



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
NINTH 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:

Charges, shaped, without detonator, UN0440


U.N. CLASSIFICATION CODE: 1.4D

REFERENCE NUMBER:
EX1994090001

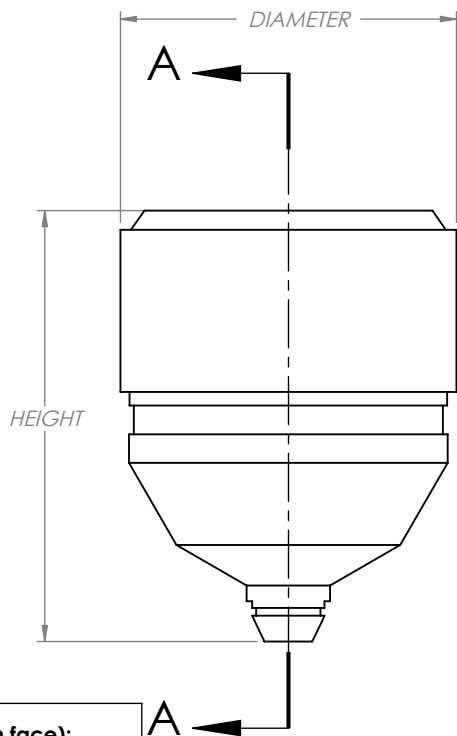
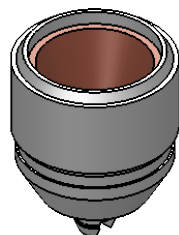
PRODUCT DESIGNATION/PART NUMBER:
D/N: 1109 Rev D, Open Face (350 Grains or Less)

NOTES: This approval as revised supersedes all previous versions.

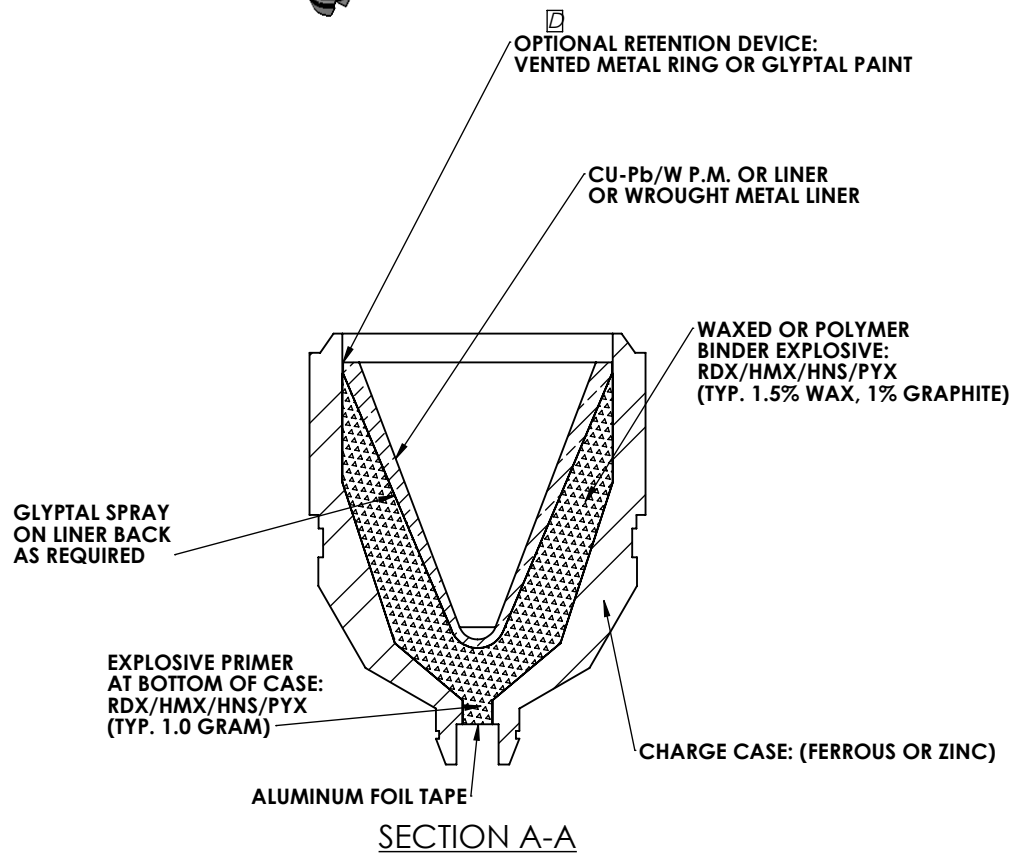
DATED: October 24, 2018


for William Schoonover
Associate Administrator for Hazardous Materials Safety

REVISION					
REV.	DESCRIPTION	BY	ECO/DCN#	DATE APPROVED	APPROVED BY
A	ADDED RETENTION DEVICE	TG		09/15/2006	TG
B	ADDED VENTED METAL RING OR GLYPTAL PAINT	BY		12/05/2006	TG
C	ADDED GLYPTOL SPRAY, REDRAWN IN SOLIDWORKS, ECO 1167	IDR		7/1/2010	TG
D	CHANGED TO OPTIONAL	DM	ECO 1558E	7/13/2017	SMW



FAMILY: Charges, Shaped (open face); Product 1109
Explosive Type: RDX, HMX, HNS, or PYX
Explosive Load: 350 Grains max. 0 Grains min.
Diameter: 1/2" to 2-1/2" Height: 3/4" to 3"



PROPRIETARY AND CONFIDENTIAL

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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

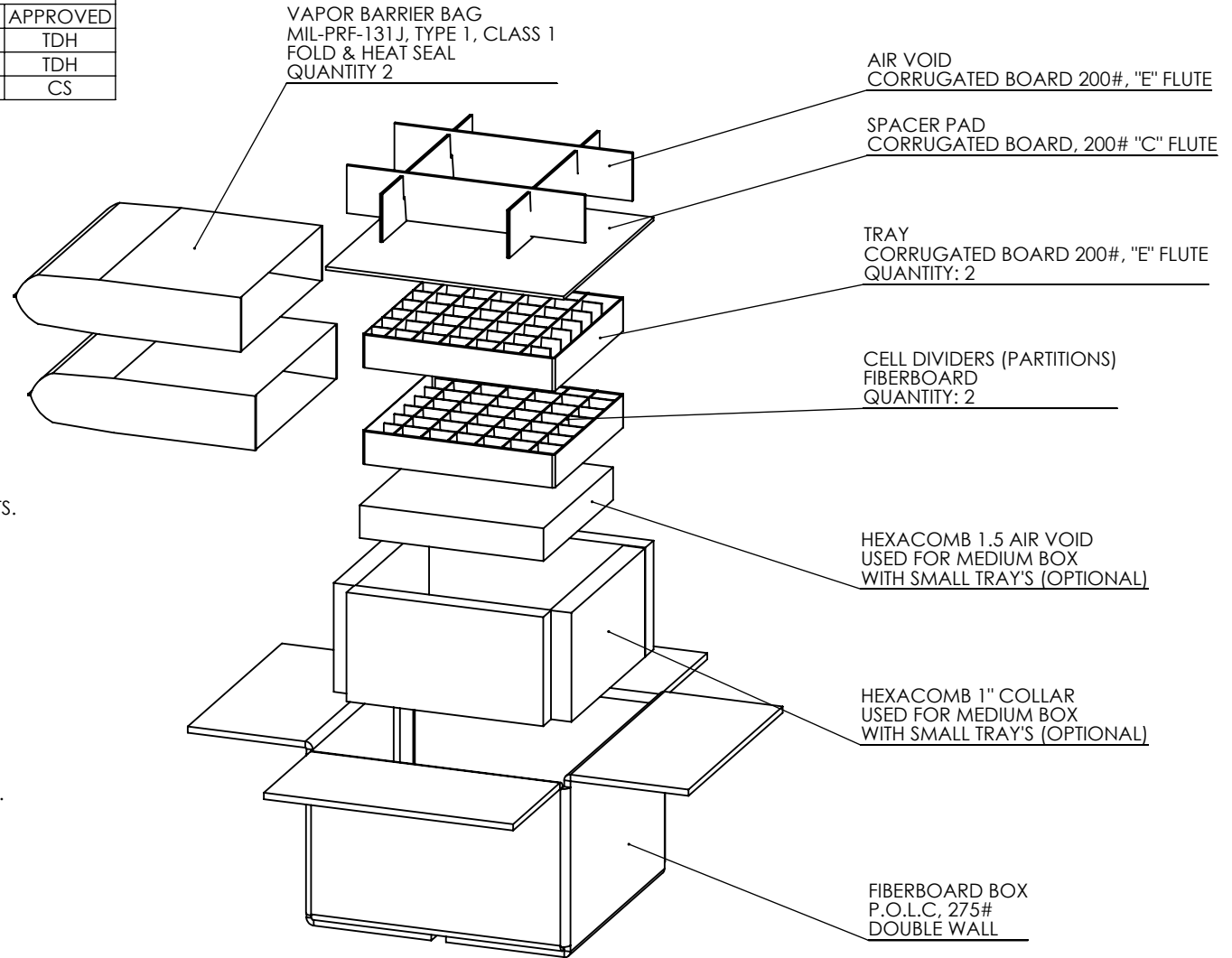
FINISH	HEAT TREAT

DO NOT SCALE DRAWING

NAME	DATE
IDR	5/27/2010
TDH	6/8/2010
COMMENTS	
THIS AREA INTENTIONALLY LEFT BLANK	
MATERIAL	

TITLE:		CHARGES, SHAPED (OPEN FACE) PRODUCT 1109	
SIZE	DWG. NO.	REV	
A	1109	D	
SCALE: NONE	WEIGHT: LBS.	SHEET 1 OF 1	

REVISIONS			
REV.	DESCRIPTION	DATE	APPROVED
XA	REDRAWN IN SOLIDWORKS	7/1/2011	TDH
XB	WAS 50 IS 84 TYPICALLY 50	7/7/2011	TDH
XC	WAS 84	10/26/2016	CS



NOTES:

1. MEETS PACKAGING REQUIREMENTS OF U.S. D.O.T. 49 CFR
2. MEETS PACKING GROUP II REQUIREMENTS.
3. IDENTIFICATION CODE UN4G.
4. PACKAGE MARKS & LABELS PER 49 CFR REQUIREMENTS.
5. QUANTITY PER PACKAGE: NOT GREATER THAN 50, TYPICAL 50. ~~XB~~ ~~XC~~
6. CLOSURE WITH ADEQUATE STAPLING.
7. BOX DIMENSIONS:
12" L x 12" W x 8-3/4" H (MED. BOX)
16-1/4" L x 13-1/2" W x 9-1/4" H (LG. BOX)

MARKS & LABELS:

1. EXPLOSIVE 1.4S OR 1.4D LABEL, AS REQ'D.
2. "CHARGES, SHAPED" & UN0441 OR UN0440, AS REQ'D.
3. US DOT APPROVAL (EX-NUMBER).
4. PERFORMANCE-ORIENTED PACKAGING UN SYMBOL & MARKS.
5. BOX MANUFACTURE'S MARK.
6. TITAN'S & CONSIGNEE'S NAME & ADDRESSES.
7. TITAN P/N, DESCRIPTION, QUANTITY, DATE SHIFT CODE.

SHAPED CHARGES ARE TO BE PACKAGED WITH 1/2 OF THE QUANTITY FACING "UP" IN THE LOWER PARTITION TRAY, AND 1/2 OF THE QUANTITY FACING "DOWN" IN THE UPPER PARTITION TRAY, SO THAT THE SHAPED CHARGE CONICAL CAVITIES FACE INWARD IN PARS.



HUNTING

PROPRIETARY AND CONFIDENTIAL

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UNLESS OTHERWISE SPECIFIED:

DIMENSIONS ARE IN INCHES
TOLERANCES:
ANGULAR: MACHINE ± 1/4°
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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

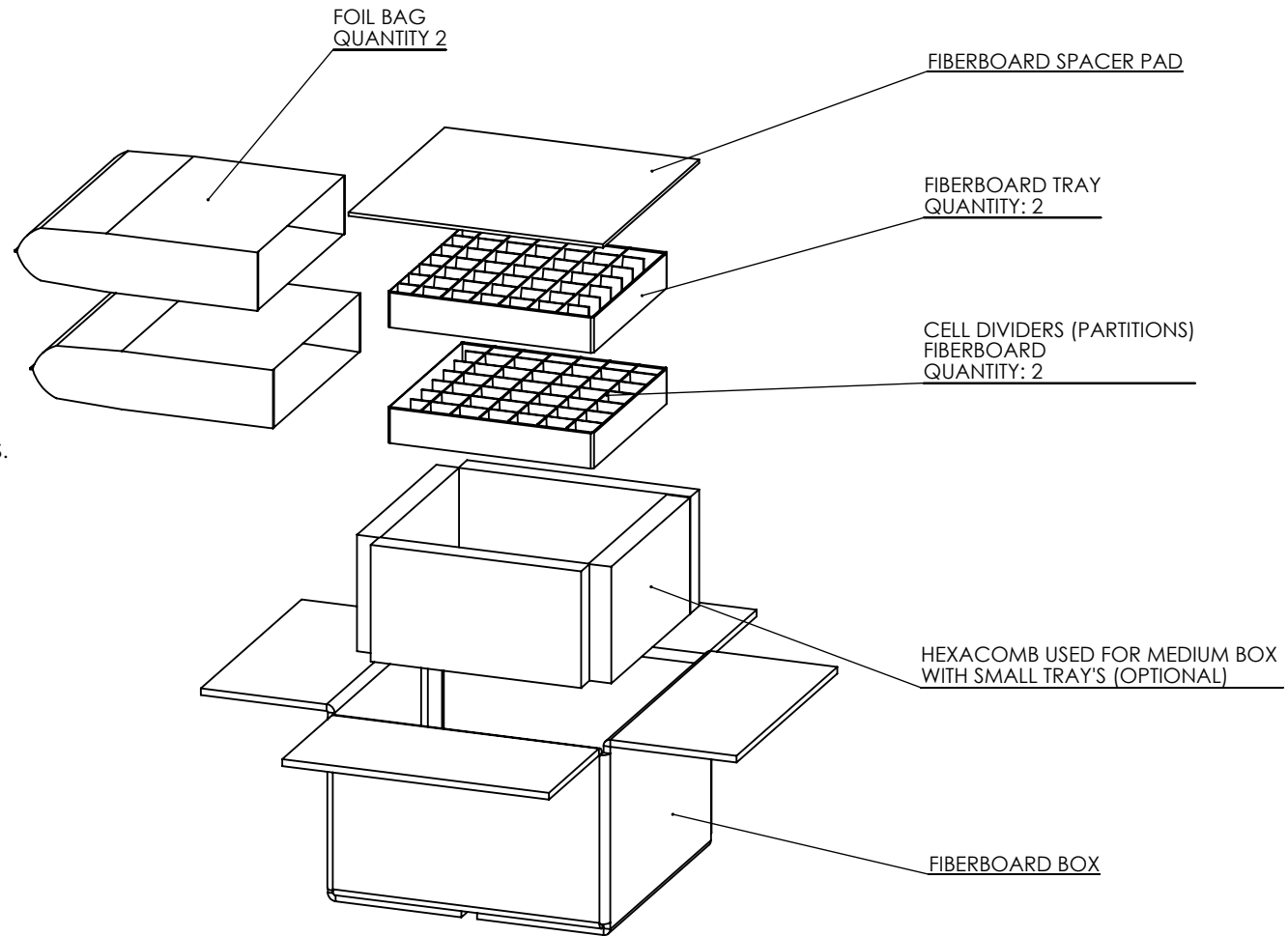
FINISH	HEAT TREAT
PLAIN	NONE

DO NOT SCALE DRAWING

	NAME	DATE
DRAWN	TDH	6/20/2011
APPROVED	CS	11/1/2016
COMMENTS		
THIS AREA INTENTIONALLY LEFT BLANK		
MATERIAL		
VARIOUS		

TITLE:		
PACKAGING INSTRUCTIONS CHARGES, SHAPED (OPEN FACED)		
SIZE	DWG. NO.	REV
A	PKG-INSTRUCTIONS	XC
SCALE: NONE	WEIGHT: LBS.	SHEET 1 OF 1

REVISIONS			
REV.	DESCRIPTION	DATE	APPROVED
X	NON-STAPLED BOX ASSEMBLY	8/07/24	8/08/24



NOTES:

1. MEETS PACKAGING REQUIREMENTS OF U.S. D.O.T. 49 CFR
2. MEETS PACKING GROUP II REQUIREMENTS. IDENTIFICATION CODE UN4G.
3. PACKAGE MARKS & LABELS PER 49 CFR REQUIREMENTS.
4. QUANTITY PER PACKAGE: NOT GREATER THAN 50, TYPICAL 50.
5. CLOSURE WITH ADEQUATE TAPE.

MARKS & LABELS:

1. EXPLOSIVE 1.4D LABEL, AS REQ'D.
2. "CHARGES, SHAPED" UN0440, AS REQ'D.
3. US DOT APPROVAL (EX-NUMBER).
4. PERFORMANCE-ORIENTED PACKAGING UN SYMBOL & MARKS.
5. BOX MANUFACTURE'S MARK.
6. HUNTING'S & CONSIGNEE'S NAME & ADDRESSES.
7. HUNTING P/N, DESCRIPTION, QUANTITY, DATE SHIFT CODE.

SHAPED CHARGES ARE TO BE PACKAGED WITH 1/2 OF THE QUANTITY FACING "UP" IN THE LOWER PARTITION TRAY, AND 1/2 OF THE QUANTITY FACING "DOWN" IN THE UPPER PARTITION TRAY, SO THAT THE SHAPED CHARGE CONICAL CAVITIES FACE INWARD IN PAIRS.



PROPRIETARY AND CONFIDENTIAL

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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	HEAT TREAT
PLAIN	NONE

DO NOT SCALE DRAWING

	NAME	DATE
DRAWN	AH	08/07/24
APPROVED	ZT	08/08/24

COMMENTS
 THIS AREA INTENTIONALLY LEFT BLANK

MATERIAL
 VARIOUS

TITLE:		PACKAGING INSTRUCTIONS CHARGES, SHAPED (OPEN FACED)	
SIZE	DWG. NO.	REV	
A	BOX-SC-500	X	
SCALE: NONE	WEIGHT: LBS.	SHEET 1 OF 1	

UN APPROVALS CERTIFICATE
CERTIFICATE NUMBER: UN USA/M4999 – Medium Harris
REFERENCE: TEST REPORT 24-0012A

PACKAGE PERFORMANCE TESTS**1. DESCRIPTION OF PACKAGING:**

Hunting Titan identification: Medium Fiberboard Box (11-5/8" x 11-5/8" x 7-1/4" interior dimensions) for shaped charges 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)]:**

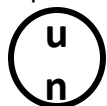
Test Description	UN Ref. No.	CFR 49	Intensity	Results
Drop Test	Chap 6.1.5.3	178.603 PG II (1.2 m)	1.2 m	Passed
Stacking Test	Chap 6.1.5.6	178.606 3 m	272.2 kg (600 lb.)	Passed
COBB Test	Chap 6.1.4.12	178.516(b)(1)	112.6 g/m ² (155 g/m ² max)	Passed
Vibration Test		178.608	252.8 CPM	Passed

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 PG II (1.2 m)	1.2 m	Passed
Stacking Test	Chap 6.1.5.6	178.606 3 m	272.2 kg (600 lb.)	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 February 23, 2024 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/Y18.6/S/**

USA/M4999

February 23, 2024

Debra Graham
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 – Medium Liberty
REFERENCE: TEST REPORT 24-0012B

PACKAGE PERFORMANCE TESTS

1. DESCRIPTION OF PACKAGING:

Hunting Titan identification: Medium Fiberboard Box (11-5/8" x 11-5/8" x 7-1/4" interior dimensions) for shaped charges 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)]:

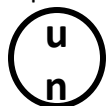
Test Description	UN Ref. No.	CFR 49	Intensity	Results
Drop Test	Chap 6.1.5.3	178.603 PG II (1.2 m)	1.2 m	Passed
Stacking Test	Chap 6.1.5.6	178.606 3 m	272.2 kg (600 lb.)	Passed
COBB Test	Chap 6.1.4.12	178.516(b)(1)	111.8 g/m ² (155 g/m ² max)	Passed
Vibration Test		178.608	244.5 CPM	Passed

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 PG II (1.2 m)	1.2 m	Passed
Stacking Test	Chap 6.1.5.6	178.606 3 m	272.2 kg (600 lb.)	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 February 23, 2024 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/Y18.6/S/**

USA/M4999

February 23, 2024

Debra Graham
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 – Large Harris
REFERENCE: TEST REPORT 24-0012A

PACKAGE PERFORMANCE TESTS

1. DESCRIPTION OF PACKAGING:

Hunting Titan identification: Large Fiberboard Box (17.125" x 13.5" x 9.125" interior dimensions) for shaped charges 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)]:

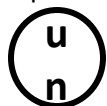
Test Description	UN Ref. No.	CFR 49	Intensity	Results
Drop Test	Chap 6.1.5.3	178.603 PG II (1.2 m)	1.2 m	Passed
Stacking Test	Chap 6.1.5.6	178.606 3 m	408.2 kg (900 lb.)	Passed
COBB Test	Chap 6.1.4.12	178.516(b)(1)	144 g/m ² (155 g/m ² max)	Passed
Vibration Test		178.608	266.8 CPM	Passed

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 PG II (1.2 m)	1.2 m	Passed
Stacking Test	Chap 6.1.5.6	178.606 3 m	408.2 kg (900 lb.)	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 February 23, 2024 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/Y32.4/S/**

USA/M4999

February 23, 2024

Debra Graham
Compliance Coordinator

Date

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


**UNITED NATIONS / DOT
PERFORMANCE CERTIFICATION**



4G DESIGN QUALIFICATION

**50-Ct. Shaped Charges Packaging
(1109 & 1110)**

TEST REPORT #: 24-NC20069 (REV 1)

 4G / Y21.2 / S / **
USA / +CQ11550 or M4999

**Insert the year packaging is manufactured

TESTING PERFORMED FOR:

HUNTING TITAN
143 HCR 4361
Milford, TX 76670

ATTN: Debra Graham

TESTING PERFORMED BY:

TEN-E PACKAGING SERVICES, INC.
2101 Shore Street
High Point, NC 27263
Phone: 336-803-4878
Fax: 336-804-5074

Issue Date: April 3, 2024
Revision Date: April 16, 2024

**UNITED NATIONS / DOT
PERFORMANCE CERTIFICATION**



4G DESIGN QUALIFICATION

**Shaped Charges Packaging (BOX-SC-500)
(2 Variables)**

TEST REPORT #: 24-NC20163

**(u/n) 4G / Y21.5 / S / ** or (u/n) 4G / Y21.5 / S / **
USA / +CQ11680 USA / M4999**

****Insert the last two digits of the year of manufacture**

TESTING PERFORMED FOR:

**HUNTING TITAN
143 HCR 4361
Milford, TX 76670**

ATTN: Debra Graham

TESTING PERFORMED BY:

**TEN-E PACKAGING SERVICES, INC.
2101 Shore Street
High Point, NC 27263
Phone: 336-803-4878
Fax: 336-804-5074**

June 26, 2024

**UNITED NATIONS / DOT
PERFORMANCE CERTIFICATION**



4G DESIGN QUALIFICATION

**50-Ct. Shaped Charges Packaging (BOX-SC-500)
(2) Variables**

TEST REPORT #: 24-NC20166

Ⓢ 4G / Y21.5 / S / ** or Ⓢ 4G / Y21.5 / S / **
USA / +CQ11680 USA / M4999

**Insert the last two digits of the year of manufacture

TESTING PERFORMED FOR:

HUNTING TITAN
143 HCR 4361
Milford, TX 76670

ATTN: Debra Graham

TESTING PERFORMED BY:

TEN-E PACKAGING SERVICES, INC.
2101 Shore Street
High Point, NC 27263
Phone: 336-803-4878
Fax: 336-804-5074

August 22, 2024



ATTESTATION D'EXAMEN UE DE TYPE - MODULE B
EU-TYPE EXAMINATION CERTIFICATE - MODULE B

NUMÉRO D'ENREGISTREMENT : **0080.EXP.05.0046**
REGISTRATION NUMBER:

INDICE : **11**
ISSUE:

NOM DU (DES) PRODUIT(S) : **Shaped charges CE type 1501**
NAME OF THE PRODUCT(S): (see references in the table)

(SOUS-)TYPE GÉNÉRIQUE : **Charge creuse**
GENERIC (SUB-)TYPE: **Shaped charge**

CATEGORIE : **--**
CATEGORY:

FABRICANT : **Hunting Titan, Inc.**
MANUFACTURER: 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 must be communicated to INERIS.

Verneuil-en-Halatte, **10 décembre 2021**
Le Directeur Général de l'INERIS
The Chief Executive Officer of INERIS
Par délégation, le Responsable Certification
By delegation, the Certification Manager

Annexe à l'attestation d'examen UE de type
0080.EXP.05.0046
Indice
11
Appendix to the EU-type examination certificate
Issue
A1- Description des produits couverts par ce certificat
Description of the product(s) covered by this certificate

 The products already certified, as given in the previous issues of the certificate **0080.EXP.05.0046**, are entered with the highlighted new items in the consolidated table below.

Highlighted = new charge							
Product Name	Part Number / Manufacturer's Reference	Explosives		Diameter mm	Height mm	Total mass, g	Minimum Running Average Penetration in Concrete Target
		Type	Mass, g				mm
CHARGE 0.75G HNS DONOR WITH SLEEVE, STEEL CASE	LTD-0005-501F	HNS	0.8	9.8	51.1	8.6	8.9
CHARGE 1G HMX DONOR	LTD-1010-400	HMX	1.0	12.7	25.4	16.4	16.5
CHARGE 1G HNS DONOR	LTD-1010-500	HNS	1.0	12.7	25.4	16.4	16.5
CHARGE 1-3/4" 1G RDX CIRC CSG 1/4"	LTD-1701-3T25	RDX	1.0	15.2	20.3	19.1	6.4
CHARGE 1-3/4" 1G RDX CIRC CSG 3/8"	LTD-1701-3T38	RDX	1.0	15.2	20.3	18.7	9.7
CHARGE 1-3/8" 1.8G RDX DP RTG	RTG-1302-300	RDX	2.0	19.9	22.4	24.0	127.0
CHARGE 1-3/8" 1.8G HMX DP RTG	RTG-1302-400	HMX	2.0	19.9	22.9	24.0	132.1
CHARGE 1-9/16" 3G RDX DP RTG	RTG-1603-300	RDX	3.2	24.1	26.5	45.7	139.7
CHARGE 1-9/16" 3.2G RDX BH RTG	RTG-1603-310	RDX	2.5	24.1	26.5	42.8	73.7
CHARGE 1-9/16" 3.2G RDX SDP RTG PRO	RTG-1603-320T	RDX	2.7	24.1	26.5	42.8	233.7
CHARGE 1-9/16" 3G HMX DP RTG	RTG-1603-400	HMX	3.2	24.1	26.5	45.7	139.7
CHARGE 1-9/16" 3.2G HMX BH RTG	RTG-1603-410	HMX	2.5	24.1	26.5	42.8	71.1
CHARGE 1-9/16" 3.2G HMX SDP RTG PRO	RTG-1603-420T	HMX	2.9	24.1	26.5	48.8	241.3
CHARGE 1-9/16" 3.5G HNS DP RTG	RTG-1603-500	HNS	3.2	24.1	26.5	45.2	28.6
CHARGE 1-9/16" 3.2G HNS SDP RTG PRO	RTG-1603-520T	HNS	2.7	24.1	26.5	48.8	198.1
CHARGE 1-9/16" 3.5G RDX SDP	RTG-1604-321T	RDX	4.0	24.1	26.5	49.4	302.3
CHARGE 1-9/16" 3.5G HMX SDP	RTG-1604-421T	HMX	3.5	24.1	26.5	49.4	322.6
CHARGE 1-9/16" 3.5G HNS SDP	RTG-1604-521T	HNS	3.8	24.1	26.5	49.4	322.6
CHARGE 2" 4G RDX LOW SWELL	RTG-2104-321T	RDX	4.0	31.5	34.3	93.0	505.5
CHARGE 2" 4G HMX LOW SWELL	RTG-2104-421T	HMX	4.0	31.5	34.3	93.0	505.5
CHARGE 2-1/8" 6.5G RDX BH RTG	RTG-2106-310	RDX	5.0	31.5	34.3	86.2	81.3
CHARGE 2-1/8" 6.5G RDX SDP RTG PRO	RTG-2106-320T	RDX	5.5	31.5	34.3	96.7	431.8
CHARGE 2" 6.5G RDX SDP GUNSLINGER	RTG-2106-321T	RDX	6.5	31.5	34.3	95.4	505.5
CHARGE 2" 6.5G RDX GH	RTG-2106-331	RDX	7.0	31.5	34.3	48.1	251.5
CHARGE 2-1/8" 6.5G HMX DP RTG PRO	RTG-2106-420T	HMX	5.5	31.5	34.3	96.7	449.6
CHARGE 2" 6.5G HMX SDP GUNSLINGER	RTG-2106-421T	HMX	6.5	31.5	34.3	95.4	513.1
CHARGE 2" 6.5G HMX GH	RTG-2106-431	HMX	7.0	31.5	34.3	48.1	269.2
CHARGE 2-1/8" 6.5G HNS SDP RTG PRO	RTG-2106-520T	HNS	6.5	31.5	34.3	96.7	360.7
CHARGE 2" 6.5G HNS SDP GUNSLINGER	RTG-2106-521T	HNS	6.5	31.5	34.3	95.4	396.2
CHARGE 2" 6.5G HNS GH	RTG-2106-531	HNS	6.5	31.5	34.3	48.1	188.7
CHARGE 2" 7G RDX SDP	RTG-2107-321T	RDX	7.0	31.5	34.3	95.9	553.7
CHARGE 2" 7G HMX SDP	RTG-2107-421T	HMX	7.0	31.5	34.3	95.9	553.7
CHARGE 2" 7G HMX SDP	RTG-2107-422T	HMX	7.0	31.5	34.3	95.9	190.5
CHARGE 2" 7G HNS SDP	RTG-2107-521T	HNS	7.0	31.5	34.3	95.9	396.2
CHARGE 2-1/2" 11G RDX DP	RTG-2511-301	RDX	11.0	37.6	43.2	146.2	406.4
CHARGE 2-1/2" 11G RDX BH BRASS	RTG-2511-310B	RDX	10.0	37.6	43.2	130.9	101.6
CHARGE 2-1/2" 11G RDX SDP PROEX	RTG-2511-322T	RDX	10.0	37.6	43.2	158.5	619.8
CHARGE 2-1/2" 11G RDX GH	RTG-2511-332T	RDX	11.0	37.6	43.2	145.0	602.0
CHARGE 2-1/2" 11G HMX DP PRO	RTG-2511-401	HMX	11.0	37.6	43.2	146.2	406.4
CHARGE 2-1/2" 11G HMX BH	RTG-2511-410B	HMX	10.0	37.6	43.2	130.9	101.6
CHARGE 2-1/2" 11G HMX SDP PRO	RTG-2511-420T	HMX	10.0	37.6	43.2	147.5	581.7
CHARGE 2-1/2" 11G HMX SDP PROEX	RTG-2511-422T	HMX	10.0	37.6	43.2	158.5	619.8

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Appendix to the EU-type examination certificate
Issue

Highlighted = new charge							
Product Name	Part Number / Manufacturer's Reference	Explosives		Diameter mm	Height mm	Total mass, g	Minimum Running Average Penetration in Concrete Target
		Type	Mass, g				mm
CHARGE 2-1/2" 11G HNS SDP PRO	RTG-2511-520T	HNS	10.0	37.6	43.2	147.3	505.5
CHARGE 2-1/2" 12G RDX SDP	RTG-2512-321T	RDX	12.0	37.6	43.2	159.2	701.0
CHARGE 2-1/2" 12G RDX SDP	RTG-2512-321T-H1	RDX	12.0	37.6	42.7	159.2	701.0
CHARGE 2-1/2" 12G RDX GH	RTG-2512-331	RDX	12.0	37.6	42.9	159.2	419.1
CHARGE 2-1/2" 12G RDX	RTG-2512-371T	RDX	12.0	37.6	43.0	162.2	541.0
CHARGE 2-1/2" 12G RDX	RTG-2512-372	RDX	12.0	37.6	43.0	148.0	127.0
CHARGE 2-1/2" 12G RDX	RTG-2512-373	RDX	12.0	37.6	43.0	143.0	127.0
CHARGE 2-1/2" 12G HMX SDP	RTG-2512-421T	HMX	12.0	37.6	43.2	159.2	701.0
CHARGE 2-1/2" 12G HMX SDP	RTG-2512-421T-H1	HMX	12.0	37.6	43.0	159.2	701.0
CHARGE 2-1/2" 12G HMX GH	RTG-2512-431	HMX	12.0	37.6	42.9	159.2	419.1
CHARGE 2-1/2" 12G HMX	RTG-2512-471T	HMX	12.0	37.6	43.0	162.2	541.0
CHARGE 2-1/2" 12G HNS SDP	RTG-2512-521T	HNS	12.0	37.6	42.9	159.2	525.8
CHARGE 2-1/2" 12G HNS GH	RTG-2512-531	HNS	12.5	37.6	42.9	159.2	419.1

A2- Conditions particulières pour le stockage, la manipulation et l'utilisation
Special conditions for storage, manipulation and use

As specified by the manufacturer.

- . Shelf life 10 years
- . Limit temperatures for use 162°C / 1 hour max. for shaped charges with RDX
204°C / 1 hour max. for shaped charges with HMX
260°C / 1 hour max. for shaped charges with HNS
- . Limit temperatures for storage - 30°C to + 60°C / 90 % RH max

A3- Document(s) technique(s) d'examen
Technical document(s) of examination

- . INERIS report reference DSC-16-164827-11445A, PNEO-AgCE 5, dated December 2, 2016;
- . Hunting Titan Inc. application file, dated September 23, 2021.



ATTESTATION D'EXAMEN UE DE TYPE - MODULE B
EU-TYPE EXAMINATION CERTIFICATE - MODULE B

NUMERO D'ENREGISTREMENT : **0080.EXP.05.0047** INDICE : **19**
REGISTRATION NUMBER: *ISSUE:*

NOM DU (DES) PRODUIT(S) : **Shaped charges CE type 1502**
NAME OF THE PRODUCT(S): (see references in the table)

(SOUS-)TYPE GÉNÉRIQUE : **Charge creuse**
GENERIC (SUB-)TYPE: *Shaped charge*

CATÉGORIE : **--**
CATEGORY:

FABRICANT : **Hunting Titan, Inc.**
MANUFACTURER: 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 must be communicated to INERIS.

Verneuil-en-Halatte, **10 décembre 2021**
Le Directeur Général de l'INERIS
The Chief Executive Officer of INERIS
Par délégation, le Responsable Certification
By delegation, the Certification Manager

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Appendix to the EU-type examination certificate
Issue
A1- Description des produits couverts par ce certificat
Description of the product(s) covered by this certificate

 The products already certified, as given in the previous issues of the certificate **0080.EXP.05.0047**, are entered with the highlighted new items in the consolidated table below.

Highlighted = new charge

Product Name	Part Number / Manufacturer's Reference	Explosives		Diameter mm	Height mm	Total mass, g	Minimum Running Average Penetration in Concrete Target
		Type	Mass, g				mm
CHARGE 3-1/8" 7G RDX CL EQ	CL-3107-371T	RDX	8.0	32.5	25.5	90.3	177.8
CHARGE 3-1/8" 7G HMX CL EQ	CL-3107-471T	HMX	8.0	32.5	25.5	90.3	177.8
CHARGE 3-1/8" 8G RDX CL EQ	CL-3108-371	RDX	8.0	40.6	23.6	91.0	76.2
CHARGE 3-1/8" 8G HMX CL EQ	CL-3108-471	HMX	8.0	40.6	23.6	91.0	76.2
CHARGE 2" 8.0G HSX	EXP-2008-721TB	HSX	8.0	31.5	34.3	96.0	400.1
CHARGE 2-3/4" 15G RDX SDP PRO	EXP-2715-320T	RDX	12.0	37.6	43.2	151.5	569.0
CHARGE 2-3/4" 15G RDX SDP PROEX	EXP-2715-322T	RDX	12.0	37.6	43.2	160.5	660.4
CHARGE 2-3/4" 15G RDX SDP	EXP-2715-323T	RDX	14.0	37.6	43.2	160.2	650.2
CHARGE 2-3/4" 15G HMX SDP PRO	EXP-2715-420T	HMX	12.0	37.6	43.2	150.5	602.0
CHARGE 2-3/4" 15G HMX SDP PROEX	EXP-2715-422T	HMX	12.0	37.6	43.2	159.5	632.5
CHARGE 2-3/4" 15G HMX SDP	EXP-2715-423T	HMX	14.0	37.6	43.2	160.2	650.2
CHARGE 2-3/4" 15G HNS DP GUNSLINGER	EXP-2715-522T	HNS	12.0	37.6	43.2	160.2	495.3
CHARGE 2-3/4" 16G RDX SDP	EXP-2716-321T	RDX	16.0	37.6	43.2	160.2	769.6
CHARGE 2-3/4" 16G RDX SDP	EXP-2716-321T-H1	RDX	16.0	37.6	43.0	160.0	769.6
CHARGE 2-3/4" 16G RDX	EXP-2716-371T	RDX	16.0	37.6	43.0	163.0	680.7
CHARGE 2-3/4" 16G RDX	EXP-2716-371T-H1	RDX	16.0	37.6	43.0	163.0	680.7
CHARGE 2-3/4" 16G RDX	EXP-2716-372T	RDX	16.0	37.6	43.0	163.0	421.6
CHARGE 2-3/4" 16G RDX	EXP-2716-372T-H1	RDX	16.0	37.6	43.0	163.0	421.6
CHARGE 2-3/4" 16G HMX SDP	EXP-2716-421T	HMX	16.0	37.6	43.2	160.2	769.6
CHARGE 2-3/4" 16G HMX SDP	EXP-2716-421T-H1	HMX	16.0	37.6	43.0	160.0	769.6
CHARGE 2-3/4" 16G HMX	EXP-2716-471T	HMX	16.0	37.6	43.0	163.0	680.7
CHARGE 2-3/4" 16G HMX	EXP-2716-471T-H1	HMX	16.0	37.6	43.0	163.0	680.7
CHARGE 2-3/4" 16G HMX	EXP-2716-472T	HMX	16.0	37.6	43.0	163.0	421.6
CHARGE 2-3/4" 16G HMX	EXP-2716-472T-H1	HMX	16.0	37.6	43.0	163.0	421.6
CHARGE 2-3/4" 16G HNS SDP	EXP-2716-521T	HNS	16.0	37.6	43.2	160.2	577.3
CHARGE 2-7/8" 16G RDX	EXP-2816-371T	RDX	16.0	37.6	43.0	161.2	701.0
CHARGE 2-7/8" 18G RDX SDP	EXP-2818-321T	RDX	17.0	37.6	43.0	160.2	779.8
CHARGE 2-7/8" 18G RDX SDP	EXP-2818-321T-H1	RDX	18.0	37.6	43.0	178.0	779.8
CHARGE 2-7/8" 18G RDX	EXP-2818-371	RDX	18.0	37.6	43.0	147.0	177.8
CHARGE 2-7/8" 18G HMX SDP	EXP-2818-421T	HMX	17.0	37.6	43.0	160.2	820.4
CHARGE 2-7/8" 18G HMX SDP	EXP-2818-421T-H1	HMX	18.0	37.6	43.0	160.2	820.4
CHARGE 2-7/8" 18G HNS SDP	EXP-2818-422T	HMX	18.0	37.6	43.0	155.0	281.4
CHARGE 2-7/8" 18G HNS SDP	EXP-2818-521T	HNS	18.0	37.6	43.0	160.2	614.7
CHARGE 3-1/8" 12G RDX SDP PRO	EXP-3112-320T	RDX	11.0	43.2	37.1	115.6	546.1
CHARGE 3-1/8" 12G RDX SDP	EXP-3112-321T	RDX	12.0	43.2	37.1	151.7	617.2
CHARGE 3-1/8" 12G HMX SDP	EXP-3112-421T	HMX	12.0	43.2	37.1	151.7	617.0
CHARGE 3-1/8" 12G HNS SDP	EXP-3112-521T	HNS	12.0	43.2	37.1	151.7	551.2
CHARGE 3-1/8" 14G RDX SDP PRO	EXP-3114-320T	RDX	13.0	39.1	43.2	140.4	546.1
CHARGE 3"-4" 3G RDX SQUEEZE	EXP-3303-3Q1	RDX	3.0	23.7	26.7	50.3	129.8
CHARGE 3-3/8" 19G RDX DP	EXP-3319-302	RDX	19.0	44.5	52.7	269.1	477.5
CHARGE 3-3/8" 19G RDX DP	EXP-3319-302-H1	RDX	19.0	44.5	52.7	231.3	477.5
CHARGE 3-1/8" 19G RDX DP	EXP-3319-304	RDX	19.0	44.5	52.7	269.1	535.9



Highlighted = new charge

Product Name	Part Number / Manufacturer's Reference	Explosives		Diameter mm	Height mm	Total mass, g	Minimum Running Average Penetration in Concrete Target
		Type	Mass, g				mm
CHARGE 3-3/8" 19G RDX SDP PROEX	EXP-3319-322T	RDX	18.0	44.5	52.7	278.9	848.4
CHARGE 3-3/8" 19G RDX SDP	EXP-3319-323T	RDX	19.0	44.5	52.7	276.2	914.4
CHARGE 3-3/8" 19G RDX SDP	EXP-3319-323T-H1	RDX	19.0	44.5	52.7	276.2	914.4
CHARGE 3-3/8" 19G RDX GH	EXP-3319-331	RDX	19.0	44.5	52.7	273.1	642.6
CHARGE 3-3/8" 19G RDX GH	EXP-3319-331-H1	RDX	19.0	44.5	52.7	273.1	642.6
CHARGE 3-3/8" 19G RDX	EXP-3319-361	RDX	19.0	44.5	52.7	267.1	469.9
CHARGE 3-3/8" 19G RDX	EXP-3319-361-H1	RDX	19.0	44.5	52.7	235.4	469.9
CHARGE 3-3/8" 19G HMX DP	EXP-3319-402	HMX	19.0	44.5	52.7	269.1	477.5
CHARGE 3-3/8" 19G HMX DP	EXP-3319-402-H1	HMX	19.0	44.5	52.7	269.1	477.5
CHARGE 3-3/8" 19G HMX SDP PROEX	EXP-3319-422T	HMX	18.0	44.5	52.7	277.4	904.2
CHARGE 3-3/8" 19G HMX SDP	EXP-3319-423T	HMX	19.0	44.5	52.7	276.2	914.4
CHARGE 3-3/8" 19G HMX SDP	EXP-3319-423T-H1	HMX	19.0	44.5	52.7	276.3	914.4
CHARGE 3-3/8" 19G HMX GH	EXP-3319-431	HMX	19.0	44.5	52.7	267.4	627.4
CHARGE 3-3/8" 19G HMX GH	EXP-3319-431-H1	HMX	19.0	44.5	52.7	266.2	627.4
CHARGE 3-3/8" 19G HMX	EXP-3319-461	HMX	19.0	44.5	52.7	267.1	469.9
CHARGE 3-3/8" 19G HMX	EXP-3319-461-H1	HMX	19.0	44.5	52.7	235.4	469.9
CHARGE 3-1/8" HNS DP	EXP-3319-523T	HNS	21.0	44.5	52.7	278.2	729.0
CHARGE 3-3/8" 21G RDX SDP	EXP-3321-321T	RDX	21.0	44.5	52.7	278.2	911.9
CHARGE 3-3/8" 21G RDX SDP	EXP-3321-321T-H1	RDX	21.0	44.5	52.7	278.2	911.9
CHARGE 3-3/8" 21G RDX GH	EXP-3321-331	RDX	21.0	44.5	52.7	266.2	627.4
CHARGE 3-3/8" 21G RDX GH	EXP-3321-331-H1	RDX	21.0	44.5	52.7	266.2	627.4
CHARGE 3-1/8" 21G RDX LC	EXP-3321-362T	RDX	21.0	44.5	52.7	273.0	810.3
CHARGE 3-3/8" 21G RDX	EXP-3321-372T	RDX	21.0	44.5	52.7	285.0	871.2
CHARGE 3-3/8" 21G RDX	EXP-3321-372T-H1	RDX	21.0	44.5	52.7	250.0	871.2
CHARGE 3-3/8" 21G HMX SDP	EXP-3321-421T	HMX	21.0	44.5	52.7	278.2	970.3
CHARGE 3-3/8" 21G HMX SDP	EXP-3321-421T-H1	HMX	21.0	44.5	52.7	278.2	970.3
CHARGE 3-3/8" 21G HMX GH	EXP-3321-431	HMX	21.0	44.5	52.7	266.2	627.4
CHARGE 3-3/8" 21G HMX GH	EXP-3321-431-H1	HMX	21.0	44.5	52.7	266.2	627.4
CHARGE 3-3/8" 21G HMX	EXP-3321-472T	HMX	21.0	44.5	52.7	285.0	871.2
CHARGE 3-3/8" 21G HMX	EXP-3321-472T-H1	HMX	21.0	44.5	52.7	250.0	871.2
CHARGE 3-3/8" 21G HNS SDP	EXP-3321-521T	HNS	21.0	44.5	52.7	278.2	838.2
CHARGE 3-3/8" 20G RDX DP	EXP-3323-301T	RDX	22.0	44.5	52.7	274.9	591.8
CHARGE 3-3/8" 20G RDX DP	EXP-3323-301T-H1	RDX	22.7	44.5	52.7	276.8	591.8
CHARGE 3-3/8" 22G RDX DP	EXP-3323-302	RDX	22.0	44.5	52.7	272.8	403.9
CHARGE 3-3/8" 22G RDX DP	EXP-3323-302-H1	RDX	20.0	44.5	52.7	272.8	403.9
CHARGE 3-3/8" 22.7G RDX SDP PRO	EXP-3323-320T	RDX	20.0	44.5	52.7	278.9	706.1
CHARGE 3-3/8" 22.7G RDX SDP PRO	EXP-3323-321T	RDX	20.0	44.5	52.7	278.9	706.1
CHARGE 3-3/8" 22.7G RDX SDP PROEX	EXP-3323-322T	RDX	19.0	44.5	52.7	280.9	904.2
CHARGE 3-3/8" 23G RDX SDP	EXP-3323-323T	RDX	23.0	44.5	52.7	283.5	977.9
CHARGE 3-3/8" 23G RDX SDP	EXP-3323-323T-H1	RDX	23.0	44.5	52.7	283.5	977.9
CHARGE 3-3/8" 20G RDX GH	EXP-3323-331	RDX	20.0	44.5	52.7	274.9	604.5
CHARGE 3-3/8" 20G RDX GH	EXP-3323-331-H1	RDX	22.7	44.5	52.7	276.8	604.5



Highlighted = new charge

Product Name	Part Number / Manufacturer's Reference	Explosives		Diameter mm	Height mm	Total mass, g	Minimum Running Average Penetration in Concrete Target
		Type	Mass, g				mm
CHARGE 3-3/8" 22.7G RDX SDP	EXP-3323-361T	RDX	20.0	44.5	52.7	288.9	762.0
CHARGE 3-3/8" 22.7G RDX SDP	EXP-3323-361T-H1	RDX	22.7	44.5	52.7	288.9	762.0
CHARGE 3-3/8" 23G RDX	EXP-3323-371T	RDX	23.0	44.5	52.7	285.0	812.8
CHARGE 3-3/8" 23G RDX	EXP-3323-371T-H1	RDX	23.0	44.5	52.7	285.0	861.1
CHARGE 3-1/8" 23G RDX	EXP-3323-373T	RDX	23.0	44.5	52.7	277.0	571.5
CHARGE 3-1/8" 23G RDX	EXP-3323-374T	RDX	23.0	44.5	52.7	277.0	670.6
CHARGE 3-3/8" 20G HMX DP	EXP-3323-401T	HMX	20.0	44.5	52.7	279.8	591.8
CHARGE 3-3/8" 20G HMX DP	EXP-3323-401T-H1	HMX	22.7	44.5	52.7	276.8	591.8
CHARGE 3-3/8" 22G HMX DP	EXP-3323-402	HMX	20.0	44.5	52.7	272.8	403.9
CHARGE 3-3/8" 22G HMX DP	EXP-3323-402-H1	HMX	22.0	44.5	52.7	272.8	403.9
CHARGE 3-3/8" 22.7G HMX SDP PRO	EXP-3323-420T	HMX	20.0	44.5	52.7	276.4	696.0
CHARGE 3-3/8" 22.7G HMX SDP PRO	EXP-3323-421T	HMX	20.0	44.5	52.7	276.4	696.0
CHARGE 3-3/8" 22.7G HMX SDP PROEX	EXP-3323-422T	HMX	19.0	44.5	52.7	278.4	904.2
CHARGE 3-3/8" 23G HMX SDP	EXP-3323-423T	HMX	23.0	44.5	52.7	279.9	1008.4
CHARGE 3-3/8" 23G HMX SDP	EXP-3323-423T-H1	HMX	23.0	44.5	52.7	279.9	1008.4
CHARGE 3-3/8" 20G HMX GH	EXP-3323-431	HMX	20.0	44.5	52.7	273.9	635.0
CHARGE 3-3/8" 22.7G HMX GH	EXP-3323-431-H1	HMX	22.7	44.5	52.7	273.9	604.5
CHARGE 3-3/8" 22.7G HMX SDP	EXP-3323-461T	HMX	22.7	44.5	52.7	289.0	762.0
CHARGE 3-3/8" 22.7G HMX SDP	EXP-3323-461T-H1	HMX	22.7	44.5	52.7	288.9	762.0
CHARGE 3-3/8" 23G HMX	EXP-3323-471T	HMX	23.0	44.5	52.7	285.0	812.8
CHARGE 3-3/8" 23G HMX	EXP-3323-471T-H1	HMX	23.0	44.5	52.7	285.0	861.1
CHARGE 3-1/8" 23G HMX	EXP-3323-473T	HMX	23.0	44.5	52.7	277.0	571.5
CHARGE 3-3/8" 22G HNS DP	EXP-3323-502	HNS	22.0	44.5	52.7	272.8	303.0
CHARGE 3-3/8" 22.7G HNS SDP PROEX	EXP-3323-522T	HNS	20.0	44.5	52.7	279.9	678.2
CHARGE 3-3/8" 22.7G HNS SDP	EXP-3323-523T	HNS	22.7	44.5	52.7	279.9	769.6
CHARGE 3-3/8" 22.7G HNS GH	EXP-3323-531	HNS	22.7	44.5	52.7	273.9	453.4
CHARGE 3-3/8" 22.7G HNS SDP	EXP-3323-561T	HNS	22.7	44.5	52.7	288.9	571.5
CHARGE 3-3/8" 25G RDX SDP PRO	EXP-3325-321T	RDX	24.0	44.5	52.7	282.6	1033.8
CHARGE 3-3/8" 25G RDX GH	EXP-3325-331	RDX	25.0	44.5	52.7	270.6	609.6
CHARGE 3-3/8" 25G RDX GH	EXP-3325-331-H1	RDX	25.0	44.5	56.7	262.0	609.6
CHARGE 3-3/8" 25G HMX SDP PRO	EXP-3325-421T	HMX	24.0	44.5	52.7	282.6	1033.8
CHARGE 3-3/8" 25G HMX GH	EXP-3325-431	HMX	25.0	44.5	52.7	270.6	665.5
CHARGE 3-3/8" 25G HMX GH	EXP-3325-431-H1	HMX	25.0	44.5	56.7	262.0	665.5
CHARGE 3-3/8" 25G HNS SDP PROSPECTOR	EXP-3325-521T	HNS	24.0	44.5	55.0	283.0	774.7
CHARGE 3-3/8" 25G HNS GH	EXP-3325-531	HNS	25.0	44.5	57.0	270.6	457.2
CHARGE 3-3/8" 26G RDX SDP	EXP-3326-321T	RDX	26.0	44.5	55.0	283.6	1099.8
CHARGE 3-3/8" 26G RDX SDP	EXP-3326-321T-H1	RDX	26.0	44.5	56.7	270.0	1099.8
CHARGE 3-3/8" 26G RDX	EXP-3326-371	RDX	26.0	44.5	52.7	253.0	94.0
CHARGE 3-3/8" 26G RDX	EXP-3326-371T	RDX	26.0	44.5	52.7	273.6	779.8
CHARGE 3-3/8" 26G RDX	EXP-3326-371T-H1	RDX	26.0	44.5	56.7	270.0	779.8
CHARGE 3-3/8" 26G HMX SDP	EXP-3326-421T	HMX	25.0	44.5	55.0	283.6	1099.8
CHARGE 3-3/8" 26G HMX SDP	EXP-3326-421T-H1	HMX	26.0	44.5	56.7	276.0	1099.8

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Product Name	Part Number / Manufacturer's Reference	Explosives		Diameter mm	Height mm	Total mass, g	Minimum Running Average Penetration in Concrete Target
		Type	Mass, g				mm
CHARGE 3-3/8" 26G HMX ROCK CHARGE	EXP-3326-422T	HMX	26.0	44.5	57.0	287.6	424.2
CHARGE 3-3/8" 26G HMX	EXP-3326-471	HMX	26.0	44.5	52.7	253.0	94.0
CHARGE 3-3/8" 26G HMX	EXP-3326-471T	HMX	26.0	44.5	52.7	273.6	779.8
CHARGE 3-3/8" 26G HMX	EXP-3326-471T-H1	HMX	26.0	44.5	56.7	276.0	779.8
CHARGE 3-3/8" 26G HNS SDP	EXP-3326-521T	HNS	26.0	44.5	52.7	283.6	825.0
CHARGE 3-3/8" 26.5G HSX	EXP-3327-721TB	HSX	26.5	44.5	57.0	300.0	1000.0
CHARGE 3-3/8" 32G RDX DP PRO	EXP-3332-300	RDX	31.0	46.7	53.8	245.5	533.4
CHARGE 3-3/8" 32G RDX SDP PRO	EXP-3332-308T	RDX	31.0	44.5	55.0	219.8	563.9
CHARGE 3-3/8" 32G RDX SDP PRO	EXP-3332-320T	RDX	31.0	46.7	53.8	260.5	856.0
CHARGE 4"-5" 6G RDX SQUEEZE	EXP-4006-3Q1	RDX	6.0	23.7	28.3	55.9	129.5
CHARGE 4" 16G RDX GH NSG	EXP-4016-302	RDX	15.3	43.9	45.7	235.5	510.5
CHARGE 4" 19G RDX DP NSG	EXP-4019-301	RDX	18.0	52.3	65.5	238.5	474.0
CHARGE 4" 22.7G RDX DP NSG	EXP-4023-301	RDX	22.7	43.9	45.7	240.3	457.2
CHARGE 4" 32G RDX DP	EXP-4032-301	RDX	32.0	53.6	61.8	445.4	797.6
CHARGE 4" 36G RDX DP	EXP-4036-301	RDX	36.0	53.6	61.8	449.4	581.7
CHARGE 4" 36G RDX SDP PRO	EXP-4036-328T	RDX	33.5	53.6	61.8	445.4	980.4
CHARGE 4" 38.5G RDX SDP GUNSLINGER	EXP-4039-321T	RDX	37.5	53.6	61.8	454.9	1206.5
CHARGE 4" 38.5G RDX SDP	EXP-4039-323T	RDX	38.5	53.6	61.8	454.9	1266.7
CHARGE 4" 38.5G RDX SDP PRO	EXP-4039-328T	RDX	38.0	53.6	61.8	457.9	1013.5
CHARGE 4" 38.5G HMX SDP GUNSLINGER	EXP-4039-421T	HMX	37.5	53.6	61.8	454.9	1206.5
CHARGE 4" 38.5G HMX SDP	EXP-4039-423T	HMX	38.5	53.6	61.8	454.9	1266.7
CHARGE 4" 38.5G HMX SDP PRO	EXP-4039-428T	HMX	36.5	53.6	61.8	447.9	939.8
CHARGE 4" 38.5G HNS SDP	EXP-4039-523T	HNS	38.5	53.6	61.8	454.9	950.0
CHARGE 4" 45G RDX SDP	EXP-4045-321T	RDX	45.0	53.3	61.0	468.4	482.6
CHARGE 4" 45G HMX SDP	EXP-4045-421T	HMX	45.0	53.3	61.0	468.4	482.6
CHARGE 4-1/2" 21G RDX SDP PRO	EXP-4521-320T	RDX	20.0	43.2	52.4	217.2	655.3
CHARGE 4-1/2" 21G RDX SDP PROEX	EXP-4521-322T	RDX	20.0	43.2	52.4	225.2	721.4
CHARGE 4-1/2" 21G RDX SDP	EXP-4521-323T	RDX	21.0	44.0	52.4	226.9	871.2
CHARGE 4-1/2" 21G RDX GH	EXP-4521-331	RDX	21.0	44.0	52.4	217.9	541.0
CHARGE 4-1/2" 21G HMX SDP PRO	EXP-4521-420T	HMX	20.0	43.2	52.4	218.2	678.2
CHARGE 4-1/2" 21G HMX SDP PROEX	EXP-4521-422T	HMX	20.0	43.2	52.4	225.2	756.9
CHARGE 4-1/2" 21G HMX SDP	EXP-4521-423T	HMX	21.0	44.0	52.4	226.9	871.2
CHARGE 4-1/2" 21G HMX GH	EXP-4521-431	HMX	21.0	44.0	52.4	217.9	539.8
CHARGE 4-1/2" 21G HNS SDP PROEX	EXP-4521-522T	HNS	20.0	43.2	52.4	226.9	541.0
CHARGE 4-1/2" 21G HNS SDP	EXP-4521-523T	HNS	21.0	44.0	52.4	226.9	653.5
CHARGE 4-1/2" 21G HNS DP	EXP-4521-531	HNS	21.0	44.0	52.4	217.9	539.8
CHARGE 4-1/2" 38.5G RDX DP PRO	EXP-4539-321T	RDX	38.0	50.8	71.1	467.4	962.7
CHARGE 4-1/2" 38.5G RDX SDP PRO	EXP-4539-323T	RDX	38.0	50.8	71.1	481.9	1066.8
CHARGE 4-1/2" 38.5G RDX SDP PROEX	EXP-4539-324T	RDX	36.5	50.8	71.1	476.9	1280.2
CHARGE 4-1/2" 38.5G RDX SDP	EXP-4539-325T	RDX	38.5	50.8	58.4	503.2	1305.6
CHARGE 4-1/2" 38.5G HMX DP PRO	EXP-4539-421T	HMX	38.0	50.8	71.1	476.9	962.7
CHARGE 4-1/2" 38.5G HMX SDP PRO	EXP-4539-423T	HMX	38.0	50.8	71.1	477.9	1069.3

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		Type	Mass, g				mm
CHARGE 4-1/2" 38.5G HMX SDP PROEX	EXP-4539-424T	HMX	36.5	50.8	71.1	477.9	1280.2
CHARGE 4-1/2" 38.5G HMX SDP	EXP-4539-425T	HMX	38.5	50.8	58.4	503.2	1305.6
CHARGE 4-1/2" 38.5G HNS SDP PRO	EXP-4539-523T	HNS	38.5	50.8	71.1	494.2	688.3
CHARGE 4-1/2" 38.5G HNS SDP	EXP-4539-525T	HNS	38.5	50.8	71.1	503.2	980.4
CHARGE 4-1/2" 42G HSX	EXP-4542-721TB	HSX	42.0	53.6	66.9	513.0	1199.9
CHARGE 4-1/2" 45G HMX SDP	EXP-4545-421T	HMX	45.0	50.8	58.4	515.4	459.7
CHARGE, 5.125" 22G RDX GH	EXP-5120-331	RDX	20	44.0	52.4	217.0	492.8
CHARGE, 5.125" 22G HMX GH	EXP-5120-431	HMX	20	44.0	52.4	217.0	492.8
CHARGE, 5.125" 22G HNS GH	EXP-5120-531	HNS	20	44.0	52.4	217.0	492.8
CHARGE 6" 32G RDX DP	EXP-6032-308	RDX	31.0	53.6	61.7	434.3	591.8
CHARGE 6" 34G RDX CJD	EXP-6034-300	RDX	33.0	53.6	61.7	436.3	447.0
CHARGE 7" 38.5G RDX GH	EXP-7039-331	RDX	38.5	53.6	61.8	429.4	711.2
CHARGE 7" 38.5G RDX GH OUTLAW II	EXP-7039-332	RDX	37.5	53.6	61.7	423.5	812.8
CHARGE 7" 38.5G HMX GH	EXP-7039-431	HMX	38.5	53.6	61.8	429.4	711.2
CHARGE 5.5" 9G HMX DP FLOWGUN	FLG-5509-401T	HMX	9.0	38.1	27.9	89.5	164.6
CHARGE 2-3/4" 13G RDX	SCH-2713-371	RDX	13.0	37.6	43.0	147.0	101.6
CHARGE 2-3/4" 13G HMX	SCH-2713-471	HMX	13.0	37.6	43.0	147.0	101.6
CHARGE 2-3/4" 15G RDX	SCH-2715-371	RDX	15.0	37.6	43.0	144.0	127.0
CHARGE 2-3/4" 15G HMX	SCH-2715-471	HMX	15.0	37.6	43.0	144.0	127.0
CHARGE 2-3/4" 17G RDX	SCH-2717-371	RDX	17.0	37.6	43.0	142.0	127.0
CHARGE 2-3/4" 17G HMX	SCH-2717-471	HMX	17.0	37.6	43.0	142.0	127.0
CHARGE 3-1/8" 12G RDX HSD	SCH-3112-371	RDX	13.0	43.2	37.1	141.0	101.6
CHARGE 3-1/8" 12G HMX HSD	SCH-3112-471	HMX	13.0	43.2	37.1	141.0	101.6
CHARGE 3-1/8" 13G RDX	SCH-3113-371	RDX	13.0	44.5	52.7	269.0	101.6
CHARGE 3-1/8" 13G RDX	SCH-3113-372	RDX	13.0	44.5	52.7	271.0	139.7
CHARGE 3-1/8" 13G HMX	SCH-3113-471	HMX	13.0	44.5	52.7	269.0	101.6
CHARGE 3-1/8" 13G HMX	SCH-3113-472	HMX	13.0	44.5	52.7	271.0	139.7
CHARGE 3-1/8" 14G RDX	SCH-3114-371	RDX	14.0	44.5	52.7	252.0	114.3
CHARGE 3-1/8" 14G HMX	SCH-3114-471	HMX	14.0	44.5	52.7	252.0	114.3
CHARGE 3-1/8" 18G RDX	SCH-3118-371	RDX	17.0	44.5	52.7	255.0	152.4
CHARGE 3-1/8" 18G RDX	SCH-3118-371-H1	RDX	18.0	44.5	52.7	225.0	152.4
CHARGE 3-1/8" 18G RDX	SCH-3118-372	RDX	18.0	44.5	52.7	260.0	127.0
CHARGE 3-1/8" 18G RDX	SCH-3118-381	RDX	17.0	44.5	52.7	255.0	152.4
CHARGE 3-1/8" 18G HMX	SCH-3118-471	HMX	17.0	44.5	52.7	255.0	152.4
CHARGE 3-1/8" 18G HMX	SCH-3118-471-H1	HMX	18.0	44.5	52.7	225.0	152.4
CHARGE 3-1/8" 18G HMX	SCH-3118-472	HMX	18.0	44.5	52.7	260.0	127.0
CHARGE 3-1/8" 21G RDX	SCH-3121-371	RDX	19.0	44.5	52.7	257.0	152.4
CHARGE 3-1/8" 21G RDX	SCH-3121-371-H1	RDX	19.0	44.5	52.7	225.0	152.4
CHARGE 3-1/8" 21G RDX	SCH-3121-381	RDX	18.5	44.5	52.7	257.0	152.4
CHARGE 3-1/8" 21G HMX	SCH-3121-471	HMX	19.0	44.5	52.7	257.0	152.4
CHARGE 3-1/8" 21G HMX	SCH-3121-471-H1	HMX	19.0	44.5	52.7	225.0	152.4
CHARGE 3-1/8" 23G RDX	SCH-3123-371	RDX	23.0	44.5	52.7	257.0	152.4



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Product Name	Part Number / Manufacturer's Reference	Explosives		Diameter	Height	Total mass, g	Minimum Running Average Penetration in Concrete Target
		Type	Mass, g	mm	mm		mm
CHARGE 3-1/8" 23G RDX	SCH-3123-371-H1	RDX	21.0	44.5	52.7	230.0	152.4
CHARGE 3-1/8" 23G RDX	SCH-3123-372	RDX	23.0	44.5	52.7	263.0	165.1
CHARGE 3-1/8" 23G RDX	SCH-3123-381	RDX	23.0	44.5	52.7	263.0	152.4
CHARGE 3-1/8" 23G RDX	SCH-3123-382	RDX	23.0	44.5	52.7	258.0	165.1
CHARGE 3-1/8" 23G HMX	SCH-3123-471	HMX	23.0	44.5	52.7	257.0	152.4
CHARGE 3-1/8" 23G HMX	SCH-3123-471-H1	HMX	21.0	44.5	52.7	230.0	152.4
CHARGE 3-1/8" 23G HMX	SCH-3123-472	HMX	23.0	44.5	52.7	263.0	165.1

A2- Conditions particulières pour le stockage, la manipulation et l'utilisation

Special conditions for storage, manipulation and use

As specified by the manufacturer.

- . Shelf life 10 years
- . Limit temperatures for use 162°C / 1 hour max. for shaped charges with RDX
204°C / 1 hour max. for shaped charges with HMX
260°C / 1 hour max. for shaped charges with HNS
- . Limit temperatures for storage - 30°C to + 60°C / 90 % RH max

A3- Document(s) technique(s) d'examen

Technical document(s) of examination

- . INERIS report reference DSC-17-171084-09326A, PNEO-AgCE 5, dated October 23, 2017;
- . Hunting Titan Inc. application file, dated September 22, 2021.



ATTESTATION D'EXAMEN UE DE TYPE - MODULE B
EU-TYPE EXAMINATION CERTIFICATE - MODULE B

NUMÉRO D'ENREGISTREMENT : **0080.EXP.05.0048**
REGISTRATION NUMBER:

INDICE : **14**
ISSUE:

NOM DU (DES) PRODUIT(S) : **Shaped charges CE type 1503**
NAME OF THE PRODUCT(S): (see references in the table)

(SOUS-)TYPE GÉNÉRIQUE : **Charge creuse**
GENERIC (SUB-)TYPE: **Shaped charge**

CATEGORIE : **--**
CATEGORY:

FABRICANT : **Hunting Titan, Inc.**
MANUFACTURER: 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 must be communicated to INERIS.

Verneuil-en-Halatte, **10 décembre 2021**
Le Directeur Général de l'INERIS
The Chief Executive Officer of INERIS
Par délégation, le Responsable Certification
By delegation, the Certification Manager



A1- Description des produits couverts par ce certificat

Description of the product(s) covered by this certificate

The products already certified, as given in the previous issues of the certificate 0080.EXP.05.0048, are entered with the highlighted new items in the consolidated table below.

Highlighted = new charge

Product Name	Part Number / Manufacturer's Reference	Explosives		Diameter mm	Height mm	Total mass, g	Minimum Running Average Penetration in Concrete Target
		Type	Mass, g				mm
CHARGE 1-9/16" 3.2G RDX BH RTG	FLO-1603-310	RDX	3.0	24.1	26.5	43.7	73.7
CHARGE 1-9/16" 3.2G HMX BH RTG	FLO-1603-410	HMX	3.0	24.1	26.5	43.7	71.1
CHARGE 1-9/16" 3.2G HNS BH RTG	FLO-1603-510	HNS	3.0	24.1	26.5	43.7	53.3
CHARGE 1-9/16" 4G RDX BH RTG	FLO-1604-310	RDX	4.0	24.1	26.5	43.7	73.7
CHARGE 1-9/16" 4G HMX BH RTG	FLO-1604-410	HMX	4.0	24.1	26.5	43.7	68.6
CHARGE 1-9/16" 4G HNS BH RTG	FLO-1604-510	HNS	3.0	24.1	26.5	43.7	53.3
CHARGE 2" 6.5G RDX BH RTG	FLO-2106-310	RDX	6.0	31.5	35.6	85.8	81.3
CHARGE 2" 6.5G HMX BH RTG	FLO-2106-410	HMX	6.0	31.5	35.6	85.7	81.3
CHARGE 2" 6.5G HNS BH RTG	FLO-2106-510	HNS	5.5	31.5	35.6	85.7	81.3
CHARGE 2" 7G RDX BH RTG	FLO-2107-310	RDX	7.0	31.5	34.3	86.7	73.7
CHARGE 2" 7G HMX BH RTG	FLO-2107-410	HMX	7.0	31.5	34.3	86.7	73.7
CHARGE 2-1/2" 11G RDX BH	FLO-2511-310B	RDX	11.0	38.1	43.0	131.0	101.6
CHARGE 2-1/2" 11G RDX BH	FLO-2511-310B-H1	RDX	11.0	37.6	43.0	131.0	101.6
CHARGE 2-1/2" 11G HMX BH	FLO-2511-410B	HMX	11.0	38.1	43.0	137.0	101.6
CHARGE 2-1/2" 11G HMX BH	FLO-2511-410B-H1	HMX	11.0	37.6	43.0	131.0	101.6
CHARGE 2-1/2" 11G HNS BH	FLO-2511-510B	HNS	11.0	37.6	43.0	131.0	76.2
CHARGE 2-3/4" 15G RDX BH	FLO-2715-310B	RDX	15.0	38.1	43.0	135.7	88.9
CHARGE 2-3/4" 15G RDX BH	FLO-2715-310B-H1	RDX	15.0	37.6	42.7	135.7	88.9
CHARGE 2-3/4" 15G HMX BH	FLO-2715-410B	HMX	15.0	38.1	43.0	135.7	88.9
CHARGE 2-3/4" 15G HMX BH	FLO-2715-410B-H1	HMX	15.0	37.6	43.0	135.7	88.9
CHARGE 2-3/4" 15G HNS BH	FLO-2715-510B	HNS	15.0	37.6	43.0	135.7	66.8
CHARGE 3-1/8" 12G RDX BH	FLO-3112-310B	RDX	12.0	43.2	43.0	94.6	101.1
CHARGE 3-1/8" 12G RDX BH CFZ	FLO-3112-311CFZ	RDX	12.0	43.2	38.1	94.6	96.5
CHARGE 3-1/8" 12G HMX BH	FLO-3112-410B	HMX	12.0	43.2	43.0	94.6	101.1
CHARGE 3-1/8" 12G HMX BH CFZ	FLO-3112-411CFZ	HMX	12.0	43.2	38.1	94.6	96.5
CHARGE 3-1/8" 12G HNS BH	FLO-3112-510B	HNS	12.0	43.2	37.1	94.6	75.9
CHARGE 3-1/8" 12G HNS BH CFZ	FLO-3112-511CFZ	HNS	12.0	43.2	37.1	94.5	72.4
CHARGE 3-3/8" 22G RDX BH EXP	FLO-3323-310B	RDX	22.0	45.7	53.8	251.8	109.2
CHARGE 3-3/8" 22G RDX BH EXP	FLO-3323-310B-H1	RDX	22.0	44.5	52.7	251.8	109.2
CHARGE 3-3/8" 22G RDX BH CF	FLO-3323-311CF	RDX	22.0	44.5	52.7	251.8	109.2
CHARGE 3-3/8" 22G RDX BH CF	FLO-3323-311CF-H1	RDX	22.0	44.5	52.7	251.8	109.2
CHARGE 3-3/8" 22G HMX BH CF	FLO-3323-410B	HMX	21.0	45.7	53.8	251.8	109.2
CHARGE 3-3/8" 22G HMX BH CF	FLO-3323-410B-H1	HMX	22.0	44.5	52.7	251.8	109.2
CHARGE 3-3/8" 22G HMX BH CF	FLO-3323-411CF	HMX	22.0	44.5	52.7	251.8	109.2
CHARGE 3-3/8" 22G HMX BH CF	FLO-3323-411CF-H1	HMX	22.0	44.5	52.7	251.8	109.2
CHARGE 3-3/8" 22G HNS BH CF	FLO-3323-510B	HNS	22.0	45.7	53.8	251.8	109.2
CHARGE 3-3/8" 26G RDX BH BTY	FLO-3326-310B	RDX	25.0	45.7	53.8	211.8	172.7
CHARGE 4" 32G RDX BH EXP	FLO-4032-311B	RDX	32.0	53.6	61.8	392.7	172.7
CHARGE 4" 36G RDX BH EXP	FLO-4036-311B	RDX	36.0	53.6	61.8	396.6	160.0
CHARGE 4" 39G RDX BH	FLO-4039-311B	RDX	39.0	53.6	61.8	399.7	165.1
CHARGE 4" 39G RDX BH CF	FLO-4039-311CF	RDX	39.0	53.6	61.8	399.7	165.1
CHARGE 4" 39G HMX BH	FLO-4039-411B	HMX	39.0	53.6	61.8	399.7	165.1

Highlighted = new charge

Product Name	Part Number / Manufacturer's Reference	Explosives		Diameter mm	Height mm	Total mass, g	Minimum Running Average Penetration in Concrete Target mm
		Type	Mass, g				
CHARGE 4" 39G HMX BH	FLO-4039-411CF	HMX	39.0	53.6	61.8	399.7	165.1
CHARGE 4" 39G HNS BH	FLO-4039-511B	HNS	39.0	53.6	61.8	399.7	124.0
CHARGE 4" 39G HNS BH CF	FLO-4039-511CF	HNS	39.0	53.6	61.8	399.7	165.1
CHARGE 4-1/2" 21G RDX BH	FLO-4521-310B	RDX	21.0	44.0	52.4	192.3	109.2
CHARGE 4-1/2" 21G RDX BH CF	FLO-4521-310CF	RDX	21.0	44.0	52.4	192.3	116.8
CHARGE 4-1/2" 21G HMX BH	FLO-4521-410B	HMX	21.0	44.0	52.4	192.3	109.2
CHARGE 4-1/2" 24G RDX CJBH CF BTY	FLO-4524-311CF	RDX	23.0	43.2	52.4	230.0	165.1
CHARGE 4-1/2" 28G RDX SBH BTY	FLO-4528-341B	RDX	28.0	53.3	61.8	388.0	157.5
CHARGE 4-5/8" 17G RDX BH CFLD	FLO-4617-311CFZ	RDX	17.0	50.2	57.0	91.1	150.9
CHARGE 4-5/8" 20G RDX BH CFLD	FLO-4620-311CFZ	RDX	20.0	50.2	45.7	110.3	171.5
CHARGE 4-5/8" 20G RDX BH CFLD	FLO-4620-312CFZ	RDX	20.0	50.2	45.7	110.3	171.5
CHARGE 4-5/8" 20G HMX BH LD	FLO-4620-411Z	HMX	20.0	50.2	44.5	110.3	158.8
CHARGE 4-5/8" 20G HMX BH CFLD	FLO-4620-412CFZ	HMX	20.0	50.2	45.7	110.3	171.5
CHARGE 4-5/8" 21G RDX CJBH CF	FLO-4621-311CF	RDX	21.0	50.2	38.1	183.8	127.0
CHARGE 4-5/8" 21G HMX CJBH CF	FLO-4621-411CF	HMX	21.0	50.2	38.1	183.7	172.7
CHARGE 4-5/8" 23G RDX BH CFLD	FLO-4623-311CF	RDX	22.7	50.2	44.5	126.1	133.9
CHARGE 4-5/8" 23G RDX BH CFLD	FLO-4623-311CFZ	RDX	22.0	50.2	45.7	113.0	172.7
CHARGE, 4-5/8" 23G HMX BH CFLD BTY	FLO-4623-411CF	HMX	22.7	50.2	44.5	126.1	133.9
CHARGE 4-5/8" 23G HMX BH CFLD	FLO-4623-411CFZ	HMX	22.0	50.2	45.7	113.0	172.7
CHARGE, 4-5/8" 23G HNS BH CFLD BTY	FLO-4623-511CF	HNS	22.7	50.2	44.5	126.1	133.9
CHARGE 5" 28G RDX BH	FLO-5028-310B	RDX	28.0	53.9	43.8	233.4	165.1
CHARGE 5" 28G HMX BH	FLO-5028-410B	HMX	28.0	53.9	43.8	233.4	165.1
CHARGE 5" 30G RDX SBH LOW DEBRIS	FLO-5030-340Z	RDX	30.0	61.8	56.8	435.6	185.4
CHARGE 5-1/8" 28G RDX BH CFZ	FLO-5128-311CFZ	RDX	27.0	62.2	48.8	174.5	188.0
CHARGE 5-1/8" 28G HMX BH CFZ	FLO-5128-411CFZ	HMX	27.0	62.2	48.8	174.5	188.0
CHARGE 5-1/8" 30G RDX BH CF	FLO-5130-311CF	RDX	30.0	62.2	48.8	208.1	188.0
CHARGE 5-1/8" 30G HMX BH CF	FLO-5130-411CF	HMX	30.0	62.2	48.8	208.1	188.0
CHARGE 5-1/8" 30G HNS BH CF	FLO-5130-511CF	HNS	30.0	62.2	48.8	208.1	141.0
CHARGE, 5.125" 32G RDX BH CF	FLO-5132-311CF	RDX	32.0	62.2	48.8	211.0	172.7
CHARGE, 5.125" 32G RDX BH CFZ	FLO-5132-311CFZ	RDX	32.0	62.2	48.8	177.5	175.3
CHARGE, 5.125" 32G HMX BH CF	FLO-5132-411CF	HMX	32.0	62.2	48.8	211.0	172.7
CHARGE, 5.125" 32G HMX BH CFZ	FLO-5132-411CFZ	HMX	32.0	62.2	48.8	177.5	175.3
CHARGE, 5.125" 32G HNS BH	FLO-5132-511CF	HNS	32.0	62.2	48.8	211.0	172.7
CHARGE, 5.125" 32G HNS BH CFZ	FLO-5132-511CFZ	HNS	32.0	62.2	48.8	177.5	175.3
CHARGE 6" 34G RDX CJBH BRASS LINER	FLO-6034-310B	RDX	33.0	53.3	43.2	239.4	137.2
CHARGE 7" 38.5G RDX BH CF	FLO-7039-312CF	RDX	38.5	73.7	71.1	329.0	215.9
CHARGE 7" 38.5G RDX BH CFZ	FLO-7039-312CFZ	RDX	38.5	73.7	71.1	329.0	210.8
CHARGE 7" 38.5G HMX BH CF	FLO-7039-412CF	HMX	38.5	73.7	71.1	329.0	215.9
CHARGE 7" 38.5G HMX BH CFZ	FLO-7039-412CFZ	HMX	38.5	73.7	71.1	329.0	210.8
CHARGE 7" 45G RDX BH CF	FLO-7045-312CF	RDX	45.0	73.7	71.1	336.0	235.0
CHARGE 7" 45G HMX BH CF	FLO-7045-412CF	HMX	45.0	73.7	71.1	336.0	235.0

A2- Conditions particulières pour le stockage, la manipulation et l'utilisation
Special conditions for storage, manipulation and use

As specified by the manufacturer.

- . Shelf life 10 years
- . Limit temperatures for use 162°C / 1 hour max. for shaped charges with RDX
204°C / 1 hour max. for shaped charges with HMX
260°C / 1 hour max. for shaped charges with HNS
- . Limit temperatures for storage - 30°C to + 60°C / 90 % RH max

A3- Document(s) technique(s) d'examen
Technical document(s) of examination

- . INERIS report reference DSC-17-171084-09326A, PNEO-AgCE 5, dated October 23, 2017;
- . Hunting Titan Inc. application file, dated October 4, 2021.



ATTESTATION D'EXAMEN UE DE TYPE - MODULE B
EU-TYPE EXAMINATION CERTIFICATE - MODULE B

NUMÉRO D'ENREGISTREMENT : **0080.EXP.05.0049**
REGISTRATION NUMBER:

INDICE : **6**
ISSUE:

NOM DU (DES) PRODUIT(S) : **Shaped charges CE type 1504**
NAME OF THE PRODUCT(S): (see references in the table)

(SOUS-)TYPE GÉNÉRIQUE : **Charge creuse**
GENERIC (SUB-)TYPE: **Shaped charge**

CATEGORIE : **--**
CATEGORY:

FABRICANT : **Hunting Titan, Inc.**
MANUFACTURER: 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 must be communicated to INERIS.

Verneuil-en-Halatte, **10 décembre 2021**
Le Directeur Général de l'INERIS
The Chief Executive Officer of INERIS
Par délégation, le Responsable Certification
By delegation, the Certification Manager

Annexe à l'attestation d'examen UE de type
Appendix to the EU-type examination certificate
0080.EXP.05.0049
Indice
6
Issue
A1- Description des produits couverts par ce certificat
Description of the product(s) covered by this certificate

 The products already certified, as given in the previous issues of the certificate **0080.EXP.05.0049**, are entered with the highlighted new items in the consolidated table below.

Highlighted = new charge

Product Name	Part Number / Manufacturer's Reference	Explosives		Diameter mm	Height mm	Total mass, g	Minimum Running Average Penetration in Concrete Target
		Type	Mass, g				mm
CHARGE 2-3/4" 6G RDX DP PPG W/SLV	PPG-2706-300	RDX	5.0	31.5	36.4	101.1	276.9
CHARGE 2-3/4" 6G RDX DP PPG WO/SLV	PPG-2706-301	RDX	6.0	31.5	36.4	97.6	276.9
CHARGE 3-1/8" 11G RDX DP	PPG-3111-301	RDX	11.0	42.0	48.9	133.1	426.7
CHARGE 3-1/8" 11G RDX BH	PPG-3111-311	RDX	11.0	42.0	48.9	119.7	330.2
CHARGE 3-1/8" 11G RDX SDP PRO W/SLV	PPG-3111-320	RDX	10.5	42.0	48.9	133.1	426.7
CHARGE 3-1/8" 11G RDX SDP PPG WO/SLV	PPG-3111-321	RDX	11.0	42.0	48.9	133.1	426.7
CHARGE 3-1/8" 11G RDX GH PPG WO/SLV	PPG-3111-331	RDX	11.0	42.0	48.9	135.1	426.7
CHARGE 3-1/8" 11G HMX DP PPG WO/SLV	PPG-3111-401	HMX	11.0	42.0	48.9	128.7	475.0
CHARGE 3-1/8" 11G HMX BH	PPG-3111-411	HMX	10.0	42.0	48.9	119.7	330.2
CHARGE 3-1/8" 11G HMX SDP PPG WO/SLV	PPG-3111-421	HMX	11.0	42.0	48.9	128.7	426.7
CHARGE 3-1/8" 12G RDX BH PPG WO/SLV	PPG-3112-310B	RDX	12.0	36.4	36.4	127.4	86.4
CHARGE 3-1/8" 12G RDX SDP PPG WO/SLV	PPG-3112-321T	RDX	12.0	42.0	48.9	135.1	495.3
CHARGE 3-1/8" 12G HMX SDP PPG WO/SLV	PPG-3112-421T	HMX	12.0	42.0	48.9	130.7	495.3
CHARGE 4" 19G RDX DP PPG	PPG-4019-301	RDX	19.0	43.9	45.7	306.9	527.3
CHARGE 4" 19G RDX SDP PRO W/SLV	PPG-4019-320	RDX	18.0	43.9	45.7	292.1	617.2
CHARGE 4" 19G RDX SDP PRO WO/SLV	PPG-4019-321	RDX	18.0	43.9	45.7	292.1	617.2
CHARGE 4" 19G RDX SDP PPG WO/SLV	PPG-4019-321T	RDX	19.0	43.9	45.7	296.1	749.3
CHARGE 4" 22G RDX DP PPG WO/SLV	PPG-4022-301	RDX	22.0	43.9	45.7	309.9	576.6
CHARGE 4" 22G RDX BH PPG WO/SLV	PPG-4022-310B	RDX	22.0	53.3	65.5	289.6	137.2
CHARGE 4" 23G RDX SDP PRO W/SLV	PPG-4023-320T	RDX	21.0	43.9	45.7	302.8	751.8
CHARGE 4" 22.7G RDX SDP PPG WO/SLV	PPG-4023-321T	RDX	22.7	43.9	45.7	302.1	749.3
CHARGE 4" 22.7G HMX SDP PPG WO/SLV	PPG-4023-421T	HMX	22.7	43.9	45.7	299.8	751.8

A2- Conditions particulières pour le stockage, la manipulation et l'utilisation
Special conditions for storage, manipulation and use

As specified by the manufacturer.

- . Shelf life 10 years
- . Limit temperatures for use 162°C / 1 hour max. for shaped charges with RDX
204°C / 1 hour max. for shaped charges with HMX
260°C / 1 hour max. for shaped charges with HNS
- . Limit temperatures for storage - 30°C to + 60°C / 90 % RH max

A3- Document(s) technique(s) d'examen
Technical document(s) of examination

- . INERIS report reference DSC-16-164827-11445A, PNEO-AgCE 5, dated December 2, 2016;
- . Hunting Titan Inc. application file, dated September 22, 2021.



ATTESTATION D'EXAMEN UE DE TYPE - MODULE B
EU-TYPE EXAMINATION CERTIFICATE - MODULE B

NUMÉRO D'ENREGISTREMENT : **0080.EXP.05.0051** INDICE : **11**
REGISTRATION NUMBER: *ISSUE:*

NOM DU (DES) PRODUIT(S) : **Shaped charges CE type 1506**
NAME OF THE PRODUCT(S): (see references in the table)

(SOUS-)TYPE GÉNÉRIQUE : **Charge creuse**
GENERIC (SUB-)TYPE: *Shaped charge*

CATEGORIE : **--**
CATEGORY:

FABRICANT : **Hunting Titan, Inc.**
MANUFACTURER: 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 must be communicated to INERIS.

Verneuil-en-Halatte, **10 décembre 2021**
Le Directeur Général de l'INERIS
The Chief Executive Officer of INERIS
Par délégation, le Responsable Certification
By delegation, the Certification Manager

Annexe à l'attestation d'examen UE de type
Appendix to the EU-type examination certificate
0080.EXP.05.0051
Indice
11
Issue
A1- Description des produits couverts par ce certificat
Description of the product(s) covered by this certificate

 The products already certified, as given in the previous issues of the certificate **0080.EXP.05.0051**, are entered with the highlighted new items in the consolidated table below.

Highlighted = new charge

Product Name	Part Number / Manufacturer's Reference	Explosives		Diameter mm	Height mm	Total mass, g	Minimum Running Average Penetration in Concrete Target
		Type	Mass, g				mm
CHARGE 1-3/8 1.8G RDX CIR 1/2"	CIR-1302-3C50	RDX	2.0	19.9	22.4	22.3	1.78
CHARGE 1-3/8 1.8G RDX CIR 5/8"	CIR-1302-3C63	RDX	1.8	19.9	22.4	24.3	1.78
CHARGE 1-3/8 2G RDX CIR 1/4"	CIR-1302-3T251	RDX	2.0	19.9	22.4	24.0	1.78
CHARGE 1-3/8 2G RDX CIR 3/8"	CIR-1302-3T381	RDX	2.0	19.9	22.4	22.4	1.78
CHARGE 1-3/8 1.8G HMX CIR 1/2"	CIR-1302-4C50	HMX	1.8	19.9	22.4	24.8	1.78
CHARGE 1-3/8 1.8G HMX CIR 5/8"	CIR-1302-4C63	HMX	1.8	19.9	22.4	24.3	1.78
CHARGE 1-3/8 1.8G HMX CIR 1/4"	CIR-1302-4T25	HMX	1.8	19.9	22.4	27.3	1.78
CHARGE 1-3/8 2G HMX CIR 1/4"	CIR-1302-4T251	HMX	2.0	19.9	22.4	24.0	1.78
CHARGE 1-3/8 1.8G HMX CIR 3/8"	CIR-1302-4T38	HMX	2.0	19.9	22.4	27.3	1.73
CHARGE 1-3/8 2G HMX CIR 3/8"	CIR-1302-4T381	HMX	2.0	19.9	22.4	22.4	1.78
CHARGE 1-3/8 1.8G HNS CIR 5/8"	CIR-1302-5C63	HNS	2.0	19.9	22.4	24.3	1.78
CHARGE 1-9/16 3.2G RDX CIR 1/2"	CIR-1603-3C501	RDX	3.2	24.1	26.5	44.2	1.78
CHARGE 1-9/16 3.5G RDX CIR 5/8"	CIR-1603-3C631	RDX	3.5	24.1	26.5	44.5	1.78
CHARGE 1-9/16 3.2G RDX CIR 1/4"	CIR-1603-3T251	RDX	3.0	24.1	26.5	42.6	1.78
CHARGE 1-9/16 3.5G RDX CIR 3/8"	CIR-1603-3T381	RDX	3.5	24.1	26.5	44.5	1.78
CHARGE 1-9/16 3.2G HMX CIR 1/2"	CIR-1603-4C50	HMX	3.2	24.1	26.5	50.4	1.78
CHARGE 1-9/16 3.2G HMX CIR 1/2"	CIR-1603-4C501	HMX	3.2	24.1	26.4	44.2	1.78
CHARGE 1-9/16 3.2G HMX CIR 5/8"	CIR-1603-4C63	HMX	3.2	24.1	26.5	46.4	1.78
CHARGE 1-9/16 3.5G HMX CIR 5/8"	CIR-1603-4C631	HMX	3.5	24.1	26.4	44.5	1.78
CHARGE 1-9/16 3.2G HMX CIR 1/4"	CIR-1603-4T25	HMX	3.5	24.1	26.5	53.4	1.78
CHARGE 1-9/16 3G HMX CIR 1/4"	CIR-1603-4T251	HMX	3.0	24.1	26.4	42.6	1.78
CHARGE 1-9/16 3.2G HMX CIR 3/8"	CIR-1603-4T38	HMX	3.5	24.1	26.5	53.4	1.78
CHARGE 1-9/16 3.5G HMX CIR 3/8"	CIR-1603-4T381	HMX	3.5	24.1	26.4	44.5	1.78
CHARGE, 1-9/16 3.2G HNS CIR CSG 1/2"	CIR-1603-5C50	HNS	3.2	24.1	26.5	48.7	1.78
CHARGE 1-9/16 3.5G HNS CIR 1/2"	CIR-1603-5C501	HNS	3.5	24.1	26.5	44.5	1.78
CHARGE, 1-9/16 3.2G HNS CIR CSG 5/8"	CIR-1603-5C63	HNS	3.2	24.1	26.5	45.7	0.51
CHARGE, 1-9/16 3.2G HNS CIR TBG 1/4"	CIR-1603-5T25	HNS	3.2	24.1	26.5	52.7	0.51
CHARGE 1-9/16 3.5G HNS CIR 1/4"	CIR-1603-5T251	HNS	3.5	24.1	26.5	44.5	1.78
CHARGE 1-9/16 3.2G HNS CIR 3/8"	CIR-1603-5T38	HNS	3.4	24.1	26.5	53.4	1.78
CHARGE 1-9/16 3.5G HNS CIR 3/8"	CIR-1603-5T381	HNS	3.5	24.1	26.5	44.5	1.78
CHARGE 2" 6.5G HMX CIR 1/2"	CIR-2106-4C50	HMX	6.5	31.5	34.3	106.4	1.78
CHARGE 2" 6.5G HMX CIR 5/8"	CIR-2106-4C63	HMX	6.5	31.5	34.3	106.4	1.78
CHARGE 2" 6.5G HMX CIR 1/4"	CIR-2106-4T25	HMX	6.5	31.5	34.3	106.4	1.78
CHARGE 2" 6.5G HMX CIR 3/8"	CIR-2106-4T38	HMX	7.0	31.5	34.3	106.4	1.78
CHARGE, 2" 6.5G HNS CIRC CSG 1/2"	CIR-2106-5C50	HNS	6.5	31.5	34.3	103.4	2.03
CHARGE 2" 6.5G HNS CIR 5/8"	CIR-2106-5C63	HNS	6.5	31.5	34.3	106.4	1.78
CHARGE, 2" 6.5G HNS CIRC TBG 1/4"	CIR-2106-5T25	HNS	6.5	31.5	34.3	103.4	1.27
CHARGE, 2" 6.5G HNS CIRC TBG 3/8"	CIR-2106-5T38	HNS	6.5	31.5	34.3	103.4	1.78
CHARGE 2" 7G RDX CIR 1/2"	CIR-2107-3C501	RDX	7.0	31.5	34.3	88.0	1.78
CHARGE 2" 7G RDX CIR 5/8"	CIR-2107-3C631	RDX	7.0	31.5	34.3	89.0	1.78
CHARGE 2" 7G RDX CIR 1/4"	CIR-2107-3T251	RDX	7.0	31.5	34.3	86.0	2.54
CHARGE 2" 7G RDX CIR 3/8"	CIR-2107-3T381	RDX	7.0	31.5	34.3	87.0	1.78

Annexe à l'attestation d'examen UE de type
0080.EXP.05.0051
Indice
11
Appendix to the EU-type examination certificate
Issue

Highlighted = new charge

Product Name	Part Number / Manufacturer's Reference	Explosives		Diameter mm	Height mm	Total mass, g	Minimum Running Average Penetration in Concrete Target
		Type	Mass, g				mm
CHARGE 2" 7G HMX CIR 1/2"	CIR-2107-4C501	HMX	7.0	31.5	34.3	88.0	1.78
CHARGE 2" 7G HMX CIR 5/8"	CIR-2107-4C631	HMX	7.0	31.5	34.3	89.0	1.78
CHARGE 2" 7G HMX CIR 1/4"	CIR-2107-4T251	HMX	7.0	31.5	34.3	86.0	2.54
CHARGE 2" 7G HMX CIR 3/8"	CIR-2107-4T381	HMX	7.0	31.5	34.3	88.0	1.78
CHARGE 2" 7G HNS CIR 1/2"	CIR-2107-5C501	HNS	7.0	31.5	34.3	89.0	1.78
CHARGE 2" 7G HNS CIR 1/4"	CIR-2107-5T251	HNS	7.0	31.5	34.3	87.0	1.78
CHARGE 2" 7G HNS CIR 3/8"	CIR-2107-5T381	HNS	7.0	31.5	34.3	88.0	1.78
CHARGE 4-1/2" 22G HMX 9-5/8 K0360 CIR	CIR-4522-48961	HMX	22.0	50.2	44.5	132.0	4.32
CHARGE 5.5" 7G HMX CIR 1/4" FLOWGUN	FLG-5507-4F251	HMX	7.0	31.5	29.2	76.0	4.57

A2- Conditions particulières pour le stockage, la manipulation et l'utilisation
Special conditions for storage, manipulation and use

As specified by the manufacturer.

- . Shelf life 10 years
- . Limit temperatures for use 162°C / 1 hour max. for shaped charges with RDX
204°C / 1 hour max. for shaped charges with HMX
260°C / 1 hour max. for shaped charges with HNS
- . Limit temperatures for storage - 30°C to + 60°C / 90 % RH max

A3- Document(s) technique(s) d'examen
Technical document(s) of examination

- . INERIS report reference DSC-17-171084-09326A, PNEO-AgCE 5, dated October 23, 2017;
- . Hunting Titan Inc. application file, dated October 7, 2021.



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

Hunting Energy Services
Level 25, 108 St. Georges Terrace
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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



Safety Data Sheet

Product Name: Shaped Charges and Tubing/Casing Cutters

*** 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 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 ***

	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



Safety Data Sheet

Product Name: Shaped Charges and Tubing/Casing Cutters

	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	0.5 mg/m ³	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

m³ = 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.



Safety Data Sheet

Product Name: Shaped Charges and Tubing/Casing Cutters

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/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

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: 0.05mg/m³ TWA
OSHA: 30 µg/m³ Action level (Poison, See 29 CFR 1910.1025); 50 µg/m³ TWA
NIOSH: 0.050 mg/m³ TWA



Safety Data Sheet

Product Name: Shaped Charges and Tubing/Casing Cutters

Tungsten (7440-33-7)

ACGIH: 5 mg/m³ TWA
10 mg/m³ STEL
OSHA: 5 mg/m³ TWA
10 mg/m³ STEL
NIOSH: 5 mg/m³ TWA
10 mg/m³ STEL

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); 0.2 mg/m³ TWA (fume)

Graphite (7782-42-5)

ACGIH: 2 mg/m³ TWA (all forms except graphite fibers, respirable fraction)
OSHA: 2.5 mg/m³ TWA (natural, respirable dust); 10 mg/m³ TWA (synthetic, total dust); 5 mg/m³ TWA (synthetic, respirable fraction)
NIOSH: 2.5 mg/m³ 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 and 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		



Safety Data Sheet

Product Name: Shaped Charges and Tubing/Casing Cutters

*** 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, 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)



Safety Data Sheet

Product Name: Shaped Charges and Tubing/Casing Cutters

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

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]	

Cyclotetramethylenetetranitramine (HMX) (2691-41-0)

Test & Species

96 Hr LC50 Pimephales promelas	8.8-26 mg/L [static]	Conditions
96 Hr LC50 Lepomis macrochirus	>32 mg/L [static]	
96 Hr LC50 Oncorhynchus mykiss	>32 mg/L [static]	

Lead (7439-92-1)

Test & Species

96 Hr LC50 Cyprinus carpio	0.44 mg/L [semi-static]	Conditions
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	



Safety Data Sheet

Product Name: Shaped Charges and Tubing/Casing Cutters

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

*** 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.



Safety Data Sheet

Product Name: Shaped Charges and Tubing/Casing Cutters

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



Fiche de données de sécurité

Nom du produit : Charges creuses et coupe-tubes

*** 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

Numéro d'urgence Chemtrec : 800-424-9300

Hunting Energy Services

Level 25, 108 St. Georges Terrace

Perth, WA 6000

Téléphone : 0428 877 632

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 : Charges creuses et coupe-tubes

*** 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. 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 ou des oxydes d'azote.

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 ***

	Charges creuses, explosif RDX			Charges creuses, explosive HMX		
	OSHA PEL	ACGIH TLV	N° C.A.S.	OSHA PEL	ACGIH TLV	N° C.A.S.
Cyclotriméthylène-trinitramine (RDX)	NE	0,5 mg/m ³	121-82-4	NA	NA	NA
Cyclotétraméthylène-tétranitramine (HMX)	NA	NA	2691-41-0	NE	NE	2691-41-0
Cire de désensibilisation	NE	NE	NA	NE	NE	NA
Acier traité contre la corrosion	NE	NE	NE	NE	NE	NE
Graphite	15 mpppc	2 mg/m ³	7782-42-5	15 mpppc	2 mg/m ³	7782-42-5
Cuivre	1 mg/m ³	1 mg/m ³	7440-50-8	1 mg/m ³	1 mg/m ³	7440-50-8
Plomb	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
Tungstène	NE	5 mg/m ³	7440-33-7	NE	5 mg/m ³	7440-33-7



Fiche de données de sécurité

Nom du produit : Charges creuses et coupe-tubes

	Charges creuses, explosif HNS			Charges creuses, explosive PYX		
	OSHA PEL	ACGIH TLV	N° C.A.S.	OSHA PEL	ACGIH TLV	N° C.A.S.
Hexanitrostilbène (HNS)	NE	0,5 mg/m ³	20062-22-0	NA	NA	NA
2, 6-Bis (Picrylamino)-3, 5-Dinitropyridine (PYX)	NA	NA	NA	NE	NE	38082-89-2
Cire de désensibilisation	NE	NE	NA	NE	NE	NA
Acier traité contre la corrosion	NE	NE	NA	NE	NE	NA
Graphite	15 mpppc	2 mg/m ³	7782-42-5	15 mpppc	2 mg/m ³	7782-42-5
Cuivre	1 mg/m ³	1 mg/m ³	7440-50-8	1 mg/m ³	1 mg/m ³	7440-50-8
Plomb	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
Tungstène	NE	5 mg/m ³	7440-33-7	NE	5 mg/m ³	7440-33-7

NE = Not établi

NA = Non applicable

m³ = mètre cube

mpppc = Million de particules par pied cube

*** 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.

Détonation possible en cas d'impact, de flamme ou de chaleur. La détonation produit des fragments dangereux.
Risque d'explosion en cas d'incendie.

Produits de combustion dangereux

Les gaz dangereux comme les oxydes d'azote peuvent causer un incendie.

Moyens d'extinction

Aucun

Moyens d'extinction inappropriés

Aucun

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

Mesures d'urgence

Isoler la zone. Éloigner le personnel non indispensable.



Fiche de données de sécurité

Nom du produit : Charges creuses et coupe-tubes

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

*** 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

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

Cyclotétraméthylènetétranitramine (HMX) (2691-41-0)

ACGIH : Non établi

OSHA : Non établi

NIOSH : Non établi

Hexanitrostilbène (HNS) (20062-22-0)

ACGIH : Non établi

OSHA : Non établi

NIOSH : Non établi

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

ACGIH : Non établi

OSHA : Non établi

NIOSH : Non établi

Plomb (7439-92-1)

ACGIH : 0,05mg/m³ TWA

OSHA : 30 µg/m³ Niveau d'action (Poison, Cf. 29 CFR 1910.1025); 50 µg/m³ TWA

NIOSH : 0,050 mg/m³ TWA



Fiche de données de sécurité

Nom du produit : Charges creuses et coupe-tubes

Tungstène (7440-33-7)

ACGIH : 5 mg/m³ TWA
10 mg/m³ STEL
OSHA : 5 mg/m³ TWA
10 mg/m³ STEL
NIOSH : 5 mg/m³ TWA
10 mg/m³ STEL

Cuivre (7440-50-8)

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

Graphite (7782-42-5)

ACGIH : 2 mg/m³ TWA (toutes formes sauf fibres de graphite, fraction respirable)
OSHA : 2,5 mg/m³ TWA (naturel, poussière respirable); 10 mg/m³ TWA (synthétique, poussière totale); 5 mg/m³ TWA (synthétique, fraction respirable)
NIOSH : 2.5 mg/m³ TWA (naturel, poussière respirable)

Mesures techniques

Non nécessaires 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.

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

Aspect :	Charges explosives formées	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 (H ₂ O) :	Sans objet	Densité relative :	Sans objet
Taux d'évaporation :	Sans objet	COV :	Sans objet
Coefficient octanol/H ₂ O :	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.



Fiche de données de sécurité

Nom du produit : Charges creuses et coupe-tubes

Réaction dangereuse potentielle

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

Conditions à éviter

Explose en cas d'impact, friction, flamme, chaleur ou déchargé électrostatique.

Produits incompatibles

Acides and alcalis.

Produits de décomposition dangereux

La détonation produit des fragments dangereux. Les gaz émis peuvent contenir du monoxyde de carbone ou des oxydes d'azote.

* * * Section 11 – Données toxicologiques * * *

Toxicité aiguë

A : Informations générales sur le produit

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

B : Analyse des composants - LD50/LC50

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

LD50 (rat, orale) 100 mg/kg

Cyclotétraméthylènetétranitramine (HMX) (2691-41-0)

LD50 (rat, orale) 6 490 mg/kg; LD50 (rat, cutanée) >5 g/kg; LD50 (lapin, cutanée) 630 mg/kg

Hexanitrostilbène (HNS) (20062-22-0)

Non établi

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

LD50 (rat, orale) 5 g/kg

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.

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 cancérrogénicité pour l'Homme



Fiche de données de sécurité

Nom du produit : Charges creuses et coupe-tubes

Plomb (7439-92-1)

- ACGIH : A3 : carcinogène confirmé pour les animaux et pertinence inconnue pour l'Homme
OSHA : 30 µg/m³ Niveau d'action (Poison, Cf. 29 CFR 1910.1025); 50 µg/m³ TWA
NTP : Effet carcinogène chez l'humain raisonnablement prévisible (choix du carcinogène possible)
CIRC : Monographe 87 [2006] (évalue les composés non-organiques du plomb dans le Groupe 2A et les composés organiques du plomb en Groupe 3) (Groupe 2A (probablement carcinogène 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 unique 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]	

Cyclotétraméthylènetétranitramine (HMX) (2691-41-0)

Test et espèces

96 Hr LC50 Pimephales promelas	8,8-26 mg/L [statique]	Conditions Agés de 7 jours
96 Hr LC50 Lepomis macrochirus	>32 mg/L [statique]	
96 Hr LC50 Oncorhynchus mykiss	>32 mg/L [statique]	

Lead (7439-92-1)

Test et espèces

96 Hr LC50 Cyprinus carpio	0,44 mg/L [semi- statique]	Conditions
96 Hr LC50 Oncorhynchus mykiss	1.17 mg/L [écoulement]	
96 Hr LC50 Oncorhynchus mykiss	1,32 mg/L [statique]	
48 Hr EC50 puce d'eau	600 µg/L	



Fiche de données de sécurité

Nom du produit : Charges creuses et coupe-tubes

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 [semi- statique]
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 : Charges, formées

N ° UN : 0440 Classe de risque : 1.4D

*** 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 : Charges creuses et coupe-tubes

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
Cyclotétraméthylènetétranitramine (HMX)	2691-41-0	Non	Non	Non	Oui	Non	Non
Plomb	7439-92-1	Oui	Oui	Oui	Oui	Oui	Non
Tungstène	7440-33-7	Oui	Oui	Oui	Oui	Oui	Non
Cuivre	7440-50-8	Oui	Oui	Oui	Oui	Oui	Non
Graphite	7782-42-5	Oui	Oui	Oui	Oui	Oui	Non

Les indications ci-dessous se basent sur le Décret d'application de 1986 sur la sécurité de l'eau potable et les substances toxiques de l'État de Californie (Proposition 65)

ATTENTION ! Ce produit contient des agents chimiques connus dans l'État de la Californie pour causer le cancer.
ATTENTION ! Ce produit contient des agents chimiques connus dans l'État de la Californie pour ses effets sur la reproduction et le développement.

Analyse des composants - SIMDUT LDI

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

Composant	N° CAS	Concentration minimale
Plomb	7439-92-1	0,1 %
Tungstène	7440-33-7	1 %
Cuivre	7440-50-8	1 %

Informations réglementaires supplémentaires Analyse des composants - Inventaire

Composant	N° CAS	TSCA	CAN	EEC
Cyclo-triméthylène-trinitramine (RDX)	121-82-4	Oui	DSL	EINECS
Hexanitrostilbène (HNS)	20062-22-0	Oui	NDSL	EINECS
Cyclotétraméthylènetétranitramine (HMX)	2691-41-0	Oui	DSL	EINECS
2, 6-Bis (Picrylamino)-3, 5-Dinitropyridine (PYX)	38082-89-2	Oui	NDSL	Non
Plomb	7439-92-1	Oui	DSL	EINECS
Tungstène	7440-33-7	Oui	DSL	EINECS
Cuivre	7440-50-8	Oui	DSL	EINECS
Graphite	7782-42-5	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

Fin de page



Sikkerhetsdatablad

Produktnavn: Rettede ladninger og produksjonsrør-/fôringsrørkuttere

***** 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

Chemtrec Nødnummer + 1 800 424 9300

Hunting Energy Services

Level 25, 108 St. Georges Terrace

Perth, WA 6000

Telefon: 0428 877 632

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

Sikkerhetsdatablad

Produktnavn: Retteede ladninger og produksjonsrør-/fôringsrørkuttere

*** 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. 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 nitrogenoksid.

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 ***

	Retteede ladninger, RDX-sprengstoff			Retteede ladninger, HMX-sprengstoff		
	OSHA PEL-verdi	ACGIH TLV-verdi	CAS- nr	OSHA PEL-verdi	ACGIH TLV-verdi	CAS- nr
Cyklotetrametylentranitramin (RDX)	IF	0,5 mg/m ³	121-82-4	IA	IA	IA
Cyklotetrametylentranitramin (HMX)	IA	IA	2691-41-0	IF	IF	2691-41-0
Desensibiliserende voks	IF	IF	IA	IF	IF	IA
Rustbestandig stål	IF	IF	IF	IF	IF	IF
Grafit	15 mppcf	2 mg/m ³	7782-42-5	15 mppcf	2 mg/m ³	7782-42-5
Kobber	1 mg/m ³	1 mg/m ³	7440-50-8	1 mg/m ³	1 mg/m ³	7440-50-8
Bly	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
Wolfram	IF	5 mg/m ³	7440-33-7	IF	5 mg/m ³	7440-33-7



Sikkerhetsdatablad

Produktnavn: Rettede ladninger og produksjonsrør-/fôringsrørkuttere

	Rettede ladninger, HNS-sprengstoff			Rettede ladninger, PYX-sprengstoff		
	OSHA PEL-verdi	ACGIH TLV-verdi	CAS- nr	OSHA PEL-verdi	ACGIH TLV-verdi	CAS- nr
Heksanitrostilben (HNS)	IF	0,5 mg/m ³	20062-22-0	IA	IA	IA
2,6-Bis(pikrylamino)-3,5-dinitropyridin (PYX)	IA	IA	IA	IF	IF	38082-89-2
Desensibiliserende voks	IF	IF	IA	IF	IF	IA
Rustbestandig stål	IF	IF	IA	IF	IF	IA
Grafitt	15 mppcf	2 mg/m ³	7782-42-5	15 mppcf	2 mg/m ³	7782-42-5
Kobber	1 mg/m ³	1 mg/m ³	7440-50-8	1 mg/m ³	1 mg/m ³	7440-50-8
Bly	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
Wolfram	IF	5 mg/m ³	7440-33-7	IF	5 mg/m ³	7440-33-7

IF = ikke fastslått

IA = ikke aktuelt

m³ = kubikkmeter

mppcf = millioner partikler per kubikkfot

*** 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. Brannslukkingstiltak ***

Generell brannfare

Se avsnitt 9 for opplysninger om antennelighet.

Kan detonere ved eksponering for slag, ild eller varme. Detonasjon forårsaker farlige fragmenter.

Eksplisjonsfarlig ved brann.

Farlige brennbare produkter

Farlige gasser, inkludert nitrogenoksider, kan dannes ved brann.

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 og statisk elektrisitet. Opprydding: Fei med redskaper som ikke genererer gnister.

Nødtiltak

Isoler området. Hold nødvendig personell borte.



Sikkerhetsdatablad

Produktnavn: Rttede ladninger og produksjonsrør-/fôringsrørkuttere

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.

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

Cyklotetrametylentetranitramin (HMX) (2691-41-0)

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

Heksanitrostilben (HNS) (20062-22-0)

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

2,6-Bis(pikrylamino)-3,5-dinitropyridin (PYX) (38082-89-2)

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

Bly (7439-92-1)

ACGIH: 0,05 mg/m³ TWA
OSHA: 30 µg/m³ Tiltaksnivå (gift, se 29 CFR 1910.1025); 50 µg/m³ TWA
NIOSH: 0,050 mg/m³ TWA



Sikkerhetsdatablad

Produktnavn: Rettede ladninger og produksjonsrør-/fôringsrørkuttere

Wolfram (7440-33-7)

ACGIH: 5 mg/m³ TWA
10 mg/m³ STEL
OSHA: 5 mg/m³ TWA
10 mg/m³ STEL
NIOSH: 5 mg/m³ TWA
10 mg/m³ STEL

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); 0,2 mg/m³ TWA (damp)

Grafitt (7782-42-5)

ACGIH: 2 mg/m³ TWA (alle former unntatt grafittfibre, pustbar del)
OSHA: 2,5 mg/m³ TWA (naturlig, pustbart støv); 10 mg/m³ TWA (syntetisk, samlet støv); 5 mg/m³ TWA (syntetisk, pustbar del)
NIOSH: 2.5 mg/m³ TWA (naturlig, pustbart støv)

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:	Eksplorative rettete ladninger	Lukt:	Ingen IA
Fysisk tilstand:	Fast stoff	pH:	Ikke fastslått
Damptrykk:	Ikke fastslått	Damp tetthet:	Ikke fastslått
Kokepunkt:	Ikke fastslått	Smeltepunkt:	Ikke fastslått
Løselighet (H ₂ O):	Ikke fastslått	Egenvekt:	Ikke fastslått
Fordampningshastighet:	Ikke fastslått	VOC:	Ikke fastslått
Oktanol/H ₂ O-koeff.:	Ikke fastslått	Flammepunkt:	Ikke fastslått
Flammepunktmetode:	Ikke fastslått	Øvre antenelighetsgrense (UFL):	Ikke fastslått
Nedre antenelighetsgrense (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, varme eller røff håndtering.



Sikkerhetsdatablad

Produktnavn: Rettede ladninger og produksjonsrør-/fôringsrørkuttere

Forhold som skal unngås

Detonerer ved slag, friksjon, ild, varme eller elektrostatisk utladning.

Stoffer som skal unngås

Syrer og alkalier.

Farlige nedbrytningsprodukter

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

* * * 11. Toksikologiske opplysninger * * *

Akutt toksisitet

A: Generelle produktopplysninger

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

B: Komponentanalyse – LD50/LC50

Cyklotetrametylentetranitramin (RDX) (121-82-4)

LD50 oral, rotte 100 mg/kg

Cyklotetrametylentetranitramin (HMX) (2691-41-0)

LD50 oral, rotte 6490 mg/kg; LD50 dermal, rotte > 5 g/kg; LD50 dermal, kanin 630 mg/kg

Heksanitrostilben (HNS) (20062-22-0)

Ikke fastslått

2,6-Bis(pikrylamino)-3,5-dinitropyridin (PYX) (38082-89-2)

LD50 oral, rotte > 5 g/kg

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.

B: Kreftfremkallende egenskaper i komponenter

Cyklotetrametylentetranitramin (RDX) (121-82-4)

ACGIH: A4 – ikke klassifisert som kreftfremkallende hos mennesker

Bly (7439-92-1)

Sikkerhetsdatablad

Produktnavn: Rttede ladninger og produksjonsrør-/fôringsrørkuttere

ACGIH:	A3 – bekreftet som kreftfremkallende hos dyr, med ukjent relevans for mennesker
OSHA:	30 µg/m ³ Tiltaksnivå (gift, se 29 CFR 1910.1025); 50 µg/m ³ TWA
NTP:	Rimelig ventet å være kreftfremkallende hos mennesker (mulig utvalgt kreftfremkallende stoff)
IARC:	Monograph 87 [2006] (evaluerer uorganiske blyforbindelser som gruppe 2A og organiske blyforbindelser som gruppe 3) (gruppe 2A (mulig 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 gjentatt eksponering.

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]	

Cyklotetrametylentetranitramin (HMX) (2691-41-0)

Test og dyrearter

		Forhold
96 timer LC50 Pimephales promelas	8,8-26 mg/L [statisk]	7 dager
96 timer LC50 Lepomis macrochirus	>32 mg/L [statisk]	
96 timer LC50 Oncorhynchus mykiss	>32 mg/L [statisk]	

Bly (7439-92-1)

Test og dyrearter

		Forhold
96 timer LC50 Cyprinus carpio	0,44 mg/L [semistatisk]	
96 timer LC50 Oncorhynchus mykiss	1.17 mg/L [gjennomstrømning]	
96 timer LC50 Oncorhynchus mykiss	1,32 mg/L [statisk]	
48 timer EC50 vannloppe	600 µg/L	

Kobber (7440-50-8)

Sikkerhetsdatablad

Produktnavn: Rettede ladninger og produksjonsrør-/fôringsrørkuttere

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]
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: Ladninger, rettede

UN-nr.: 0440 Fareklasse: 1.4D

*** 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

Sikkerhetsdatablad

Produkt navn: Rettede ladninger og produksjonsrør-/fôringsrørkuttere

Komponentanalyse – delstatsnivå

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

Komponent	CAS	California	Massachusetts	Minnesota	New Jersey	Pennsylvania	Rhode Island
Cyklotetrametylentetranitramin (RDX)	121-82-4	Ja	Ja	Ja	Ja	Ja	Nei
Cyklotetrametylentetranitramin (HMX)	2691-41-0	Nei	Nei	Nei	Ja	Nei	Nei
Bly	7439-92-1	Ja	Ja	Ja	Ja	Ja	Nei
Wolfram	7440-33-7	Ja	Ja	Ja	Ja	Ja	Nei
Kobber	7440-50-8	Ja	Ja	Ja	Ja	Ja	Nei
Grafitt	7782-42-5	Ja	Ja	Ja	Ja	Ja	Nei

Følgende uttalelse(r) er gitt i California Safe Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65):

ADVARSEL! Dette produktet inneholder en kjemikalie som delstatsmyndighetene i California vet forårsaker kreft.
ADVARSEL! Dette produktet inneholder en kjemikalie som delstatsmyndighetene i California vet påvirker forplanthgsevnen/utviklingen.

Komponentanalyse – WHMIS IDL

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

Komponent	CAS-nr.	Minimumskonsentrasjon
Bly	7439-92-1	0,1 %
Wolfram	7440-33-7	1 %
Kobber	7440-50-8	1 %

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
Cyklotetrametylentetranitramin (HMX)	2691-41-0	Ja	DSL	EINECS
2,6-Bis(pikrylamino)-3,5-dinitropyridin (PYX)	38082-89-2	Ja	NDSL	Nei
Bly	7439-92-1	Ja	DSL	EINECS
Wolfram	7440-33-7	Ja	DSL	EINECS
Kobber	7440-50-8	Ja	DSL	EINECS
Grafitt	7782-42-5	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: Cargas huecas y cortadores de tubo/carcasa

*** 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: Cargas huecas y cortadores de tubo/carcasa

*** 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. No fumar.

No intente desensamblar.

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

Después del 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 óxido de nitrógeno.

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 está 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.



Hoja de Datos de Seguridad

Nombre del producto: Cargas huecas y cortadores de tubo/carcasa

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

	Cargas huecas, Explosivo RDX			Cargas huecas, Explosivo HMX		
	Límite de exposición permisible OSHA	Valores de longitud y tipo ACGIH	Núm. de C.A.S.	Límite de exposición permisible OSHA	Valores de longitud y tipo ACGIH	Núm. de C.A.S.
Ciclotrimetileno trinitramina (RDX)	NE	0.5 mg/m ³	121-82-4	NA	NA	NA
Ciclotetrametileno tetranitramina (HMX)	NA	NA	2691-41-0	NE	NE	2691-41-0
Cera desensibilizante	NE	NE	NA	NE	NE	NA
Acero resistente a la corrosión	NE	NE	NE	NE	NE	NE
Grafito	15 mppcf	2 mg/m ³	7782-42-5	15 mppcf	2 mg/m ³	7782-42-5
Cobre	1 mg/m ³	1 mg/m ³	7440-50-8	1 mg/m ³	1 mg/m ³	7440-50-8
Plomo	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
Tungsteno	NE	5 mg/m ³	7440-33-7	NE	5 mg/m ³	7440-33-7

	Cargas huecas, Explosivo HNS			Cargas huecas, Explosivo PYX		
	Límite de exposición permisible OSHA	Valores de longitud y tipo ACGIH	Núm. de C.A.S.	Límite de exposición permisible OSHA	Valores de longitud y tipo ACGIH	Núm. de C.A.S.
Hexanitrostilbeno (HNS)	NE	0.5 mg/m ³	20062-22-0	NA	NA	NA
2, 6-Bis (Picrilamino)-3, 5- Dinitropiridina (PYX)	NA	NA	NA	NE	NE	38082-89-2
Cera desensibilizante	NE	NE	NA	NE	NE	NA
Acero resistente a la corrosión	NE	NE	NA	NE	NE	NA
Grafito	15 mppcf	2 mg/m ³	7782-42-5	15 mppcf	2 mg/m ³	7782-42-5
Cobre	1 mg/m ³	1 mg/m ³	7440-50-8	1 mg/m ³	1 mg/m ³	7440-50-8
Plomo	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
Tungsteno	NE	5 mg/m ³	7440-33-7	NE	5 mg/m ³	7440-33-7

NE = No establecido

NA = No aplicable

m³ = Metro cúbico

mppcf = Millón de partículas por pie cúbico

*** 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 con impactos, flama o calor. La detonación genera fragmentos peligrosos. Riesgo de explosión en caso de incendio.

Productos Combustibles Peligrosos

En un incendio pueden producirse gases peligrosos, incluyendo óxidos de nitrógeno.



Hoja de Datos de Seguridad

Nombre del producto: Cargas huecas y cortadores de tubo/carcasa

Medios de Extinción

Ninguno

Medios de Extinción Inadecuados

Ninguno

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, ó energía electrostática. 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

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



Hoja de Datos de Seguridad

Nombre del producto: Cargas huecas y cortadores de tubo/carcasa

Ciclotetrametileno-tranitramina (HMX) (2691-41-0)

ACGIH: Not está
OSHA: Not está
NIOSH: Not está

Hexanitrostibeno (HNS) (20062-22-0)

ACGIH: Not está
OSHA: Not está
NIOSH: Not está

2, 6-Bis (Picrilamino)-3, 5-Dinitropiridino (PYX) (38082-89-2)

ACGIH: Not está
OSHA: Not está
NIOSH: Not está

Plomo (7439-92-1)

ACGIH: 0.05mg/m³ TWA
OSHA: 30 µg/m³ Nivel de Acción (Veneno, Ver 29 CFR 1910. 1025); 50 µg/m³ TWA
NIOSH: 0.050 mg/m³ TWA

Tungsteno (7440-33-7)

ACGIH: 5 mg/m³ TWA
10 mg/m³ STEL
OSHA: 5 mg/m³ TWA
10 mg/m³ STEL
NIOSH: 5 mg/m³ TWA
10 mg/m³ STEL

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); 0.2 mg/m³ TWA (humo)

Grafito (7782-42-5)

ACGIH: 2 mg/m³ TWA (todas las formas excepto fibras de grafito, fracción respirable)
OSHA: 2.5 mg/m³ TWA (natural, polvo respirable); 10 mg/m³ TWA (sintético, polvo total); 5 mg/m³ TWA (sintético, fracción respirable)
NIOSH: 2.5 mg/m³ TWA (natural, polvo respirable)

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: Cargas huecas y cortadores de tubo/carcasa

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

Apariencia:	Cargas explosivas formadas	Olor:	Ninguno
Estado Físico:	Sólido	pH:	NA
Presión de Vapor:	ND	Densidad de Vapor:	ND
Punto de Ebullición:	ND	Punto de Fusión:	ND
Solubilidad (H2O):	ND	Gravedad Especifica:	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 calor o manejo brusco.

Condiciones a Evitar

Detona con impacto, Fricción, flama, calor o descarga electrostática.

Productos Incompatibles

Ácidos y álcalis.

Productos de Descomposición Riesgosa

La detonación produce fragmentos peligrosos. Los gases que produce pueden contener monóxido de carbono y óxido de nitrógeno.

*** Sección 11 – Información Toxicológica ***

Toxicidad Aguda

A: Información General del Producto

Las cargas formadas 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, incluyendo la muerte.

B: Análisis de Componentes - LD50/LC50

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

Oral LD50 Rata 100 mg/kg

Ciclotetrametileno-tranitramina (HMX) (2691-41-0)

Oral LD50 Rata 6490 mg/kg; Dérmico LD50 Rata >5 g/kg; Dérmico LD50 Conejo 630 mg/kg

Hexanitrostibeno (HNS) (20062-22-0)

No está establecido

2, 6-Bis (Picrilamino)-3, 5-Dinitropiridino (PYX) (38082-89-2)

Oral LD50 Rata >5 g/kg

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.

Efectos Potenciales en la Salud: ingestión

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



Hoja de Datos de Seguridad

Nombre del producto: Cargas huecas y cortadores de tubo/carcasa

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

Plomo (7439-92-1)

ACGIH: A3 – Cancerígeno Animal Confirmado con Relevancia Desconocida para los Humanos

OSHA: Nivel de Acción 30 µg/m³ (Veneno, Ver 29 CFR 1910.1025); 50 µg/m³ TWA

NTP: Se Anticipa Razonablemente que Sea un Cancerígeno Humano (Posible Cancerígeno Selecto)

IARC: Monografía 87 [2006] (evalúa compuestos inorgánicos de plomo como Grupo 2A y compuestos orgánicos de plomo como Grupo 3) (Grupo 2A (Probablemente cancerígeno para los humanos))

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 una sola exposición.

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.



Hoja de Datos de Seguridad

Nombre del producto: Cargas huecas y cortadores de tubo/carcasa

B: Análisis de Componentes – Ecotoxicidad – Toxicidad Acuática

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

Prueba y Especie

96 Hr LC50 Lepomis macrochirus	1.9-6.6 mg/L [estático]
96 Hr LC50 Lepomis macrochirus	5.6-10 mg/L [por flujo]
96 Hr LC50 Oncorhynchus mykiss	5.4-7.4 mg/L [estático]
96 Hr LC50 Pimephales promelas	5-8.7 mg/L [por flujo]
96 Hr LC50 Pimephales promelas	3.0-5.0 mg/L [estático]

Condiciones

Ciclotetrametileno-tranitramina (HMX) (2691-41-0)

Prueba y Especie

96 Hr LC50 Pimephales promelas	8.8-26 mg/L [estático]
96 Hr LC50 Lepomis macrochirus	>32 mg/L [estático]
96 Hr LC50 Oncorhynchus mykiss	>32 mg/L [estático]

Condiciones
Edad de 7 días

Plomo (7439-92-1)

Prueba y Especie

96 Hr LC50 Cyprinus carpio	0.44 mg/L [semi- estático]
96 Hr LC50 Oncorhynchus mykiss	1.17 mg/L [por flujo]
96 Hr LC50 Oncorhynchus mykiss	1.32 mg/L [estático]
48 Hr EC50 water flea	600 µg/L

Condiciones

Cobre (7440-50-8)

Prueba y Especie

96 Hr LC50 Pimephales promelas	0.0068 - 0.0156 mg/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 [semi- estático]
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]

Condiciones

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.



Hoja de Datos de Seguridad

Nombre del producto: Cargas huecas y cortadores de tubo/carcasa

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: Cargas, formadas

UN #: 0440 Clase de Riesgo: 1.4D

*** 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).

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
Ciclotetrametileno-tranitramina (HMX)	2691-41-0	No	No	No	Sí	No	No
Plomo	7439-92-1	Sí	Sí	Sí	Sí	Sí	No
Tungsteno	7440-33-7	Sí	Sí	Sí	Sí	Sí	No
Cobre	7440-50-8	Sí	Sí	Sí	Sí	Sí	No
Grafito	7782-42-5	Sí	Sí	Sí	Sí	Sí	No

La(s) siguiente(s) declaración(es) se proporcionan bajo el Decreto de California de Agua Potable Segura y Cumplimiento de Lineamientos de Toxicidad de 1986 (Propuesta 65):

¡ADVERTENCIA! Este producto contiene un químico conocido para el estado de California como causante de cáncer.

¡ADVERTENCIA! Este producto contiene un químico conocido para el estado de California como causante de efectos reproductivos / efectos en el desarrollo.

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
Plomo	7439-92-1	0.1 %
Tungsteno	7440-33-7	1 %
Cobre	7440-50-8	1 %

Información Regulatoria Adicional Análisis de Componentes - Inventario



Hoja de Datos de Seguridad

Nombre del producto: Cargas huecas y cortadores de tubo/carcasa

Componente	# CAS	TSCA	CAN	EEC
Ciclotrimetileno Trinitramina (RDX)	121-82-4	Sí	DSL	EINECS
Hexanitrostibeno (HNS)	20062-22-0	Sí	NDSL	EINECS
Ciclotetrametileno-tranitramina (HMX)	2691-41-0	Sí	DSL	EINECS
2, 6-Bis (Picrilamino)-3, 5-Dinitropiridino (PYX)	38082-89-2	Sí	NDSL	No
Plomo	7439-92-1	Sí	DSL	EINECS
Tungsteno	7440-33-7	Sí	DSL	EINECS
Cobre	7440-50-8	Sí	DSL	EINECS
Grafito	7782-42-5	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