



TENAGA KIMIA – ENSIGN BICKFORD SDN. BHD. (580221-P)

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MATERIAL SAFETY DATA SHEET

Date of issue: January 2006

1.0 PRODUCT AND COMPANY IDENTIFICATION

Product name	NONEL [®] MS / MILLISECOND (MS) NONEL [®] EZ DET [®] / EZ DET [®] NONEL [®] LP / LONG PERIOD (LP) NONEL [®] EZTL [™] / EZ TRUNKLINE [™] DELAY (EZTL) NONEL [®] SL / SHORT LEAD (SL) NONEL [®] EZ DRIFTER [®] / EZ DRIFTER [®] NONEL [®] TD / NOISELESS TRUNKLINE DELAY (NTD) NONEL [®] MS CONNECTOR / MS CONNECTOR (MSC) NONEL [®] TWINPLEX [™] / TWINPLEX EZTL NONEL [®] STARTER / NOISELESS LEAD-IN-LINE OPTIMIZER [®] OPTISLIDE [®] OPTIMIZER [®] OPTISURFACE [®] OPTIMIZER [®] OPTI-TL [®]
General name	NONEL [®] Non-electric Delay Detonators / PRIMADET [®] Non-electric Detonators
General description	NONEL [®] Non-electric Delay Detonators / PRIMADET [®] Non-electric Detonators
Product use	NONEL [®] Non-electric Delay Detonators / PRIMADET [®] Non-electric Detonators consist of a precise, millisecond delay detonator crimped to a length of shock tube, and are used in open pit mining, quarrying, construction and underground mining. They are available in various lengths and delay times.
Company Name	Tenaga Kimia - Ensign Bickford Sdn. Bhd.
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2.0 PRODUCT COMPOSITION / INFORMATION ON INGREDIENTS

Ingredients	CAS#	OSHA PEL-TWA	ACGIH TLV-TWA
Molybdenum	7439-98-7	None ¹	None ²
Tungsten	7440-33-7	None ¹	5 mg/m ³ (TWA) 10 mg/m ³ (STEL)
Aluminum	7429-90-5	15 mg/m ³ (total dust) 5 mg/m ³ (respirable fraction)	5 mg/m ³
Silicon	7440-21-3	15 mg/m ³ (total dust) 5 mg/m ³ (respirable fraction)	10 mg/m ³
Selenium	7782-49-2	0.2 mg/m ³	0.2 mg/m ³
Potassium Perchlorate ³	7778-74-7	None ¹	None ²
Red Lead (Lead tetroxide)	1314-41-6	0.05 mg (Pb)/m ³	0.05 mg (Pb)/m ³
Titanium dioxide	13463-67-7	15 mg/m ³	10 mg/m ³
Barium Chromate	10294-40-3	1 mg (CrO ₃)/10m ³ (ceiling)	0.01 mg (Cr)/m ³
Lead Chromate	7758-97-6	0.5 mg (Ba)/m ³ 0.05 mg (Pb)/m ³ 1 mg (CrO ₃)/10m ³ (ceiling)	0.5 mg (Ba)/m ³ 0.15 mg (Pb)/m ³ 0.012 mg (Cr)/m ³
Barium Sulfate	7727-43-7	0.5 mg (Ba)/m ³	10 mg/m ³
Silica (crystalline)	61790-53-2	See Note Below	0.05 mg/m ³ (resp frac)
Pentaerythritol Tetranitrate (PETN)	78-11-5	None ¹	None ²
Lead Azide	13424-46-9	0.05 mg (Pb)/m ³	0.05 mg (Pb)/m ³
Lead	7439-92-1	0.05 mg (Pb)/m ³	0.05 mg (Pb)/m ³
Antimony	7440-36-0	0.5 mg/m ³	0.5 mg/m ³
Cyclotetramethylene Tetranitramine (HMX)	2691-41-0	None ¹	None ²

¹ Use limit for particulates not otherwise regulated (PNOR): Total dust, 15 mg/m³; respirable fraction, 5 mg/m³.

² Use limit for particulates not otherwise classified (PNOC): Inhalable particulate, 10 mg/m³; respirable part. 3 mg/m³.

Note: The OSHA PEL for crystalline silica is calculated as follows:

Quartz, respirable: $10 \text{ mg/m}^3 \times \% \text{ SiO}_2 + 2 \text{ Quartz}$, total dust: $30 \text{ mg/m}^3 \times \% \text{ SiO}_2 + 2$

³ Not all delay periods contain perchlorate. Those that do contain between from about 4 to a maximum of about 60 mg perchlorate per detonator.

Ingredients, other than those mentioned above, as used in this product are not hazardous as defined under current Department of Labor regulations, or are present in de minimus concentrations (less than 0.1% for carcinogens, less than 1.0% for other hazardous materials).

3.0 HAZARDS IDENTIFICATION

Emergency overview

Detonators are designed to explode with substantial energy release. Detonators are not to be placed in contact with corrosive acidic or caustic environments which may corrode the aluminum detonator shell to potentially allow ingress of contaminants which increase the sensitivity of the internal components. Detonators must not be subjected to impact, electrostatic discharge or conditions that could penetrate the aluminum shell and cause detonation.

Potential health effects

Eye Contact

Not a likely exposure because the detonator is sealed and the user is not subjected to the component during normal handling and before detonation. Post detonation reaction products may produce dust that can irritate; corneal injury may result. Flush immediately with running water for at least 15 minutes. Seek Medical attention. Symptoms of exposure include redness, swelling, itching, tearing and pain.

Skin Contact

Not a likely route of exposure since the detonator is a sealed assembly. If exposed to post-detonation reaction products occur, wash thoroughly with soap

and water. If skin irritation occurs, seek medical attention. Symptoms may include redness, swelling, itching and pain.

Inhalation	Breathing dust from post detonation reaction products can cause nasal and respiratory irritation and lowering of Wood pressure. Lead exposure at high levels can cause acute or chronic symptoms can range from eye and skin irritation to permanent brain damage, vomiting and convulsions. Prolonged or repeated exposure to post function residue may result in respiratory tract irritation, and symptoms may include coughing, shortness of breath, sore throat and runny nose. If the sufficient amount is inhaled and absorbed, the symptoms may resemble those in acute ingestion.
Ingestion	See INHALATION. Post function residue is toxic by ingestion. Symptoms may include gastroenteritis (inflammation of the lining membrane of the stomach and intestines) with abdominal pain, nausea, vomiting and diarrhoea. Systemic effects may follow and may include ringing of the ears, dizziness, elevated blood pressure, blurred vision and tremors.
Carcinogenicity	ACGIH classifies Lead as a "Suspected Human Carcinogen", and insoluble Chromium VI as "Confirmed Human Carcinogen". NTP, QSHA, and IARC consider components contained in this detonator carcinogenic. Reference to Section 11, Toxicological Information, in this MSDS.

4.0 FIRST AID MEASURES

Product is fully contained and presents low risk of skin contact, ingestion or inhalation of chemical constituents during normal handling. Personnel could be exposed to by-products during functional detonation of the unit and post clean up.

Eye Contact	Flush using running water for at least 15 minutes. If irritation persists, seek medical attention.
Skin Contact	Wash exposed area with soap and water. If irritation persists, seek medical attention.
Inhalation	Remove victim to fresh air. If breathing is difficult, give oxygen. If not breathing, administer artificial respiration. Seek medical attention.
Ingestion	Give large quantities of water. Induce vomiting in a conscious victim. Seek immediate medical attention.

5.0 FIRE FIGHTING MEASURES

Special Fire Fighting	DO NOT FIGHT FIRES INVOLVING DETONATORS OR EXPLOSIVES, PRODUCT MAY EXPLODE, ISOLATE THE ARBA, EVACUATE PERSONNEL TO A SAFE DISTANT LOCATOON, ALLOW FIRE TO BURN OR FIGHT FIRE REMOTELY.
Extinguishing Media	DO NOT FIGHT FIRES INVOLVING DETONATORS AND EXPLOSIVES. Water may be applied through fixed extinguishing system (sprinklers) as long as people need not be present for the system to operate. Extinguish fire using inert powder, but only if it can be applied remotely.
Unusual Fire / Explosion	All the NONEL [®] Non-electric Delay Detonators / PRIMADET [®] Non-electric Detonators covered in this MSDS are sealed at manufacture. Should a detonator break open to expose the internal components, extreme care must be used when handling. Only authorized personnel should handle a damaged detonator. A damaged detonator can explode if exposed to shock, impact, friction, or electrostatic discharge (ESC).

Hazardous gasses released upon detonation are nitrogen oxides, carbon monoxide and carbon dioxide. The likelihood of mass detonation is increased if the fire occurs in a confined space. All personnel must be evacuated.

Auto Ignition Temperature 190 °C at which PETN may detonate. Other components may also detonate at higher temperatures.

Hazardous Combustion Hazardous gasses produced are oxides of nitrogen and carbon. Airborne particulates, including the metals found in Section 2 may be released.

6.0 ACCIDENTAL RELEASE MEASURES

For the following reasons, only properly qualified and authorized personnel should be involved with handling and clean-up of damaged detonators NONEL[®] Non-electric Delay Detonators / PRIMADET[®] Non-electric Detonators contain Lead Azide which is extremely sensitive to initiation by electrostatic discharge which can cause detonation. Precautions must be taken to avoid generation and discharge of electrostatic energy during all procedures. In the event of any spill of loose powder, such as from a broken detonator, all spilled material should be treated with Ceric Ammonium Nitrate killing solution (10%). This will chemically decompose the Lead Azide, but PETN and pyrotechnics will remain reactive, therefore, all residue materials must be assumed to be explosive-contaminated until proper waste disposal (see below) is complete. Only qualified personnel should perform a clean up and disposal of explosive material. Use recommended exposure controls/protective clothing, equipment and handling procedures (see Section 7 & Section 8)

Review Fire and Explosive Hazards and Safety Precautions before proceeding with clean up. Isolate the spill area; removing all sources of ignition from the location. Remove all explosives that were not involved in the spill from the spill area.

Carefully collect the spilled material and place in a (Velostat[®]) electrically conductive bag. Contamination of this material with sand, grit, or dirt will render the material more sensitive to detonation. If safe, separate material that is not contaminated from contaminated material. Loose powder spills should be cleaned-up in a manner that does not disperse dust into the air. The preferred method is to desensitize the spilled material with water and wipe up with a soapy damp sponge. Collect wash water for approved disposal. Store all collected water/material in a secure area, to await proper disposal. Keep from entering water or ground water.

7.0 HANDLING AND STORAGE

Handling Only properly qualified and authorized personnel should handle and use NONEL[®] Non-electric Delay Detonators / PRIMADET[®] Non-electric Detonators. Avoid breathing post-detonation dust; avoid getting in eyes or on skin. Wash thoroughly after handling shot detonators or after exposure to post-detonation residues. Protect shipping container against physical damage. Store in cool, dry place, and avoid sources of heat, shock, impact, friction and electrostatic discharge (ESD). Utilize recommended exposure controls/protective clothing (Section 8) when working with post-detonation residues or the contents of a damaged detonator.

Transportation/Storage Must be in accordance with Federal, State and Local Regulations. Store away from sparks or other ignition sources. Avoid heat, impact and shock.

8.0 EXPOSURE CONTROLS & PERSONAL PROTECTION

Respiratory Protection NIOSH/MSHA approved high efficiency particulate respirator to protect against dust if OSHA PEL is exceeded. MOSH/MSHA approved self-contained respirator for emergency use. However, respiratory protection is not required for normal use of these detonators providing PEL is not exceeded.

Ventilation	Product is intended for outside use and underground mines. Ventilation should be provided for underground use. Ventilation should also be provided if repetitive indoor testing is to be performed. Provide local exhaust and mechanical ventilation as needed so as not to exceed PEL.
Protective Gloves	Not required for normal use and handling of detonators as received from the manufacturer. Protective gloves should be worn when handling post-detonation residues, the contents of damaged detonators, and any chemicals used to chemically decompose Lead Azide. Rubber gloves are recommended.
Eye Protection	Safely glasses or goggles are recommended to handling, testing, or clean up.
Other Protection	Detonators are to be handled only by qualified and authorized personnel. Follow instructions on the manufacturers data sheet.

9.0 PHYSICAL AND CHEMICAL PROPERTIES

Component	Boiling Point (°C)	Melting Point (°C)	Solubility in Water	Specific Gravity (gm/cc)
Molybdenum	425	2622	No	10.2
Tungsten	5900	3980	No	19.3
Aluminum	2450	660	No	2.7
Silicon	2675	1410	No	2.4
Selenium	690	217	No	4.81
Potassium Perchlorate	Decomp at melting	400 decomp	Yes	2.52
Red Lead	Decomp at melting	500 decomp	No	9.29
Titanium dioxide	Decomp at melting	1640 decomp	No	4.26
Barium Chromate	Not establish	Not establish	No	4.5
Lead Chromate	Decomp at melting	844	No/Slight	6.3
Barium Sulfate	Decomp at melting	1580	No	4.5
Silica (crystalline)	2230	1710	No	2.6
PETN	Decomp at melting	140	Slight	1.76
Lead Azide	Decomp at melting	Explodes 330	Slight	4.8
Lead	1740	327	No	11.34
Antimony	1636	630	No	6.68
HMX	Decomp at melting	274	Slight	1.96

Boiling Point Aluminium: 1 mm @ 1284°C
Lead: 1mm @ 973°C

Vapour Pressure N/A

Vapour Density N/A

Specific Gravity See above table

Percent Volatile N/A

Evaporation Rate N/A

Appearance The aluminium detonator shell contains a lead sheathed pyrotechnic which is located between an explosive output charge consisting of PETN and or Lead Azide, and a length of flexible plastic tube (Shock Tube). The shock tube is inserted into a black rubber bushing and both are retained in the aluminium shell by a secure crimp at the open cud of the shell. The shock tube contains a dust on the inside surface of a mixture of explosive and aluminium powder. The shock tube may be of various colours, vary from several feet to over one hundred feet in length, in coils of on spools. The detonator may be enclosed in a plastic housing (connector), and the MS Connector has a detonator and plastic housing on each end of a short length of shock tube.

Odour Odourless

10.0 STABILITY AND REACTIVITY DATA

Stability	Stable under normal conditions, but improper handling can result in accidental detonation.
Conditions to Avoid	High temperatures, shock, impact, friction and electrical static discharge (ESD).
Incompatibility	Detonators are designed to explode with substantial release of energy to initiate other explosive devices. Detonators are not to be placed in corrosive environments that may corrode the aluminium detonator shell to allow ingress of contaminants that may react adversely with internal components.
Hazardous Decomposition Products	Functioning of these NONEL [®] Non-electric Delay Detonators / PRIMADET [®] Non-electric Detonators, may evolve oxides of carbon (CO and CO ₂) and oxides of nitrogen, heavy metal oxides, sulfides and chromates. Solid elemental Lead and Antimony and fumes will be present.
Hazardous Polymerization	Will not occur

11.0 TOXICOLOGY INFORMATION

Compound	Toxicological Information
Molybdenum	Carcinogenicity: not listed as carcinogenic by NTP, IARC or OSHA. Irritant: fumes and dust may cause eye, nose, throat, and respiratory tract irritation. General Toxicity: LDLo 70 Big/kg in rabbit caused fibrosis, focal effects. Reproductive Effects: TDLo 448 mg/kg oral mouse (multigererations) caused fetotoxicity, fetal death. Mutagenicity: cytogenetic analysis, rat-inhalation, dose 19500 ug/m ³ , ref. Gig Tr Prof Zabol, vol 24(9), pg 33, 1980 (GTPZAB)
Tungsten	Carcinogenicity: not listed as carcinogenic by NTP, IARC or QSHA. Irritant: 500 mg/24H, mild irritant to eyes and skin (rabbit), dust may cause eye, throat, and irritation. General Toxicity: LD50 rat intraperitoneal dose 5 gm/kg effects vascular, blood and liver. Reproductive Effects: LDLo oral rat dose 1210 ug/kg, (35W pre) musculoskeletal system abnormalities. Changes, post-implantation mortality.
Aluminium	Carcinogenicity: not listed as carcinogenic by NTP, IARC or OSHA. Irritant: mild irritant to eyes, dust may cause eye, throat, or respiratory irritation. General Toxicity: Inhalation of finely divided powder may cause pulmonary fibrosis. Mutagenicity: no data.
Silicon	Carcinogenicity: not listed as carcinogenic by NTP, IARC or OSHA. Irritant: mild irritant to eyes (eye, rabbit, 3 mg), dust may cause skin or respiratory irritation. General Toxicity: LDLo intraperitoneal, rat, dose 500 mg/kg, effect sense organs and special senses, lungs, thorax: or respiration. Reproductive Effects: no data. Mutagenicity: no data.

Selenium	Carcinogenicity: not listed as carcinogenic by NTP, IARC or OSHA, TDLo 480 mg/kg/60D-C, oral mouse, tumorigenic, skin and appendages. Irritant: eye and respiratory irritation. General Toxicity: Reported kidney damage, liver damage to lab animals from chronic exposure. LCLo inhalation rat 33 mg/kg/8H, hemorrhage, emphysema, acute pulmonary edema, LD50 oral rat 6700 mg/kg, somnolence, dyspnea. Reproductive Effects: LDLo oral mouse is 134 mg/kg producing fetotoxicity, fetal death. Mutagenicity: no data.
Potassium Perchlorate	Carcinogenicity: not listed as carcinogenic by NTP, IARC or OSHA. Irritant: may cause eye Mid respiratory irritation. General Toxicity: no data. Reproductive Effects: TDLo oral rat 27675 mg/kg causes abnormalities of endocrine system. Mutagenicity: no data.
Red Lead (Lead Tetroxide)	Carcinogenicity: Red lead is not listed by NTP, IARC or OSHA as carcinogenic, however, Lead is an IARC listed 2B carcinogen, possibly carcinogenic to humans, see Lead, Irritant: no data. General Toxicity: excessive exposure may cause nervous, digestive, renal and reproductive system disorders. Moderately toxic by ingestion. LDLo guinea pig oral dose 1 gm/kg effected behaviour, nucleated red blood cells. Reproductive Effects: may cause reproductive system disorders with excessive exposure. Mutagenicity: no data.
Titanium Dioxide	Carcinogenicity: not listed by NTP, IARC or OSHA as carcinogenic to humans. TCLo inhalation rat dose 250 mg/m ³ tumorigenic to lungs, thorax or respiratory system. Irritant: mild human skin irritant, 300 ug/3D-I. General Toxicity: no data. Reproductive Effects: no data. Mutagenicity: no data.
Barium Chromate	Carcinogenicity: Listed as NTP and IARC as a Group 1 chemical, carcinogenic to humans. Irritant: may cause severe skin, eye and respiratory irritation. General Toxicity: no data, Reproductive Effects: no data. Mutagenicity: no data.
Lead Chromate	Carcinogenicity: NTP 5th Report, 1RAC group 1 classification as carcinogenic to humans. ACGIH lists Lead Chromaie as a substance suspect of carcinogenic potential in man. TDLo subcutaneous rat dose 135 mg/kg causes tumors at site of application. Irritant: May cause skin, eye and respiratory irritation. General Toxicity: LD50 oral rat dose >12 gm/kg. Reproductive Effects: no data. Mutagenicity: no data.
Barium Sulfate	Carcinogenicity: Not listed by NTP, IARC or OSHA as carcinogenic. TDLo intrapleural rat dose, 200 mg/kg produced tumors of lungs, thorax or respiration. Irritant: may cause skin and eye irritation. General Toxicity: LD intratracheal mouse, >600 uL/kg produced changes in lungs, thorax or respiration. Reproductive Effects: no data. Mutagenicity: Micronucleus test, mouse intraperitoneal toe 12500 ug/kg, effect not listed (ref. GWZHEW).
Silica (Ottawa Sand) (crystalline silica)	Carcinogenicity: Classified by IARC as a Group 2A chemical, which is probably carcinogenic to humans. Irritant: mild to eyes. General Toxicity: Exposure to crystalline free silica may cause silicosis, pulmonary fibrosis. Moderately toxic as an acute irritating dust. Reproductive Effects: no data. Mutagenicity: no data.
Pentaerythritol Tetranitrate (PETN)	Carcinogenicity: Not listed by NTP, IARC or OSHA as carcinogenic. Irritant: Skin and eye irritant. General Toxicity: moderately toxic by ingestion. Vasodilator. PETN can lower blood pressure. LD50 intraperitoneal mouse dose >5 gm/kg causes arteriolar or venous dilation. TDLo oral man, 1669 mg/kg/8Y-C, dermatitis after systemic exposure. Reproductive Effects: no data. Mutagenicity: no data.

Lead Azide	Carcinogenicity: Not considered to be a carcinogen by IARC, NTP or OSHA, however, Sax's Dangerous Properties of Industrial Materials lists Lead as IARC 2B, possibly carcinogenic to humans. Irritant: may cause eye and skin irritation. General Toxicity: A deadly poison may be fatal if swallowed, may cause anemia, kidney damage. Reproductive Effects: may cause damage to reproductive system. Mutagenicity: no data.
Lead	Carcinogenicity: Lead is classified by IARC to be a 2B carcinogen, possibly carcinogenic to humans. Irritant: May cause eye and skin irritation. General Toxicity: may be fatal if swallowed, may cause anemia, kidney damage and damage to reproductive system. TDLo oral woman dose 450 mg/kg/6Y produced peripheral nerve and sensation effects, hallucinations, distorted perceptions, muscle weakness. TCLo inhalation human. Reproductive Effects: may cause damage to reproductive system. TCLo inhalation rat dose, 10 mg/m ³ /24H(1 -21D preg) produced effects on embryo or fetus (fetotoxicity) or specific developmental abnormalities of the blood and lymphatic systems. Mutagenicity: no data
Antimony	Carcinogenicity: Antimony is not considered to be carcinogenic by the IARC, NTP or OSHA. TCLo inhalation rat, dose 50 mg/m ³ /7W/52W-I, causes tumors of lungs, thorax or respiratory system. Irritant: no data. General Toxicity: inhalation of dusts may cause acute pneumonitis, nausea, vomiting. LD50 oral rat dose, 7 gm/k. Reproductive Effects: no data. Mutagenicity: no data.
HMX	Carcinogenicity: Not considered to be a carcinogen by IARC, NIP or OSHA. Irritant: Skin and eye irritant. General Toxicity: A poison by ingestion and intravenous routes. LD50 oral guinea pig 300mg/kg. Reproductive Effects: no data. Mutagenicity: no data.

12.0 ECOLOGICAL INFORMATION

Data is not available at the present time.

13.0 DISPOSAL CONSIDERATION

Waste Disposal All detonators are classified as hazardous waste with the characteristic of reactivity, EPA Hazardous Waste Number of D003; see CFR 40 Section 261. Any such waste should be treated and stored in accordance with local, state and federal regulations. The current preferred method of waste treatment for waste detonators is remote detonation in a confined chamber designed for this purpose. The (unconfined) detonation of waste detonators may result in the release of lead particulate. Open burning of detonators is likely to result in detonation, and is not recommended. Any treatment of waste detonators must be performed by qualified personnel at permitted facilities and may require a permit.

14.0 TRANSPORT INFORMATION

Transportation Transport only in accordance with the Federal, State and Local regulations for transportation of explosives. Additional reference information for transportation of explosives and energetic materials is provided in the DoD Contractor's Safety Manual for Ammunition and Explosives, DoD 4145.26-M.

Shipping name Detonators Assemblies, Non Electric

Class 1.4B

UN 0361

Group	PG II
Packing	In fibreboard box
Material	Solid
Flash Point:	Nil

15.0 REGULATORY INFORMATION

SARA 313 Information The NONEL® Non-electric Delay Detonators / PRIMADET® Non-electric Detonators contain chemicals that are subject to the reporting requirements of Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986, and 40 CFR Part 372.

<u>Chemical Name</u>	<u>CAS Number</u>	<u>Max. lbs / 1000 units</u>
Lead	7439-92-1 (Use Toxic Chemical Category Code)	39.4
Lead Compounds	N420	2.0
Barium Compounds	N040	1.8
Chromium Compounds	N090	1.9

Product	<u>Range* of Section 313 Chemicals in Each Product</u>			
	<u>lb Pb per 1000 detonators</u>	<u>lb Pb compounds per 1000 detonators</u>	<u>lb Ba compounds per 1000 detonators</u>	<u>lb Cr compounds per 1000 detonators</u>
NONEL® MS (MILLISECOND (MS))	0 - 27	0.3 - 1.5	0 - 0.9	0 - 0.9
NONEL® LP (LONG PERIOD (LP))	0 - 30	0.3 - 2.0	0 - 1.8	0 - 1.9
NONEL® SL (SHORT LEAD (SL))	7 - 27	0.3 - 1.5	0	0
NONEL® TD (NOISELESS TRUNKLINE DELAY (NTD))	0 - 18	0.3 - 0.7	0	0
NONEL® MS Connector (MS CONNECTOR (MSC))	5 - 16	0.3 - 0.4	0	0
NONEL® TWINPLEX™ (TWINPLEX EZTL)	5 - 15	0.3 - 0.7	0	0
NONEL® STARTER (NOISELESS LEAD-IN-LINE)	0	0.3	0	0
NONEL® EZ DET® (EZ DET®)	22 - 36	2.0	0	0
NONEL® EZTL™ (EZ TRUNKLINE™ DELAY (EZTL))	5 - 15	0.5 - 0.7	0	0
NONEL® EZ DRIFTER (EZ DRIFTER®)	39.4	1.3	1.2	1.3
OPTIMIZER® OPTISLIDE®	0	0	0	0
OPTIMIZER® OPTISURFACE®	0	0	0	0
OPTIMIZER® OPTI-TL®	0	0	0	0

* The exact quantity and weight percent of Section 313 Chemicals in each delay period and tubing length for each product is available upon request.