nei
Aluminium	7429-90-5	Ja	Ja	Ja	Ja	Ja	Nei
Kobber	7440-50-8	Ja	Ja	Ja	Ja	Ja	Nei

Komponentanalyse – WHMIS IDL

Følgende komponenter er identifisert på Canadian Hazardous Products Act Ingredient Disclosure List:

Komponent	CAS-nr.	Minimumskonsentrasjon
Aluminium	7429-90-5	1 %
Kobber	7440-50-8	1 %

Produktnavn: Tenner, elektrisk

Ytterligere regelverksmessige opplysninger

Komponentanalyse – lager

Komponent	CAS-nr.	TSCA	CAN	EEC
Cyklotetrametylentetranitramin (RDX)	121-82-4	Ja	DSL	EINECS
Heksanitrostilben (HNS)	20062-22-0	Ja	NDSL	EINECS
Blystyfnat	15245-44-0	Ja	DSL	EINECS
Blyazid	13424-46-9	Ja	DSL	EINECS
Aluminium	7429-90-5	Ja	DSL	EINECS
Kobber	7440-50-8	Ja	DSL	EINECS

***** 16. Andre opplysninger *****

Forklaring

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.

Litteraturliste

Ingen

Databladets slutt



Hoja de Datos de Seguridad

Nombre del producto: Detonador, Eléctrico

*** Sección 1 – Identificación del Producto y la Compañía ***

Información del Fabricante

Hunting Titan
143 HCR 4361
Milford, TX 76670
Teléfono: 972-493-2580

Hunting Energy Services
Level 25, 108 St. Georges Terrace
Perth, WA 6000
Teléfono: 0428 877 632

Número de emergencia de Chemtrec 800-424-9300

Número internacional de emergencia de Chemtrec:

Argentina	54-1159839431	Mexico	800-681-9531 (Toll Free)
Australia	61-290372994	Netherlands	31-858880596
Brazil	55-2139581449 0800 892 0479 (Toll Free)	New Zealand	64-98010034
Chile	56 2 2581 4934	Nigeria	234 1 227 8883
China	4001-204937	Peru	51-17071295
Colombia	01800-710-2151 (Toll Free)	Philippines	+63 2 8395 3308 1-800-1-116-1020 (Toll Free)
Costa Rica	506-40003869	Poland	48-223988029
Czech Republic	420-228880039	Romania	40-37-6300026
Denmark	45-69918573	Russia	8-800-100-6346 (Toll Free)
Dominican Republic	1 (829) 956-7588	Saudi Arabia	966-8111095861
France	33-975181407	Singapore	65-31581349 800-101-2201 (Toll Free)
Germany	49-69643508409 0800-181-7059 (Toll Free)	South Africa	0-800-983-611 (Toll Free)
India	000-800-100-7141 (Toll Free)	Thailand	001-800-13-203-9987 (Toll Free)
Indonesia	001-803-017-9114 (Toll Free)	Trinidad and Tobago	1-868-224-5716
Italy	39-0245557031 800-789-767 (Toll Free)	Turkey	90-212-7055340
Japan	81-345209637	Ukraine	380-947101374
Malaysia	60-392125794 1-800-815-308 (Toll Free)	United Kingdom	44-870-8200418 44-2038073798



Hoja de Datos de Seguridad

Nombre del producto: Detonador, Eléctrico

*** Sección 2 – Identificación de Riesgos ***

Clasificación GHS:

Explosivos – División 1.4

ELEMENTOS DE ETIQUETA GHS

Signo(s)



Palabra de Señalización

Peligro

Declaraciones de Riesgos

Riesgo de incendio o proyección.

Declaraciones de Precaución

Prevención

No se someta a molienda/sacudidas/impactos/flamas/calor/energía electrostática/fricción/energía de radiofrecuencia.

Mantenga los cables eléctricos cortocircuitados hasta tanto se vayan a conectar a otros elementos.

No fumar.

No intente desensamblar.

No consuma alimentos, bebidas ni tabaco en un área que pueda estar contaminada con estos materiales.

Después de manejarse el producto o de haber tenido exposición al mismo, lave inmediatamente a conciencia con jabón y agua.

Respuesta

Riesgo de explosión en caso de incendio. NO extinga un incendio cuando el fuego alcance a un explosivo; evacue el área por lo menos a 1500 pies (460 metros) a la redonda.

La detonación produce fragmentos peligrosos.

Los gases que produce pueden contener monóxido de carbono y humos de plomo.

La limpieza debe ser realizada sólo por personal experimentado en el manejo de explosivos. Aísle el área y retire fuentes de impacto, fricción, flama, calor, energía electrostática, ó energía de radio frecuencia.

Porte gafas de seguridad, guantes y respirador para polvo (si el área es polvosa).

Limpie, y barra con herramientas que no generen chispas.

Almacenamiento

Almacene de acuerdo con los reglamentos locales/regionales/nacionales/internacionales.

Eliminación

Elimine el contenido/contenedor de acuerdo con los reglamentos locales/regionales/nacionales/internacionales.

*** Sección 3 – Composición / Información sobre Ingredientes ***

# CAS	Componente
121-82-4	Ciclotrimetileno Trinitramina (RDX)
20062-22-0	Hexanitrostibeno (HNS)
7429-90-5	Aluminio
15245-44-0	Estífnato de Plomo
13424-46-9	Azida de Plomo
7440-50-8	Cobre



Hoja de Datos de Seguridad

Nombre del producto: Detonador, Eléctrico

*** Sección 4 – Medidas de Primeros Auxilios ***

Primeros Auxilios: Ojos

Para exposición al polvo: Enjuague los ojos inmediatamente con abundante agua por 15 minutos. Si la irritación persiste consiga atención médica.

Primeros Auxilios: Piel

Para exposición al polvo: lave la piel con jabón y agua.

Primeros Auxilios: ingestión

No es una ruta de entrada que se espere suceda bajo condiciones normales de manejo del producto.

Primeros Auxilios: Inhalación

Para exposición al polvo: Traslade a la víctima al aire fresco.

*** Sección 5 – Medidas de Extinción de Incendio ***

Riesgos Generales de Incendio

Consulte la Sección 9 para Propiedades de Inflamabilidad.

Puede detonar cuando esté sujeto a flama, calor, impacto, fricción, corrientes eléctricas, electrostáticas o energía de radiofrecuencia. Evite la acumulación de carga estática. Mantenga los cables eléctricos cortocircuitados hasta tanto se vayan a conectar a otros elementos.

Productos Combustibles Peligrosos

Los gases que produce pueden contener monóxido de carbono y humos de plomo.

Medios de Extinción

Ninguna

Medios de Extinción Inadecuados

Ninguna

Equipo/Instrucciones de Extinción de Incendios

¡NO EXTINGA INCENDIOS! ¡PUEDE OCURRIR UNA EXPLOSIÓN! Aísle el área. evacue el área por lo menos a 1500 pies (460 metros) a la redonda. Consulte la Guía de Respuesta de Emergencia U.S.D.O.T. o consulte con el personal local de respuesta de emergencias para mayores detalles.

*** Sección 6 – Medidas por Liberación Accidental ***

Recuperación y Neutralización

Ninguna

Materiales y Métodos para Limpieza

La limpieza debe ser realizada sólo por personal experimentado en el manejo de explosivos. Aísle el área y retire fuentes de impacto, fricción, flama, calor, energía electrostática, ó energía de radio frecuencia. Limpie, y barra con herramientas que no generen chispas.

Medidas de Emergencia

Aísle el área. Mantenga lejos al personal que no sea necesario.

Precauciones Personales y Equipo de Protección

Porte gafas de seguridad, guantes y respirador para polvo (si el área es polvosa).

Precauciones Ambientales

Ninguna

Prevención de Riesgos Secundarios

Ninguna



Hoja de Datos de Seguridad

Nombre del producto: Detonador, Eléctrico

*** Sección 7 – Manejo y Almacenamiento ***

Procedimientos de Manejo

Manténgase lejos de impacto, fricción, flama, calor, y energía eléctrica o electrostática. No intente desensamblar. No consuma alimentos, bebidas ni tabaco en un área que pueda estar contaminada con estos materiales. Después de manejarse el producto o de haber tenido exposición al mismo, lave inmediatamente a conciencia con jabón y agua.

Procedimientos de Almacenamiento

Almacene de acuerdo a los requerimientos regulatorios locales de seguridad.

Incompatibilidades

Ácidos y álcalis.

*** Sección 8 – Controles de Exposición / Protección Personal ***

Límites de Exposición a los Componentes

Ciclotrimetileno Trinitramina (RDX) (121-82-4)

ACGIH: 0.5 mg/m³ TWA
Piel – contribución significativa potencial a exposición general por la ruta cutánea
OSHA: 1.5 mg/m³ TWA
Prevenga o reduzca la absorción por la piel
NIOSH: 1.5 mg/m³ TWA
3 mg/m³ STEL
Potencial para absorción dérmica

Hexanitrostibeno (HNS) (20062-22-0)

ACGIH: No está establecido
OSHA: No está establecido
NIOSH: No está establecido

Aluminio (7429-90-5)

ACGIH: 1 mg/m³ TWA (fracción respirable)
OSHA: 15 mg/m³ TWA (polvo total); 5 mg/m³ TWA (fracción respirable)
NIOSH: 10 mg/m³ TWA (polvo total); 5 mg/m³ TWA (polvo respirable)

Cobre (7440-50-8)

ACGIH: 0.2 mg/m³ TWA (humo)
OSHA: 0.1 mg/m³ TWA (polvo, humo, niebla, como Cu)
NIOSH: 1 mg/m³ TWA (polvo y niebla); 0.1 mg/m³ TWA (humo)

Medidas de Ingeniería

No se requieren bajo condiciones normales de manejo del producto.

Equipo de Protección Personal: Respiratorio

No se requieren bajo condiciones normales de manejo del producto.

Equipo de Protección Personal: Manos

No se requieren bajo condiciones normales de manejo del producto.

Equipo de Protección Personal: Ojos

Se recomiendan gafas de seguridad.

Equipo de Protección Personal: Piel y Cuerpo

No se requieren bajo condiciones normales de manejo del producto. La ropa no debe ser propensa a acumular energía electrostática.



Hoja de Datos de Seguridad

Nombre del producto: Detonador, Eléctrico

*** Sección 9 – Propiedades Físicas y Químicas ***

Apariencia:	Coraza metálica que contiene componentes explosivos	Olor:	Ninguna
Estado Físico:	Sólido	pH:	N/A
Presión de Vapor:	ND	Densidad de Vapor:	ND
Punto de Ebullición:	ND	Punto de Fusión:	ND
Solubilidad (H2O):	ND	Gravedad Específica:	ND
Tasa de Evaporación:	ND	Químicos Orgánicos Volátiles:	ND
Coefficiente Octanol/H2O:	ND	Punto de Combustión:	ND
Método de Punto de Combustión:	ND	Límite de Inflamabilidad superior (UFL):	ND
Límite de Inflamabilidad Inferior (LFL):	ND	Tasa de Incineración:	ND
Auto-Ignición:	ND		

*** Sección 10 – Información de Estabilidad Química y Reactividad ***

Estabilidad Química

Este es un material estable bajo condiciones normales.

Potencial de Reacción Peligrosa

Puede explotar si está sujeto a sacudidas, impacto, fricción, energía de radiofrecuencia o un manejo brusco.

Condiciones a Evitar

Detona con impacto, fricción, flama, calor, descarga electrostática o energía de radiofrecuencia. No exceder de los 475°F (246°C) por más de 1 hora.

Productos Incompatibles

Ácidos y Alcalis.

Productos de Descomposición Riesgosa

La detonación produce fragmentos peligrosos. Los gases que produce pueden contener monóxido de carbono y humos de plomo.

*** Sección 11 – Información Toxicológica ***

Toxicidad Aguda

A: Información General del Producto

Los detonadores no presentan un riesgo a la salud bajo un manejo y uso normales. Sin embargo el producto es altamente explosivo y una detonación puede ocasionar severas lesiones físicas.

B: Análisis de Componentes

Ciclotrimetileno Trinitramina (RDX) (121-82-4)

Oral LD50 Rata 100 mg/kg

Hexanitrostibeno (HNS) (20062-22-0)

No está establecido

Efectos Potenciales en la Salud: Propiedad Corrosiva en la Piel / Grado Estimulante

El contacto del polvo con la piel puede ocasionar una irritación menor en la piel.

Efectos Potenciales en la Salud: Daño Crítico en los Ojos / Grado Estimulante

El contacto con el polvo puede ocasionar irritación en los ojos.



Hoja de Datos de Seguridad

Nombre del producto: Detonador, Eléctrico

Efectos Potenciales en la Salud: ingestión

No es una ruta de entrada que se espere suceda bajo condiciones normales de uso del producto.

Efectos Potenciales en la Salud: Inhalación

La inhalación de polvos puede ocasionar irregularidades del sistema nervioso incluyendo dolores de cabeza y mareos.

Sensibilización de los Órganos Respiratorios / Sensibilización de la Piel

No ha sido reportado que este producto tenga ningún efecto de sensibilización.

Mutagenicidad Generativa de Células

No ha sido reportado que este producto tenga ningún efecto de de mutagénico.

Carcinogenicidad

A: Información General del Producto

No ha sido reportado que este producto tenga ningún efecto de cancerígeno.

B: Carcinogenicidad de los Componentes

Ciclotrimetileno Trinitramina (RDX) (121-82-4)

ACGIH: A4 – No Clasificable como Cancerígeno Humano

Hexanitrostibeno (HNS) (20062-22-0)

No está establecido

Aluminio (7429-90-5)

ACGIH: A4 – No Clasificable como Cancerígeno Humano

Toxicidad Reproductiva

No ha sido reportado que este producto tenga ningún efecto de toxicidad reproductiva.

Toxicidad General en Órganos Objetivo Especificados: Una Sola Exposición

No ha sido reportado que este producto tenga ningún efecto específico en la toxicidad general de un órgano específico por exposición repetida.

Toxicidad General en Órganos Objetivo Especificados: Exposición Repetida

No ha sido reportado que este producto tenga ningún efecto específico en la toxicidad general de un órgano específico por exposición repetida.

Riesgo por Aspiración para Órganos Respiratorios

No ha sido reportado que este producto tenga ningún riesgo por aspiración.

Otra Información Toxicológica

El envenenamiento por plomo puede ocasionar daños a los sistemas nerviosos central y periféricos, los órganos que forman la sangre, induciendo así a la anemia. El Plomo puede deteriorar el sistema reproductivo de hombres y mujeres. Hay una creciente evidencia de que la exposición al plomo puede afectar la presión arterial en los adultos.

* * * Sección 12 – Información Ecológica * * *

Ecotoxicidad

A: Información General del Producto

Ninguna información disponible para el producto.

B: Análisis de Componentes – Ecotoxicidad – Toxicidad Acuática

Ciclotrimetileno Trinitramina (RDX) (121-82-4)

Prueba y Especie

96 Hr LC50 Lepomis macrochirus
96 Hr LC50 Lepomis macrochirus
96 Hr LC50 Oncorhynchus mykiss

1.9-6. 6 mg/L [estático]
5.6-10 mg/L [por flujo]
5.4-7. 4 mg/L [estático]

Condiciones



Hoja de Datos de Seguridad

Nombre del producto: **Detonador, Eléctrico**

96 Hr LC50 Pimephales promelas 5-8. 7 mg/L [por flujo]
96 Hr LC50 Pimephales promelas 3.0-5. 0 mg/L [estático]

Hexanitrostibeno (HNS) (20062-22-0)
No está establecido

Cobre (7440-50-8)

Prueba y Especie

	Condiciones
96 Hr LC50 Pimephales promelas	0.0068 - 0. 0156mg/L
96 Hr LC50 Pimephales promelas	<0. 3 mg/L [estático]
96 Hr LC50 Pimephales promelas	0.2 mg/L [por flujo]
96 Hr LC50 Oncorhynchus mykiss	0.052 mg/L [por flujo]
96 Hr LC50 Lepomis macrochirus	1.25 mg/L [estático]
96 Hr LC50 Cyprinus carpio	0.3 mg/L [semiestático]
96 Hr LC50 Cyprinus carpio	0.8 mg/L [estático]
96 Hr LC50 Poecilia reticulata	0.112 mg/L [por flujo]
72 Hr EC50 Pseudokirchneriella subcapitata	0.0426 - 0. 0535 mg/L [estático]
96 Hr EC50 Pseudokirchneriella subcapitata	0.031 - 0. 054 mg/L [estático]
48 Hr EC50 Daphnia magna	0.03 mg/L [estático]

Persistencia/Degradabilidad

Ninguna información disponible para el producto.

Bio-Acumulación

Ninguna información disponible para el producto.

Movilidad en el Suelo

Ninguna información disponible para el producto.

*** Sección 13 – Consideraciones para Eliminación ***

Instrucciones de Eliminación de Residuos

Consulte la Sección 7 para Procedimientos de Manejo. Consulte la Sección 8 para las recomendaciones de Equipo de Protección Personal.

Eliminación de Contenedores o Empaque Contaminados

Elimine el contenido/contenedor de acuerdo con los reglamentos locales/regionales/nacionales/internacionales.

*** Sección 14 – Información de Transporte ***

Información del DOT (Departamento de Transporte) de los EUA

Nombre del Embarque: Detonadores, Eléctricos

UN #: 0255 Clase de Riesgo: 1.4B

UN #: 0456 Clase de Riesgo: 1.4S

*** Sección 15 – Información Regulatoria ***

Regulaciones Federales en los EUA

A: Análisis de Componentes

Ninguno de los componentes en este artículo contienen los químicos requeridos para ser identificados bajo la sección 302 de SARA (40 CFR 355 Apéndice A), Sección 313 de SARA (40 CFR 372.65) y/o CERCLA (40 CFR 302.4).



Hoja de Datos de Seguridad

Nombre del producto: Detonador, Eléctrico

B: Contaminantes Marinos de los Componentes

Ninguno de los componentes en este artículo contienen químicos requeridos por el DOT de los EUA para que sean identificados como contaminantes marinos.

Regulaciones Estatales

Análisis de Componentes - Estatales

Los siguientes componentes aparecen en una o más de las siguientes listas estatales de sustancias peligrosas:

Componente	# CAS	CA	MA	MN	NJ	PA	RI
Ciclotrimetileno Trinitramina (RDX)	121-82-4	Sí	Sí	Sí	Sí	Sí	No
Estifnato de Plomo	15245-44-0	No	Sí	No	Sí	No	No
Azida de Plomo	13424-46-9	No	Sí	No	No	No	No
Aluminio	7429-90-5	Sí	Sí	Sí	Sí	Sí	No
Cobre	7440-50-8	Sí	Sí	Sí	Sí	Sí	No

Análisis de Componentes – WHMIS IDL

Los siguientes componentes son identificados bajo la Lista de Divulgación de Ingredientes del Decreto Canadiense de Productos Riesgosos:

Componente	# CAS	Concentración mínima
Aluminio	7429-90-5	1 %
Cobre	7440-50-8	1 %

Información Regulatoria Adicional

Análisis de Componentes – Inventario

Componente	# CAS	TSCA	CAN	EEC
Ciclotrimetileno Trinitramina (RDX)	121-82-4	Sí	DSL	EINECS
Hexanitrostibeno (HNS)	20062-22-0	Sí	NDSL	EINECS
Estifnato de Plomo	15245-44-0	Sí	DSL	EINECS
Azida de Plomo	13424-46-9	Sí	DSL	EINECS
Aluminio	7429-90-5	Sí	DSL	EINECS
Cobre	7440-50-8	Sí	DSL	EINECS

*** Sección 16 – Otra Información ***

Claves/Leyendas

EPA = Agencia de Protección Ambiental; TSCA = Decreto de Control de Sustancias Tóxicas; ACGIH = Conferencia Americana de Higienistas de la Industria Gubernamental; IARC = Agencia Internacional para la Investigación del Cáncer; NIOSH = Instituto Nacional para la Seguridad y Salud en el Trabajo; NTP = Programa Toxicológico Nacional; OSHA = Administración para la Seguridad y Salud en el Trabajo., NJTSR = Registro de Secreto de Marca de New Jersey.

Referencias a Literatura

Ninguna

Fin de Hoja