GENERAL BLASTING SAFETY PLAN
SUNCREST DYNAMIC REACTIVE POWER SUPPORT PROJECT

A. **Codes and Regulations Governing Project Blasting Operations**

California Occupational Safety and Health Standards Title 8, Group 18 "Sections 5236-5374".
Title 3, Divisions 5, Chapter III of the County Code of Regulatory Ordinances,
Suncrest Dynamic Reactive Power Support Project Blasting Plan prepared by S&L Engineering Ltd.
Project Blasting Preparation and Protection Plans, SDG&E Requirements for Review Package Submittal

B. **Blasting Contractor**

Tom C. Dyke Drilling & Blasting, Inc. California Contractors License Number 542984
P.O. Box 352 Alpine, CA 91903, (619) 445-2270

C. **Certificate of Liability Insurance**

(see Attachment A)

D. **Responsible Blasters**

Mike Burkett	P.O. Box 352 Alpine, CA 91903	(619) 445-2270	Blasters License Number 1259
Anthony J. Corirossi	P.O. Box 352 Alpine, CA 91903	(619) 445-2270	Blasters License Number 7974
Chad Bartley	P.O. Box 352 Alpine, CA 91903	(619) 445-2270	Blasters License Number 9953

E. **Contact Person for Project Blasting**

Mike Burkett P.O. Box 352 Alpine, CA 91903, (619) 445-2270

F. **Blast Plan Designer**

Mike Burkett P.O. Box 352 Alpine, CA 91903, (619) 445-2270

G. **Safety Officer**

Mike Burkett P.O. Box 352 Alpine, CA 91903, (619) 445-2270

H. **Local Fire and Law Enforcement Agencies Responsible for Project Blasting**

County of San Diego Sheriff's Department Licensing Division
P.O. Box 429000 San Diego, CA 92142 (619) 974-2101
CalFire San Diego
2249 Jamacha Road, El Cajon CA 92019 (619) 590-3170

I. **Explosive Storage**

The blasting subcontractor's explosive storage facility is located in San Diego County. The facility is approved by the San Diego County Sheriffs Department; the U.S. Department of Justice Bureau of Alcohol, Tobacco, Firearms and Explosives and the U.S. Department of Transportation Pipeline and Hazardous Materials Safety Administration. The blasting subcontractor's facility meets the above agencies security requirements for the storage of explosives. Explosives will be transported to the site from the blasting subcontractor's storage facility in San Diego County. Unused explosives will be returned daily to the blasting subcontractor's storage facility. The blasting subcontractor's drivers and vehicles will be used to transport explosives to and from the project site. All vehicles and drivers will be licensed and permitted to transport explosives in the State of California. Only the subcontractor's personnel will be allowed to handle the explosives. The blasting subcontractor's personnel are approved "Employee Possessors" by the Bureau of Alcohol, Tobacco, Firearms and Explosives and approved "Explosives Handlers" by the County of San Diego Sheriff's Department.

J. **The Effective Exclusion Zone**

Minimum of fifty feet from loading and blasting operation. Warning signs, cones and caution tape will be employed where blasting is on going to prevent the entry of unauthorized personnel.

K. **Blast Warning Signals**

The blasting contractor will provide an audible warning signal and guards in sufficient numbers to assure that people, property and improvements will not be endangered during blasting operations. Blasting signals will be posted at one or more conspicuous locations at the project. The blasting signals will be as specified in section 5291 of the General Industry Safety Orders. Job site personnel will be made aware of the blasting signals during the job site safety meeting. Blasting area warning signs and cones will be used in the area when the shot is being loaded (see Attachment C). Signage identifying the blast site will be posted along the access road and trails leading to the blast site at a minimum distance of 1,000 feet.

L. **Blasting Procedures**

1. The Contractor will obtain all necessary federal, state and local permits prior to the commencement of blasting operations. (see Attachment B)

2. The Contractor will employ a state licensed blaster with a non-electric rating to conduct all blasting operations. The responsible blaster will be experienced in supervising the loading and firing of charges for rock slope and open trench excavations. (see Attachment B)

3. The Contractor will not store explosives on site. Explosives will be transported to the site from the contractor's storage facility in San Diego County. Unused explosives will be returned daily to the contractor's storage facility. The transportation of explosives will be in accordance with the rules and regulations as prescribed by the California Highway Patrol and the General Industry Safety Orders for the transportation and use of explosives.

4. The Contractor will provide written notice to all residences or businesses within 1,000 feet of the blast area 7 days prior to commencement of blasting operations. Residences or businesses requesting additional notifications, 24 hours in advance of a blasting event, will be notified by phone or email. SDG&E will be notified 4 days in advance of all project blasting. Underground Service Alert will be contacted.

5. The Contractor will make and document a pre-blast survey of properties and improvements located within 1,000 feet of the blasting site. (see Attachment D)

6. The Contractor will monitor all blasting operations with two Nomis Mini Super Graph X2G portable seismographs to determine the ground motion particle velocity and air noise.

7. The Contractor will provide for limiting the maximum peak particle velocity at the nearest residential or commercial structure to the following:

Frequency (hertz)	Maximum Peak Particle Velocity (inch per second)
2.5 to 10	0.50
11 to 40	0.05 x frequency
>40	2.0

The maximum particle velocity at the nearest point to the underground pipelines/utilities from the blast area will not be greater than 5.0 inches per second at a minimum frequency of 10 hertz, SDG&E Facilities 2.0 inches per second, and 4.0 inches per second at electrical power poles and lattice towers. The Contractor will maintain a minimum scaled distance: factor of 12 with respect to underground pipelines, electrical power poles and lattice towers and factor of 25 with respect to residential, commercial structures and other SDG&E facilities. Blasting will not be performed within 100 feet of any critical structure. Blast induced air-overpressure at the property right of way lines or structures within 300 feet of the blast area will not exceed 0.03 psi (140dBL). Air-overpressure at residential or other occupied structures will not exceed 0.012 psi (133dBL) 2Hz flat response.

8. The Contractor will drill blast holes not larger than 3 inches in diameter and drill patterns will not be greater than 6 feet by 6 feet. Blast hole depths will be 6 - 25 feet.

9. The Contractor will control project blasting so that vibration, fly rock and air noise do not cause damage to nearby structures, undue annoyance to nearby residents, or danger to employees on the project. When there is a possibility of "fly rock" leaving the project right-of-way or if air noise exceeds 133 dBC (2Hz flat response) a protective layer of dirt will be placed on top of exposed rock formation to limit the risk of "fly rock" and to limit air noise levels.

10. The Contractor will use explosives manufactured by Dyno Nobel, Inc. Alpha Explosive Company is the manufacturer of the Blasting Agents. (see Attachment E)

11. The Contractor will use a non-electric blast imitation system manufactured by Dyno Nobel, Inc.

12. The Contractor will use multi deck hole detonation to comply with the scale distance factors and particle velocity limitations as specified by these blasting procedures.

13. The Contractor will stem all blast holes with 3/8" crushed rock or drill cuttings. The stemming height of each blast hole will be determined by the amount of overburden or cover on the rock and the powder charge weight for each individual hole.

14. The Contractor will not blast within 100 feet of concrete which has been placed less than seven (7) days.

15. The Contractor will provide an audible warning signal and guards in sufficient numbers to assure that people, property and improvements will not be endangered during blasting operations. Blasting signals will be posted at one or more conspicuous locations at the project. The blasting signals will be as specified in section 5291 of the General Industry Safety Orders. Job site personnel will be made aware of the blasting signals during the job site safety meeting. Blasting area warnings signs and cones will be used in the area when the shot is being loaded. (see Attachment C)

16. A Site Specific Blasting plan will be submitted to SDG&E prior to blasting within 600 feet of SDG&E facilities. The blast plan will include the location of existing improvements, the blast pattern, number of holes, hole diameter, hole depth, timing sequence, explosive volumes, and calculated peak particle velocities at the nearest structures.

17. The Contractor will keep accurate records of each blast including explosive quantities, delay system used and hole diameter and spacing.

18. The contractor will review seismic records and blasters log after each blast to insure that particle velocity limits are met.

19. Blasting will be done between the hours of 7:00 a.m. and 5:00 p.m. Monday through Friday.

20. The contractor will clear the blasting site of all debris associated with the blasting operations at the end of each day of blasting and transport it to contractor's facility for approved disposal.

M. **Lightning Protection Procedures**

Prior to commencing the loading of a blast, the blaster will determine if lightning is forecasted. If there is a possibility that an electrical storm may interfere with the loading schedule, loading will either be rescheduled or be accomplished in such a sequence that, should an electrical storm approach loading could be terminated, the area secured, traffic controlled and the loaded portion of the blast fired safely prior to the arrival of the storm. A Safety Device Inc., Model SD-250 (or equivalent) lightning detector will be utilized to detect the approach of electrical storms if lightning is forecasted.

N. **Emergency Evacuation Procedures**

The blasters in charge will determine if circumstance require the evacuation of personnel from the vicinity of a blast site. The blaster will immediately notify project management and the project engineer and coordinate with them the steps he will be taking to properly clear the blast site. The blasting crew members will instruct job site personnel to move to a safe location away from the blast site. Project management will notify the highway patrol (or traffic authority) if traffic will be either routed away from the area or halted until the emergency issue is resolved. While this is being accomplished the blast site will remain guarded.

O. **Misfires**

After each shot the blast area will be examined for misfires. Only the blaster and his minimum necessary crew should be present.

Some signs of a misfire could be:

- Unexploded shock tube or remnants.
- Undetonated surface delay detonators.
- Undetonated explosive residue.
- Results of a shot not as expected.
- Shot didn't sound as expected.

It is possible that a misfire could be discovered during three separate phases of the operation;

-A misfire that is obvious during the detonation of the blast

-A misfire that is discovered during inspection of the blast site, before the "All Clear" signal is given, and

-A misfired hole or undetonated explosive discovered during some subsequent operation following the blast and the "All Clear"
signal.

To assist in the discovery of misfires and to assure that they are properly cleared without undue hazards to persons or property, the following procedures will be followed by project personnel involved in the blasting operation:

a. **Obvious misfire during detonation of the blast:**

During the detonation of each blast, the blaster will carefully evaluate the blast detonation timing. If the blaster suspects that a misfire has occurred, he will immediately notify project management who will notify the project engineer and the Highway Patrol (or traffic authority) of the likelihood of a misfire and the following steps will be taken:

The "All Clear" signal will not be given, traffic will not be released and the blast site will continue to remain guarded. Following a minimum mandatory 30-minute wait after the blast, the blaster and only those personnel necessary to the task will approach and investigate the suspected misfire.

If **no misfire is found** to exist after adequate inspection by the blaster, he will so notify project management and will give the order to sound the "All Clear" signal, after which traffic can be released.

If **a misfire is found** to exist, the blaster will immediately notify project management and the project engineer and coordinate with them the steps he will be taking to properly clear the misfire. If the blaster determines that the area of potential hazard has increased beyond that of the original blast, the area will be cleared to the new limits. The blaster will not proceed to clear the misfire until the area has been secured. He will the take the steps necessary to safely clear the misfire. While this is being accomplished, the blast site will remain guarded.

Following successful clearing of the misfire and a subsequent inspection of the blast site by the blaster, he will give the order to sound the "All Clear" signal, after which traffic can be released.

b. **Misfire discovered during inspection of the blast site:**

After a minimum mandatory wait of 5-minutes after the blast, the blaster will conduct a thorough inspection of the blast site to be certain that no misfire exists.

If **no misfire is found** to exist after adequate inspection by the blaster, he will so notify project management and will give the order to sound the "All Clear" signal, after which traffic can be released.

If **a misfire is found** to exist, the blaster will immediately notify project management and the project engineer and coordinate with them the steps he will be taking to properly clear the misfire. The "All Clear" signal will not be given, traffic will not be released and the blast site will continue to remain guarded. Following a minimum mandatory 30-minute wait after the blast, the blaster and only those personnel necessary to the task will approach and investigate the misfire.

If the blaster determines that the area of potential hazard has increased beyond that of the original blast, the area will be cleared to the new limits. The blaster will not proceed to clear the misfire until the area has been secured. He will the take the steps necessary to safely clear the misfire. While this is being accomplished, the blast site will remain guarded. Following successful clearing of the misfire and a subsequent inspection of the blast site by the blaster, he will give the order to sound the "All Clear" signal, after which traffic can be released.

c. **Misfire discovered in subsequent operation:**

-In the event that an unexploded charge is discovered during some subsequent operation following blasting (such as excavating, loading, hauling, etc.) the following steps will be taken:

-The person discovering the undetonated charge will immediately notify the Licensed Blaster, project management and the project engineer, and take steps to guard the charge.

-Excavating, loading, hauling and other activities in the immediate vicinity of the blast zone will be suspended.

-The Licensed Blaster will proceed to the area and will evaluate the problem and determine the likelihood of additional explosive charges being involved. After this inspection, safe remediation procedures will be developed.

If the inspection reveals that one or more individual cartridges of explosive require removal from the site, the explosive supplier will be notified and the explosives will be returned to storage or destroyed as determined by the supplier.

If the inspection reveals that explosives will have to be fired in place or removed from the drill hole, the Licensed Blaster will advise project management and the project engineer of the steps necessary to properly clear the misfire.

The Licensed Blaster will determine the area surrounding the misfire that needs to be cleared and secured for safety. Steps will be taken to properly secure this area, including notification of the Highway Patrol (or traffic authority).

The blaster will then proceed to clear the misfire. If clearing the misfire involves detonating the explosives, all provisions of the Explosive Safety Orders pertaining to the firing of blasts will be followed.

Following successful clearing of the misfire and a subsequent inspection of the blast site by the blaster, he will give the order to sound the "All Clear" signal, after which traffic can be released.

Equipment requirement that may be needed to resolve misfire includes the following:

- Backhoe or excavator
- Dozer
- Track drill
- Hand held shovel

Specific procedures concerning misfires cannot be made. Every misfire will be evaluated on an individual basis. All information regarding the misfire will be analyzed completely and a plan of action will be outlined to safely handle, neutralize and dispose of the explosives involved.

P. **Blasting Zone Signage**

A sign with the blasting warning signals printed on it will be posted at one or more conspicuous locations near the blast site. Signs that identify the blast area and to keep out of that area will be posted at ingress and egress areas to the blasting site and at a minimum distance of 50 feet from the perimeter of the blast area. Warning cones with blasting area keep off printed on them will be displayed and blast warning area tape will be used at a distance of 50 feet from the perimeter of the blast site. (see Attachment C) The blaster in charge will assign a member(s) of the blasting crew to place the signage prior to the loading of each shot.

Q. **Traffic Control**

Traffic will be routed at least 50 feet from blast loading operations. Traffic will be stopped at a safe distance at the time the "5 Minute Warning" signal is given. Traffic will remain stopped at a safe distance until the blast has been detonated and the "All Clear" signal has been given, after which traffic can be released.

R. **Traffic Control in the Event of a Misfire or Blast Related Phenomenon**

The blaster in charge will immediately notify project management who will notify the project engineer and the Highway Patrol (or traffic authority.) All project activity in the vicinity of the blast zone will be suspended and traffic will be stopped or routed at a safe distance from the incident. Following a successful clearing of the misfire or resolving other blast related safety issues the blaster will sound the "All Clear" signal after which traffic can be released.

S. **Groundwater Contamination**

The following is a list of the safe guards to prevent ground water contamination:

- Proper priming of the explosives column.
- Sufficient in hole explosives confinement.
- The use of explosives with sufficient water resistance when wet blast hole conditions are encountered.
- Only explosives with an IME "Fume Class 1" classification will be used for project blasting.
- Explosives will be loaded to maintain good continuity in the column to promote complete detonation.
- Loaded explosives will be detonated as soon as possible and will not be left in the blast hole overnight.
- Spillage around the blast hole will be placed in the blast hole prior to stemming so that it will be detonated with the blast.
- Drillers will prepare a blast hole log to include depth, voids, cavities, and groundwater. The log will be written on each blast hole plug for review by the blaster.
- Blasted rock and stormwater interaction will be managed to prevent contamination of water wells and surface water.

T. **Rock removal**

The rock generated onsite will be crushed onsite and processed for reuse onsite or removed and properly disposed of at an approved disposal site.

U. **Wild Fire Mitigation**

The SUNCREST DYNAMIC REACTIVE POWER SUPPORT PROJECT CONSTRUCTION FIRE PREVENTION PLAN (CFPP), prepared by Dudek, shall serve as the wild fire mitigation plan for all blasting activities.

V. **Material Safety Data Sheets and Manufacturer Data Sheets**

(see Attachment E)

W. **Demonstration of Capability**

The following is a list of previous projects of similar character successfully completed by Tom C. Dyke Drilling and Blasting Company:

Standard Pacific Homes, Harmony Grove Village Phase I & II
Construction of Residential Subdivision
Escondido, CA
Senior Project Manager: Jamie Ahrensberg 949.689.4059

San Diego Gas & Electric, Los Coches Substation Rebuild Project
Lakeside, CA
Project Manager: Doug Provins 619.818.2427

County of San Diego, San Vicente Road Project
Ramona, CA
Project Engineer: Ted Kautman 858.694.3166

San Diego Gas & Electric, Sunrise Power Link: Construction of the Suncrest Substation
Bell Bluff Truck Trail
Alpine, CA
Project Manager: Matt Huber 858-654-1651

The following is a list of the Supervisors to be employed by Tom C. Dyke Drilling and Blasting, Inc. for the Suncrest Dynamic Reactive Power Support Project:

Mike Burkett employed by Tom C. Dyke Drilling and Blasting, Inc. since May of 1975 as Drilling and Blasting Superintendent and Blaster. Licensed State of California Blaster since December 1975.

Anthony J. Corirossi employed by Tom C. Dyke Drilling and Blasting, Inc. since July 1996 as Blasters Helper and Blaster. Licensed State of California Blaster since February 1998.

Chad Bartley employed by Tom C. Dyke Drilling and Blasting, Inc. since August 2, 2002 as Blasters Helper and Blaster. Licensed State of California Blaster since December 10, 2012.

The above personnel were supervisors on the previous listed projects successfully completed.

If you have any questions or require additional information, please contact the undersigned.

TOM C. DYKE DRILLING AND BLASTING, INC.
California Contractors License #542984

Mike Burkett
Mike Burkett

Jones Seismic Services

P. O. Box 2366 • Alpine, California 91903
(619) 659-3020 • FAX: (619) 659-1264

19 February, 2019

Tom C. Dyke Drilling & Blasting
P.O. Box 352
Alpine, CA 91903

Attention: Mike Burkett

Subject: Pre-Blast Inspection

Project: AM Ortega – NextEra Energy, Suncrest SVC Substation
San Diego County, CA

Dear Mike,
As requested, I have completed the pre-blast inspection of the structure in the vicinity of the proposed project blasting. The inspection was conducted on February 19, 2019 at the following:

> Garage Building – North side of Bell Bluff Truck Trail, NW of future SVC Substation
> (Exterior Inspection Only – Doors were locked, no access to the interior was available)

The inspection consists of more than 150 still photographs of representative conditions taken without the moving of furniture or objects, and a digital recording of the narrative. The inspection is only for the purpose of determining the existence of any visible or reasonably recognizable preexisting defects or damages in any structure. It should be noted that it is not possible for every defect or crack to be photographed, or seen. It is human nature to miss a small percentage of what is visible. In addition, many factors such as lighting, furniture, decorator items, and environmental conditions have a substantial effect on the visibility of many details. Because of these factors, we have spent considerable time on the inspection, in an effort to be as thorough as possible. Copies of the photographs, and narratives will be delivered to your office.

Please let me know if I can be of further assistance.

Sincerely,

Leland R. Jones
Jones Seismic Services

COUNTY OF SAN DIEGO

SHERIFF'S DEPARTMENT
BLASTING PERMIT
EP#0002

THE BOARD OF SUPERVISORS of the County of San Diego, has prescribed as defined in the County Fire Code Section 96.1.202 and Section 5601.2.3 a Blasting Permit shall be issued for the effective period and shall not exceed the valid period of time or location listed.

Therefore, pursuant to the San Diego County Fire Code, Tom C Dyke Drilling & Blasting, Inc. **is hereby authorized to blasting permit**

from: February 6, 2019 **to** November 20, 2019

Located at: Bell Bluff Truck Trail, 1.83 Miles West of Japatul Valley Road

VALID IN SAN DIEGO COUNTY ONLY

THIS LICENSE IS NOT TRANSFERABLE FROM PERSON TO PERSON OR FROM PLACE TO PLACE
This permit does not excuse any owner or operator from complying with all applicable federal, state, county or local laws, ordinances or regulations. The owner or operator is required to determine if another permit or approval from any other agency or department is necessary. The County, by issuing this permit, does not relinquish its right to enforce any violation of law.
I.D. ISSUED TO APPROVED EXPLOSIVE HANDLERS

William D. Gore
SHERIFF, San Diego County

By R. Harper

Date Issued February 6, 2019

SAN DIEGO COUNTY
SHERIFF'S DEPARTMENT
License Division, 9621 Ridgehaven Court, PO Box 939062
San Diego, CA 92193-9062

William D. Gore, Sheriff

APPLICATION FOR BLASTING PERMIT

FILE # EP 0002

***IN ADDITION TO THE INDIVIDUAL BACKGROUND APPLICATION, YOU MUST SUBMIT THE FOLLOWING ITEMS*:**

[ ] State Blaster's Permit – Cal-OSHA Blaster's Permit
[ ] Certificate of Insurance
[ ] Parcel Number(s) of blasting location
[ ] State COE
[ ] Site map for each blasting location
[ ] Other _____

(Print or Type only)

TOM C. DYKE

Name of Company Requesting Blasting Service: DRILLING & BLASTING, INC. **Company Phone #** 619.445.2270

Local Company Address: 1115 (Number) TAVERN ROAD (Street) ALPINE (City) CA (State) 91901 (Zip)

Local Mailing Address for Permit Holder: PO BOX 352 (Number Street) ALPINE 91903 (City) **Local Office Phone #** 619.445.2270

Address Where Use Is Requested: BELL BLUFF TRUCK TRAIL, 1.83 MILES WEST OF JAPATUL VLY RD **Parcel #** _____

Fire District: CAL FIRE SAN DIEGO **Contact Name:** COMMAND CENTER **Phone#** 619-590-3170

Name of Person Responsible for Conducting the Blasting: MIKE BURKETT **Blaster's Cell #** 619.548.2741 **ID #** _____

BLASTING INSPECTOR INFORMATION
Name of Inspector: LELAND JONES **Cal OSHA ID#** 6234
Inspector's Cell # 619.520.8085 **Minor blast** ☐ **Major blast** ☒
Company Inspector works for: JONES SEISMIC SERVICES

Date(s) of Blasting Operation: From 02.01.19 to 11.20.19
From _____ to _____
From _____ to _____
From _____ to _____

Purpose of blasting: EXCAVATION FOR SUNCREST SVC SUBSTATION & UNDERGROUND ELECTRICAL TRANSMISSION LINES

Attach map of property where explosives will be used depicting the following:

1. Size and shape of property
2. Exact location of explosives usage
3. Distances from point of usage to property boundaries
4. Exact location of any structures
5. Nearest public roadways
6. Parcel number(s)

SEE ATTACHED GOOGLE IMAGE MAPS: BELL BLUFF TRUCK TRAIL, 1.83 MILES WEST OF JAPATUL VALLEY ROAD
NO HOMES OR BUSINESSES WITHIN 1,000 FEET OF PROJECT BLASTING.
NO ON-SITE STORAGE OF EXPLOSIVES REQUIRED: ALL EXPLOSIVES WILL BE TRANSPORTED TO THE SITE FROM OUR ALPINE FACILITY AND UNUSED EXPLOSIVES RETURNED DAILY TO OUR FACILITY.
PROJECT MAY REQUIRE 5 – 10 DAYS OF BLASTING.

SUPPLEMENTAL APPLICATION FOR BLASTING PERMIT
PAGE TWO
FILE # EP 0002

INDEMNIFICATION AND DEFENSE OF LAWSUITS: The applicant shall: (1) indemnify and hold harmless the County, its agents, officers and employees (hereinafter collectively "County"), from any claim, demand, action or proceeding (hereinafter collectively "claims") against the county resulting from any action that the county may take with respect to this application, or that the applicant may take in reliance on any permit that the county may issue pursuant to this application; (2) pay any damages, court costs and attorney's fees that the county may be required to pay as a result of any action that the County may take with respect to this application, or that the applicant may take in reliance on any permit that the County may issue pursuant to this application; and (3) upon the written request of the County, defend the County from any claims against the County resulting from any action that the county may take with respect to this application, or that the applicant may take in reliance on any permit that the County may issue pursuant to this application. At its sole discretion, the County may participate at its own expense in the defense of any such action, but such participation shall not relieve the applicant of any obligation imposed by this condition. The county shall notify the applicant promptly of any claim and cooperate fully in the defense. When the county requests that the applicant defend the County, the applicant and the County shall jointly agree on the selection of legal counsel. If the county, in its sole discretion, determines that a conflict of interest may result from the joint legal representation of the county and the applicant, the County may require the applicant to retain separate legal counsel to represent the County.

I HEREBY CERTIFY UNDER PENALTY OF PERJURY THAT THE STATEMENTS MADE IN THIS APPLICATION ARE TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF. I FURTHER CERTIFY THAT I UNDERSTAND AND WILL ABIDE BY ALL FEDERAL, STATE AND LOCAL LAWS, ORDINANCES, RULES OR ORDERS TO PERFORM THOSE ACTS NOTED HEREIN IF THIS PERMIT IS ISSUED. I UNDERSTAND THAT ALL UNUSED INVENTORY COVERED BY A PERMIT WILL BE DISPOSED OF ON OR BEFORE THE PERMIT EXPIRATION DATE BY:

_____ Returning to source
_____ Surrendering to issuing authority
_____ Totally destroying
__X__ Applying for a new permit

SIGNATURE Teri Ragsdale DATE 1.28.19

FOR OFFICIAL USE:

APPLICATION ACCEPTED BY _____ DATE _____

STEP 1 FOR FIRE DEPARTMENT USE ONLY

Copy of the Sheriff's Explosives Permit on file? [ ]Yes [ ]No
Copy of the grading permit on file? [ ]Yes [ ]No
Map with blast site 300' or 600' on file? [ ]Yes [ ]No
Has the permit fee been paid? Amount: _____
List of addresses requiring notification on file? [ ]Yes [ ]No
List of addresses requiring inspection on file? [ ]Yes [ ]No
Has the blast been approved by Zoning? [ ]Yes [ ]No
Copy of the seismograph report on file? [ ]Yes [ ]No

Fire Station: _____ Station Number: _____
Street City Zip
Fire Dept Representative: _____ Dept. Reps #: _____ [ ] Approved [ ] Denied

STEP 2 SHERIFF – BOMB/ARSON

[ ] Approved [ ] Disapproved
BY: _____ Date: _____
Reason: _____ Code section: _____

STEP 3 SHERIFF SUBSTATION _____

[ ] Approved [ ] Disapproved
BY: _____ Date: _____
Reason: _____ Code section: _____

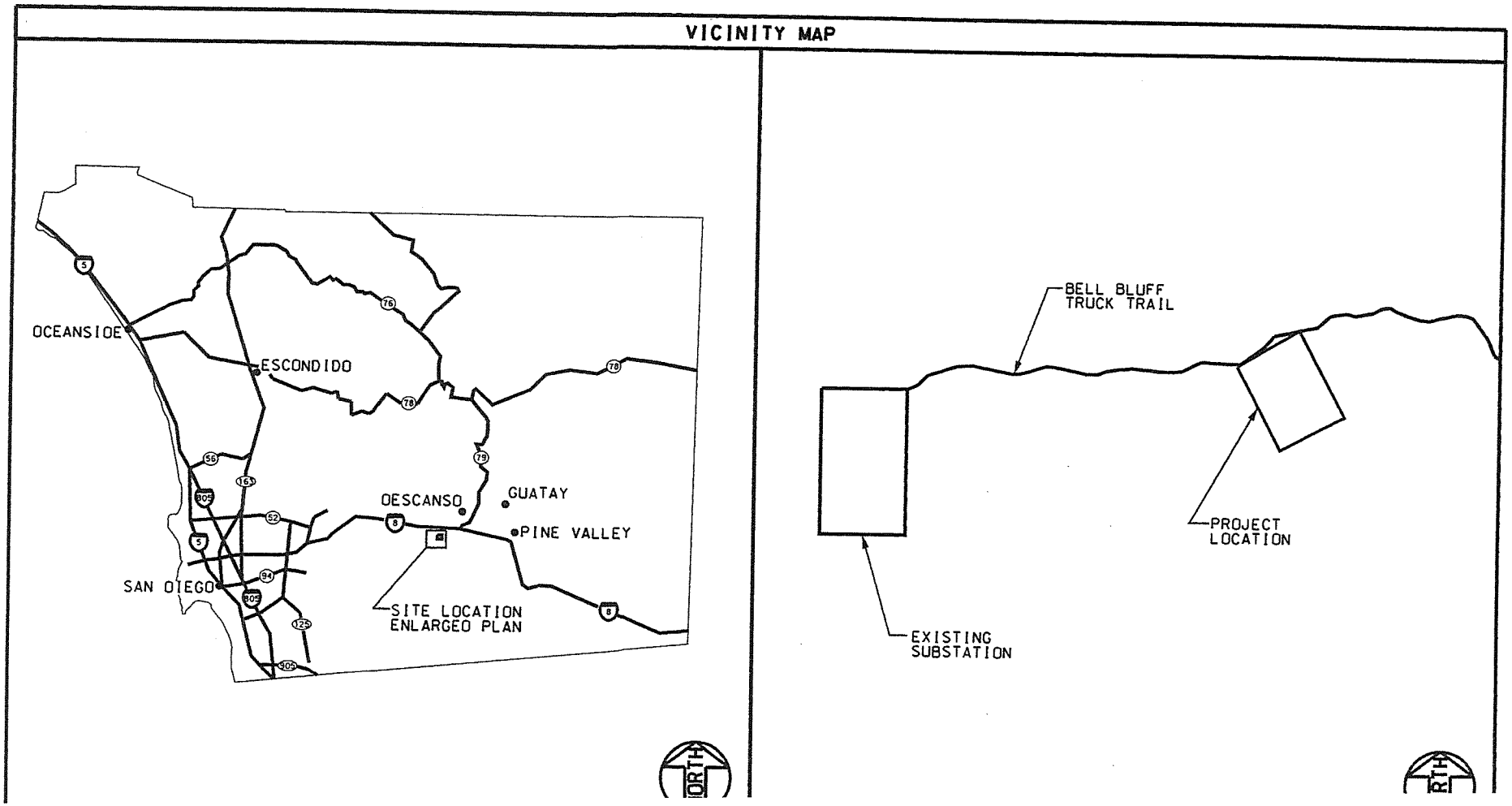
STEP 4 SHERIFF SUPERVISOR _____

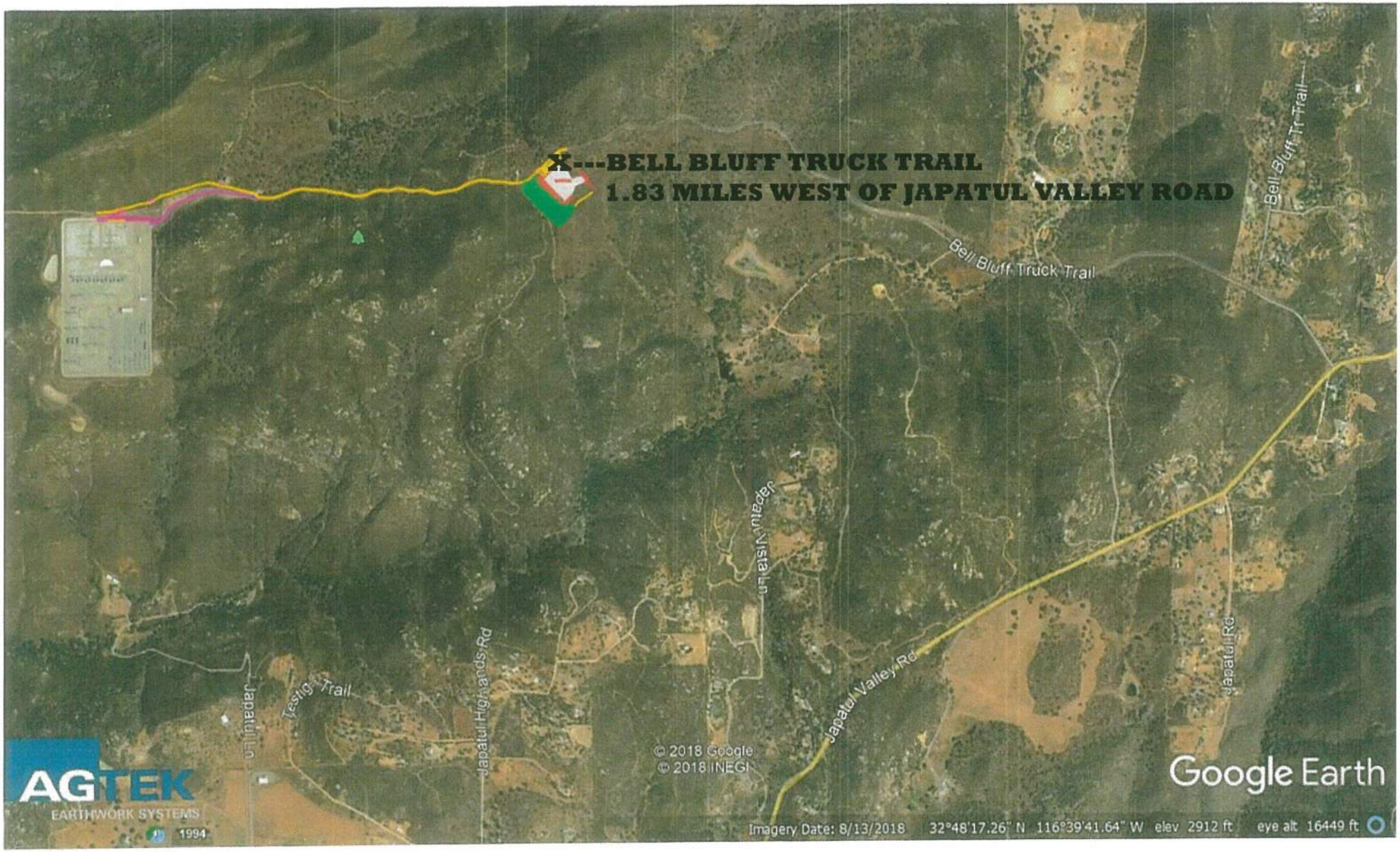
[ ] Approved [ ] Disapproved
BY: _____ Date: _____
Reason: _____ Code section: _____

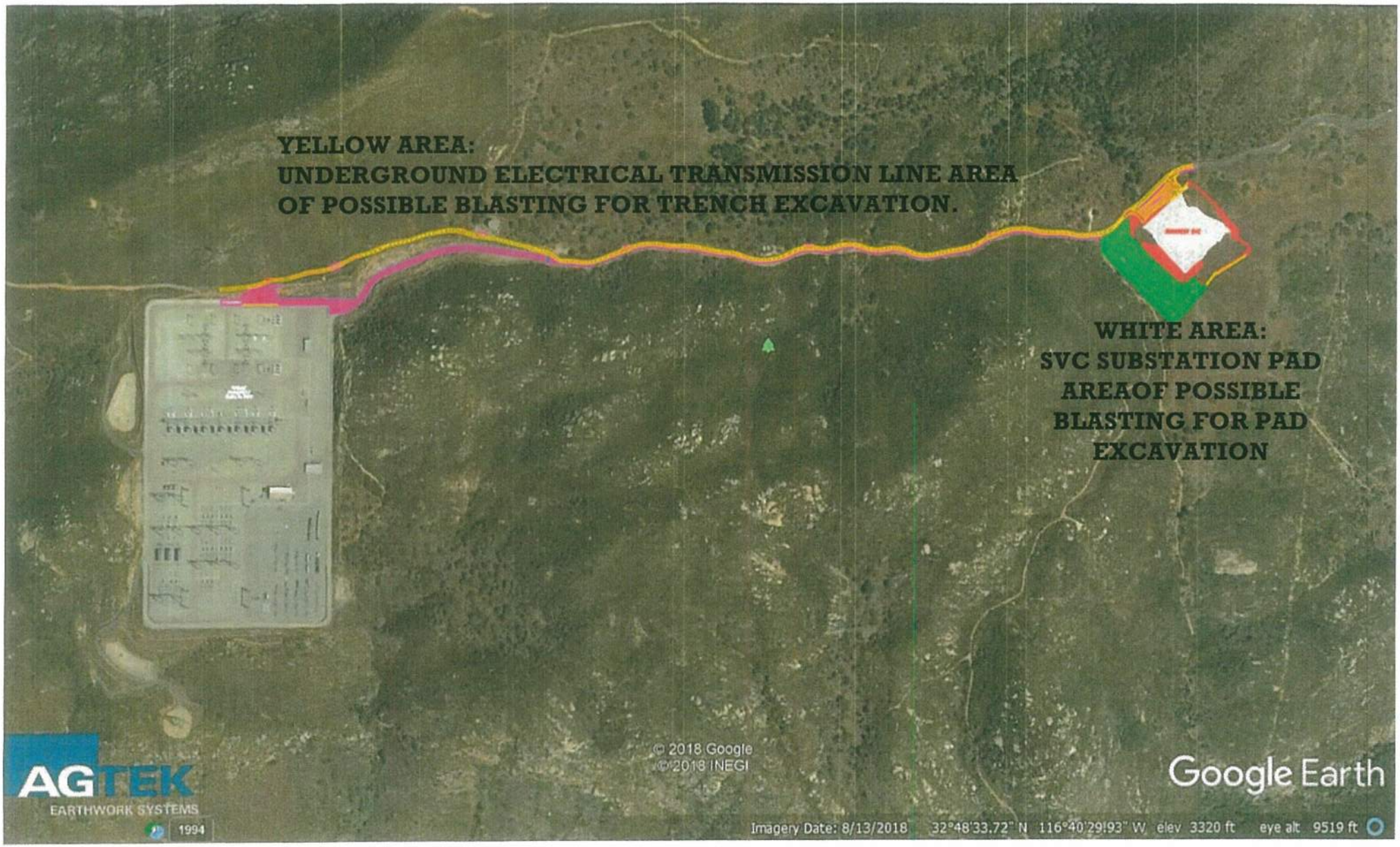
Revised 3-24-16

T SVC SUBSTATION & TRANSMISSION LINE PR
SUNCREST SVC SUBSTATION SITEWORK

SAN DIEGO COUNTY, CALIFORNIA




X---BELL BLUFF TRUCK TRAIL
1.83 MILES WEST OF JAPATUL VALLEY ROAD
Bell Bluff Truck Trail
Bell Bluff Tr Trail
Japatul Vista Ln
Japatul Valley Rd
Japatul Rd
Japatul Highlands Rd
Tesig Trail
Japatul Ln
© 2018 Google
© 2018 INEGI
AGTEK
EARTHWORK SYSTEMS
1994
Google Earth
Imagery Date: 8/13/2018 32°48'17.26" N 116°39'41.64" W elev 2912 ft eye alt 16449 ft


YELLOW AREA:
UNDERGROUND ELECTRICAL TRANSMISSION LINE AREA
OF POSSIBLE BLASTING FOR TRENCH EXCAVATION.
WHITE AREA:
SVC SUBSTATION PAD
AREAOF POSSIBLE
BLASTING FOR PAD
EXCAVATION
AGTEK
EARTHWORK SYSTEMS
1994
© 2018 Google
© 2018 INEGI
Google Earth
Imagery Date: 8/13/2018 32°48'33.72" N 116°40'29.93" W elev 3320 ft eye alt 9519 ft

-----Original Message-----
From: Smith, Ashley <Ashley.Smith2@sdcounty.ca.gov>
Sent: Tuesday, January 22, 2019 10:40 AM
To: Flajole, Andy <Andy.Flajole@nexteraenergy.com>
Cc: Charbonneau, Adrienne <Adrienne.Charbonneau@nexteraenergy.com>
Subject: RE: Blasting permit issue

CAUTION - EXTERNAL EMAIL

Good Morning Andy,

Sorry to have missed you Friday. You are correct, we had determined that a grading permit was not required to be obtained from the County as you are a public utility and subject to CPUC oversight and regulation.

Please let me know if this is sufficient for your contractor of if you need me to speak with them today on the subject.

Thank you,

Ashley

Ashley Smith | Planning Manager | Project Planning COUNTY OF SAN DIEGO | Planning & Development Services T. 858.495.5375

ATTACHMENT A

Insurance Certificate

TOMDYKE-01 ZWANG

CERTIFICATE OF LIABILITY INSURANCE

DATE (MM/DD/YYYY) 08/06/2018

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AFFIRMATIVELY OR NEGATIVELY AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW. THIS CERTIFICATE OF INSURANCE DOES NOT CONSTITUTE A CONTRACT BETWEEN THE ISSUING INSURER(S), AUTHORIZED REPRESENTATIVE OR PRODUCER, AND THE CERTIFICATE HOLDER.

IMPORTANT: If the certificate holder is an ADDITIONAL INSURED, the policy(ies) must have ADDITIONAL INSURED provisions or be endorsed. If SUBROGATION IS WAIVED, subject to the terms and conditions of the policy, certain policies may require an endorsement. A statement on this certificate does not confer rights to the certificate holder in lieu of such endorsement(s).

PRODUCER License # 0C36861 San Diego-Alliant Insurance Services, Inc. 701 B St 6th Fl San Diego, CA 92101	CONTACT NAME: Mechelle Wilson PHONE (A/C, No, Ext): (619) 238-1828 FAX (A/C, No): (619) 699-2100 E-MAIL ADDRESS: MWilson@alliant.com
	INSURER(S) AFFORDING COVERAGE — NAIC #
	INSURER A : Lancer Insurance Company — 26077
INSURED Tom C. Dyke Drilling & Blasting Inc. PO Box 352 Alpine, CA 91903	INSURER B : INSURER C : INSURER D : INSURER E : INSURER F :

COVERAGES CERTIFICATE NUMBER: REVISION NUMBER:

THIS IS TO CERTIFY THAT THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

INSR LTR	TYPE OF INSURANCE	ADDL INSD	SUBR WVD	POLICY NUMBER	POLICY EFF (MM/DD/YYYY)	POLICY EXP (MM/DD/YYYY)	LIMITS	
A	X COMMERCIAL GENERAL LIABILITY							
	CLAIMS-MADE X OCCUR	X	X	GL80285716	08/15/2018	08/15/2019	EACH OCCURRENCE	$ 1,000,000
							DAMAGE TO RENTED PREMISES (Ea occurrence)	$ 100,000
							MED EXP (Any one person)	$ 5,000
							PERSONAL & ADV INJURY	$ 1,000,000
	GEN'L AGGREGATE LIMIT APPLIES PER:						GENERAL AGGREGATE	$ 2,000,000
	X POLICY X PRO-JECT LOC						PRODUCTS - COMP/OP AGG	$ 2,000,000
	OTHER:							$
	AUTOMOBILE LIABILITY						COMBINED SINGLE LIMIT (Ea accident)	$ 1,000,000
	ANY AUTO						BODILY INJURY (Per person)	$
	OWNED AUTOS ONLY X SCHEDULED AUTOS	X	X	BA80285616	08/15/2018	08/15/2019	BODILY INJURY (Per accident)	$
	X HIRED AUTOS ONLY X NON-OWNED AUTOS ONLY						PROPERTY DAMAGE (Per accident)	$
								$
A	UMBRELLA LIAB X OCCUR						EACH OCCURRENCE	$ 4,000,000
	X EXCESS LIAB CLAIMS-MADE			XS80285816	08/15/2018	08/15/2019	AGGREGATE	$ 4,000,000
	DED X RETENTION $ 0							$
	WORKERS COMPENSATION AND EMPLOYERS' LIABILITY Y/N						PER STATUTE OTH-ER	
	ANY PROPRIETOR/PARTNER/EXECUTIVE OFFICER/MEMBER EXCLUDED? (Mandatory in NH)	N/A					E.L. EACH ACCIDENT	$
	If yes, describe under DESCRIPTION OF OPERATIONS below						E.L. DISEASE - EA EMPLOYEE	$
							E.L. DISEASE - POLICY LIMIT	$

DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES (ACORD 101, Additional Remarks Schedule, may be attached if more space is required)

A.M. Ortega Construction, Inc., its owner, subsidiaries, affiliates, and their respective officers, directors, employees, agents, representatives, successors and assigns are included as Additional Insureds on primary and non-contributory basis, waiver of subrogation applies.

CERTIFICATE HOLDER

A.M. Ortega Construction, Inc.
10125 Channel Rd
Lakeside, CA 92040

CANCELLATION

SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, NOTICE WILL BE DELIVERED IN ACCORDANCE WITH THE POLICY PROVISIONS.

AUTHORIZED REPRESENTATIVE

POLICY NUMBER: GL80285716

COMMERCIAL GENERAL LIABILITY
CG 20 10 04 13

THIS ENDORSEMENT CHANGES THE POLICY. PLEASE READ IT CAREFULLY.

ADDITIONAL INSURED – OWNERS, LESSEES OR CONTRACTORS – SCHEDULED PERSON OR ORGANIZATION

This endorsement modifies insurance provided under the following:

COMMERCIAL GENERAL LIABILITY COVERAGE PART

SCHEDULE

Name Of Additional Insured Person(s) Or Organization(s)	Location(s) Of Covered Operations
All Persons or Organizations for which coverage is required by contract or agreement.	
Information required to complete this Schedule, if not shown above, will be shown in the Declarations.	

A. **Section II – Who Is An Insured** is amended to include as an additional insured the person(s) or organization(s) shown in the Schedule, but only with respect to liability for "bodily injury", "property damage" or "personal and advertising injury" caused, in whole or in part, by:

1. Your acts or omissions; or
2. The acts or omissions of those acting on your behalf;

in the performance of your ongoing operations for the additional insured(s) at the location(s) designated above.

However:

1. The insurance afforded to such additional insured only applies to the extent permitted by law; and
2. If coverage provided to the additional insured is required by a contract or agreement, the insurance afforded to such additional insured will not be broader than that which you are required by the contract or agreement to provide for such additional insured.

B. With respect to the insurance afforded to these additional insureds, the following additional exclusions apply:

This insurance does not apply to "bodily injury" or "property damage" occurring after:

1. All work, including materials, parts or equipment furnished in connection with such work, on the project (other than service, maintenance or repairs) to be performed by or on behalf of the additional insured(s) at the location of the covered operations has been completed; or
2. That portion of "your work" out of which the injury or damage arises has been put to its intended use by any person or organization other than another contractor or subcontractor engaged in performing operations for a principal as a part of the same project.

C. With respect to the insurance afforded to these additional insureds, the following is added to **Section III – Limits Of Insurance:**

If coverage provided to the additional insured is required by a contract or agreement, the most we will pay on behalf of the additional insured is the amount of insurance:

1. Required by the contract or agreement; or
2. Available under the applicable Limits of Insurance shown in the Declarations;

whichever is less.

This endorsement shall not increase the applicable Limits of Insurance shown in the Declarations.

POLICY NUMBER: GL80285716

COMMERCIAL GENERAL LIABILITY
CG 20 37 04 13

THIS ENDORSEMENT CHANGES THE POLICY. PLEASE READ IT CAREFULLY.

ADDITIONAL INSURED – OWNERS, LESSEES OR CONTRACTORS – COMPLETED OPERATIONS

This endorsement modifies insurance provided under the following:

COMMERCIAL GENERAL LIABILITY COVERAGE PART
PRODUCTS/COMPLETED OPERATIONS LIABILITY COVERAGE PART

SCHEDULE

Name Of Additional Insured Person(s) Or Organization(s)	Location And Description Of Completed Operations
All persons or organizations for which coverage is required by contract or agreement.	
Information required to complete this Schedule, if not shown above, will be shown in the Declarations.	

A. **Section II – Who Is An Insured** is amended to include as an additional insured the person(s) or organization(s) shown in the Schedule, but only with respect to liability for "bodily injury" or "property damage" caused, in whole or in part, by "your work" at the location designated and described in the Schedule of this endorsement performed for that additional insured and included in the "products-completed operations hazard".

However:

1. The insurance afforded to such additional insured only applies to the extent permitted by law; and
2. If coverage provided to the additional insured is required by a contract or agreement, the insurance afforded to such additional insured will not be broader than that which you are required by the contract or agreement to provide for such additional insured.

B. With respect to the insurance afforded to these additional insureds, the following is added to **Section III – Limits Of Insurance:**

If coverage provided to the additional insured is required by a contract or agreement, the most we will pay on behalf of the additional insured is the amount of insurance:

1. Required by the contract or agreement; or
2. Available under the applicable Limits of Insurance shown in the Declarations;

whichever is less.

This endorsement shall not increase the applicable Limits of Insurance shown in the Declarations.

THIS ENDORSEMENT CHANGES THE POLICY. PLEASE READ IT CAREFULLY.

PRIMARY AND NONCONTRIBUTORY – OTHER INSURANCE CONDITION

This endorsement modifies insurance provided under the following:

COMMERCIAL GENERAL LIABILITY COVERAGE PART
PRODUCTS/COMPLETED OPERATIONS LIABILITY COVERAGE PART

The following is added to the **Other Insurance** Condition and supersedes any provision to the contrary:

Primary And Noncontributory Insurance

This insurance is primary to and will not seek contribution from any other insurance available to an additional insured under your policy provided that:

(1) The additional insured is a Named Insured under such other insurance; and

(2) You have agreed in writing in a contract or agreement that this insurance would be primary and would not seek contribution from any other insurance available to the additional insured.

POLICY NUMBER: GL80285716

COMMERCIAL GENERAL LIABILITY
CG 24 04 05 09

WAIVER OF TRANSFER OF RIGHTS OF RECOVERY AGAINST OTHERS TO US

This endorsement modifies insurance provided under the following:

COMMERCIAL GENERAL LIABILITY COVERAGE PART
PRODUCTS/COMPLETED OPERATIONS LIABILITY COVERAGE PART

SCHEDULE

Name Of Person Or Organization:
All persons or organizations for which coverage is required by contract or agreement.
Information required to complete this Schedule, if not shown above, will be shown in the Declarations.

The following is added to Paragraph **8. Transfer Of Rights Of Recovery Against Others To Us** of **Section IV – Conditions:**

We waive any right of recovery we may have against the person or organization shown in the Schedule above because of payments we make for injury or damage arising out of your ongoing operations or "your work" done under a contract with that person or organization and included in the "products-completed operations hazard". This waiver applies only to the person or organization shown in the Schedule above.

POLICY NUMBER: BA80285616

LANCER INSURANCE
The Difference is Our Attitude.

THIS ENDORSEMENT CHANGES THE POLICY. PLEASE READ IT CAREFULLY.

ADDITIONAL INSURED – SCHEDULED PERSON OR ORGANIZATION – PRIMARY OR NON-CONTRIBUTORY BASIS

This endorsement modifies insurance provided under the following:

BUSINESS AUTO COVERAGE FORM
AUTO DEALERS COVERAGE FORM
MOTOR CARRIER COVERAGE FORM
TRUCKERS COVERAGE FORM

With respect to coverage provided by this endorsement, the provisions of the Coverage Form apply unless modified by the endorsement.

This endorsement changes the policy effective on the inception date of the policy unless another date is indicated below.

SCHEDULE

Name of Person or Organization:	**Endorsement Effective Date:**
All persons or organizations for which coverage is required by contract or agreement.	08/15/2018

WHO IS AN INSURED is changed as follows:

A. The person or organization shown in the Schedule above is included as an "insured," but only with respect to liability arising out of the operations and activities of the Named Insured. The Insurance provided under this policy to the person or organization shown in the Schedule above is primary insurance and we will not seek contribution from any other insurance available to that insured; except that, if the person or organization shown in the Schedule is solely liable for the "loss," this insurance shall be exess over any other collectible insurance and we shall contribute only to "loss" covered under this policy.

B. The coverage provided by this endorsement shall be subject to all the terms, conditions and exclusions of the policy and all endorsements attached thereto.

C. The Additional Insured named in the above Schedule is covered for an amount up to the Limit of Insurance required by an agreement you have with them or the policy's Limit of Insurance, whichever is less.

POLICY NUMBER: BA80285616

COMMERCIAL AUTO
CA 04 44 10 13

THIS ENDORSEMENT CHANGES THE POLICY. PLEASE READ IT CAREFULLY.

WAIVER OF TRANSFER OF RIGHTS OF RECOVERY AGAINST OTHERS TO US (WAIVER OF SUBROGATION)

This endorsement modifies insurance provided under the following:

AUTO DEALERS COVERAGE FORM
BUSINESS AUTO COVERAGE FORM
MOTOR CARRIER COVERAGE FORM

With respect to coverage provided by this endorsement, the provisions of the Coverage Form apply unless modified by the endorsement.

This endorsement changes the policy effective on the inception date of the policy unless another date is indicated below.

Named Insured: Tom C. Dyke dba Tom C. Dyke Drilling & Blasting, Inc.
Endorsement Effective Date: 08/15/2018

SCHEDULE

Name(s) Of Person(s) Or Organization(s): All persons or organizations for which coverage is required by contract or agreement.
Information required to complete this Schedule, if not shown above, will be shown in the Declarations.

The **Transfer Of Rights Of Recovery Against Others To Us** condition does not apply to the person(s) or organization(s) shown in the Schedule, but only to the extent that subrogation is waived prior to the "accident" or the "loss" under a contract with that person or organization.

POLICYHOLDER COPY

SP

STATE COMPENSATION INSURANCE FUND

P.O. BOX 8192, PLEASANTON, CA 94588

CERTIFICATE OF WORKERS' COMPENSATION INSURANCE

ISSUE DATE: 01-31-2019

GROUP:
POLICY NUMBER: 9040857-2019
CERTIFICATE ID: 153
CERTIFICATE EXPIRES: 01-01-2020
01-01-2019/01-01-2020

A.M. ORTEGA

10125 CHANNEL RD
LAKESIDE CA 92040-1703

SP

JOB: SUNCREST SVC SUBSTATION
BELL BLUFF TRUCK TRAIL
ALPINE
CA 91901

This is to certify that we have issued a valid Workers' Compensation insurance policy in a form approved by the California Insurance Commissioner to the employer named below for the policy period indicated.

This policy is not subject to cancellation by the Fund except upon 30 days advance written notice to the employer.

We will also give you 30 days advance notice should this policy be cancelled prior to its normal expiration.

This certificate of insurance is not an insurance policy and does not amend, extend or alter the coverage afforded by the policy listed herein. Notwithstanding any requirement, term or condition of any contract or other document with respect to which this certificate of insurance may be issued or to which it may pertain, the insurance afforded by the policy described herein is subject to all the terms, exclusions, and conditions, of such policy.

Authorized Representative

President and CEO

EMPLOYER'S LIABILITY LIMIT INCLUDING DEFENSE COSTS: $1,000,000 PER OCCURRENCE.

ENDORSEMENT #0016 ENTITLED ADDITIONAL INSURED EMPLOYER EFFECTIVE 2019-01-31 IS ATTACHED TO AND FORMS A PART OF THIS POLICY. NAME OF ADDITIONAL INSURED: A.M. ORTEGA

ENDORSEMENT #2066 ENTITLED CERTIFICATE HOLDERS' NOTICE EFFECTIVE 01-01-2013 IS ATTACHED TO AND FORMS A PART OF THIS POLICY.

ENDORSEMENT #2570 ENTITLED WAIVER OF SUBROGATION EFFECTIVE 2019-01-31 IS ATTACHED TO AND FORMS A PART OF THIS POLICY. THIRD PARTY NAME: A.M. ORTEGA

EMPLOYER

TOM C DYKE DRILLING & BLASTING INC AND/OR INC
AND/OR DYKE, TOM AND/OR C.
PO BOX 352
ALPINE CA 91903

[P1Q,HO]

(REV.7-2014)

PRINTED : 01-31-2019

ATTACHMENT B

Permits & Licenses

U.S. Department of Justice
Bureau of Alcohol, Tobacco, Firearms and Explosives

Federal Explosives License/Permit
(18 U.S.C. Chapter 40)

In accordance with the provisions of Title XI, Organized Crime Control Act of 1970, and the regulations issued thereunder (27 CFR Part 555), you may engage in the activity specified in this license or permit within the limitations of Chapter 40, Title 18, United States Code and the regulations issued thereunder, until the expiration date shown. **THIS LICENSE IS NOT TRANSFERABLE UNDER 27 CFR 555.53.** See "WARNINGS" and "NOTICES" on reverse.

Direct ATF Correspondence To: ATF - Chief, FELC 244 Needy Road Martinsburg, WV 25405-9431	License/Permit Number: **9-CA-073-20-8M-02091**
Chief, Federal Explosives Licensing Center (FELC): Christopher R. Reeves	Expiration Date: **December 1, 2018**

Name
TOM C DYKE DRILLING AND BLASTING INC

Premises Address (Changes? Notify the FELC at least 10 days before the move.)
1115 TAVERN ROAD
ALPINE, CA 91901-

Type of License or Permit
20-MANUFACTURER OF EXPLOSIVES

Purchasing Certification Statement

The licensee or permittee named above shall use a copy of this license or permit to assist a transferor of explosives to verify the identity and the licensed status of the licensee or permittee as provided by 27 CFR Part 555. The signature on each copy must be an original signature. A faxed, scanned or e-mailed copy of the license or permit with a signature intended to be an original signature is acceptable. The signature must be that of the Federal Explosives Licensee (FEL) or a responsible person of the FEL. I certify that this is a true copy of a license or permit issued to the licensee or permittee named above to engage in the business or operations specified above under "Type of License or Permit."

Tom C Dyke — Licensee/Permittee/Responsible Person Signature

OWNER — Position Title

TOM C. DYKE — Printed Name

12.7.15 — Date

Mailing Address (Changes? Notify the FELC of any changes.)

TOM C DYKE DRILLING AND BLASTING INC
PO BOX 352
ALPINE, CA 91903-

Previous Edition is Obsolete TOM C DYKE DRILLING AND BLASTING INC 1115 TAVERN ROAD 91901 9-CA-073-20-8M-02091 December 1, 2018 20-MANUFACTURER OF EXPLOSIVES

ATF Form 5400.14/5400.15 Part I
Revised October 2011

Federal Explosives License (FEL) Customer Service Information

Federal Explosives Licensing Center (FELC)
244 Needy Road
Martinsburg, WV 25405-9431

Toll-free Telephone Number: (877) 283-3352
Fax Number: (304) 616-4401
E-mail: FELC@atf.gov

ATF Homepage: www.atf.gov

Change of Address *(27 CFR 555.54(a)(1))*. Licensees or permittees may during the term of their current license or permit remove their business or operations to a new location at which they intend regularly to carry on such business or operations. The licensee or permittee is required to give notification of the new location of the business or operations not less than 10 days prior to such removal with the Chief, Federal Explosives Licensing Center. The license or permit will be valid for the remainder of the term of the original license or permit. **(The Chief, FELC, shall, if the licensee or permittee is not qualified, refer the request for amended license or permit to the Director of Industry Operations for denial in accordance with § 555.54.)**

Right of Succession *(27 CFR 555.59)*. (a) Certain persons other than the licensee or permittee may secure the right to carry on the same explosive materials business or operations at the same address shown on, and for the remainder of the term of, a current license or permit. Such persons are: (1) The surviving spouse or child, or executor, administrator, or other legal representative of a deceased licensee or permittee; and (2) A receiver or trustee in bankruptcy, or an assignee for benefit of creditors. (b) In order to secure the right provided by this section, the person or persons continuing the business or operations shall furnish the license or permit for for that business or operations for endorsement of such succession to the Chief, FELC, within 30 days from the date on which the successor begins to carry on the business or operations.

(Continued on reverse side)

Cut Here ✂

Federal Explosives License/Permit (FEL) Information Card

License Permit Name: TOM C DYKE DRILLING AND BLASTING INC

Business Name:

License Permit Number: 9-CA-073-20-8M-02091

License Permit Type: 20-MANUFACTURER OF EXPLOSIVES

Expiration: December 1, 2018

Please Note: Not Valid for the Sale or Other Disposition of Explosives

DEPARTMENT OF JUSTICE

Bureau of Alcohol, Tobacco,
Firearms and Explosives

Martinsburg, WV 25405

November 6, 2018

Tom C Dyke Drilling And Blasting Inc
PO Box 352
Alpine, CA 91903-

901090: CRR/SMC
5400
File Number: 9-CA-02091

Premises Address: 1115 Tavern Road, Alpine, CA 91901-

Dear Sir/Madam:

This letter acknowledges receipt of your timely application to renew your Federal explosives license/permit.

The Bureau of Alcohol, Tobacco, Firearms and Explosives (ATF) is not able to process your application prior to the expiration date of your license/permit. However, Federal law allows you to continue operations under your current license/permit until such time as ATF completes processing your application. See 5 U.S.C. § 558. This letter, or as explained below, a follow-up letter, will serve as your license/permit until we complete action on your renewal. It is referred to as a Letter of Authorization (LOA).

Since we have not completed processing your application, you may supply a copy of this letter to other licensees/permittees, e.g., your distributors, for the next six months (or until we complete action on your renewal, if that occurs in less than six months) as evidence of your licensed/permitted status. If we have not completed processing your application for renewal within six months of the date of this letter, we will send you another letter, which will also be valid for six months (or until we complete action on your renewal, if that occurs in less than six months). This is of course contingent upon your remaining entitled to continue operations under your current license/permit.

Please direct questions or concerns regarding this letter to Susan Clark, 1-877-283-3352.

Sincerely,

Christopher R. Reeves

Christopher R. Reeves
Chief, Federal Explosives Licensing Center

ATF web address: www.atf.gov

U.S. Department of Justice
Bureau of Alcohol, Tobacco, Firearms and Explosives
Federal Explosives Licensing Center (FELC)
www.atf.gov

Federal Explosives Licensing Center
244 Needy Road
Martinsburg, West Virginia 25405
telephone: (877)283-3352 fax: (304)616-4401

02/01/2018

NOTICE OF CLEARANCE

for individuals transporting, shipping, receiving, or possessing explosive materials.

ISSUED TO: TOM C DYKE DRILLING AND BLASTING INC

NOTICE DATE: 02/01/2018

Federal Explosives license/permit no.: 9-CA-073-20-8M-02091
Expiration Date: **December 1, 2018**
Explosives License/Permit Type: 20-MANUFACTURER OF EXPLOSIVES

EXPIRATION DATE: This Notice expires when superseded by a newer Notice which will list all current responsible persons and employee possessors, or when the license or permit expires - whichever comes first.

1. **WARNING. Only those individuals listed below as RESPONSIBLE PERSONS and EMPLOYEE POSSESSORS with a background clearance status of "CLEARED" or "PENDING" are authorized to transport, ship, receive, or possess explosive materials in the course of employment with you.**
2. **"DENIED" STATUS. If an employee possessor has a background clearance status of "DENIED", you MUST take immediate steps to remove the employee from a position requiring the transporting, shipping, receiving, or possessing of explosive materials. Also, if the employee has been listed as a person authorized to accept delivery of explosive materials, you MUST remove the employee from such list and immediately, and in no event later than the second business day after such change, notify distributors of such change, as stated in 27 CFR 555.33(a).**
3. **CHANGE IN RESPONSIBLE PERSONS. You MUST report any change in responsible persons to the Chief, Federal Explosives Licensing Center, within 30 days of the change and new responsible persons MUST include "appropriate identifying information" as defined in 27 CFR 555.11. Fingerprints and photos are NOT required, however they will be required upon renewal of the license or permit.**
4. **CHANGE OF EMPLOYEES. You MUST report any change of employee/possessors to the Chief, FELC, within 30 days. Reports relating to newly hired employees must be submitted on ATF Form 5400.28 for EACH employee.**

Premises Address: 1115 TAVERN ROAD
ALPINE, CA 91901

Mailing Address:
TOM C DYKE DRILLING AND BLASTING INC
PO BOX 352
ALPINE, CA 91903

This 'Notice of Clearance' is provided to you as required by 18 U.S.C. 843(h) and MUST be retained as part of your permanent records and be made available for examination or inspection by ATF officers as required by 27 CFR 555.121. If you receive a Notice subsequent to this Notice, this Notice will no longer be valid.

In accordance with 27 CFR 555.33, Background Checks and Clearances, and 27 CFR 555.57, Change of Control, Change in Responsible Persons, and Change of Employees, ATF's Federal Explosives Licensing Center (FELC) has conducted background checks on the individual(s) you identified as a responsible person(s) and an employee/possessor(s) on your application, or reported after the issuance of your license/permit.

The following is a SUMMARY of the results of the background checks conducted on the individuals you reported as responsible persons and employee/possessors. ATF will be notifying ALL individuals listed on this document of their respective status by separate letter mailed to their residence address.

PLEASE BE ADVISED THAT IT IS UNLAWFUL FOR ANY PERSON REFLECTING A STATUS OF "DENIED" TO TRANSPORT, SHIP, RECEIVE, OR POSSESS EXPLOSIVE MATERIALS.

Please carefully review this Notice to ensure that all the information is accurate. If this Notice is incorrect, please return the Notice to the Chief, FELC, with a statement showing the nature of the error(s). The Chief, FELC, shall correct the error, and return a corrected Notice.

Number of RESPONSIBLE PERSON(S) : 2
Number of EMPLOYEE POSSESSOR(S): 13

LAST NAME, First Name, Middle Name	Clearance Status
RESPONSIBLE PERSONS:	**2**
0001 BURKETT, MICHAEL JAMES	Cleared
0002 DYKE, THOMAS C	Conditionally Cleared
EMPLOYEE POSSESSORS:	**13**
0001 BARTLEY, CHAD MITCHELL	Cleared
0002 CARTER, STEPHEN PAUL	Cleared
0003 CORIROSSI, ANTHONY JOHN	Cleared

continued

LAST NAME, First Name, Middle Name	Clearance Status
0004 CORIROSSI, JOHN ANTHONY	Cleared
0005 CORIROSSI, JOSHUA COLE	Cleared
0006 CORIROSSI, PETER HEROLD	Cleared
0007 DYKE, THOMAS CHARLES II	Cleared
0008 GUITIERREZ, DAVID GUADALUPE	Cleared
0009 HEATH, WYATT THOMAS WILLIAM	Cleared
0010 HEROLD, ROBERT JAY	Cleared
0011 KODER, RANDY MAX JR	Cleared
0012 RAGSDALE, TERI LYNN	Cleared
0013 RUIZ LOPEZ, J CRESCENCIO	Cleared

COUNTY OF SAN DIEGO

SHERIFF'S DEPARTMENT

SHERIFF'S File # 0002

EXPLOSIVES PERMIT

THE BOARD OF SUPERVISORS of the County of San Diego, has prescribed as defined in Chapter 1, Title 3, Divison 5 of the San Diego County Code of Regulatory Ordinances that is shall be unlawful for any person to manufacture, sell, furnish, give away, receive, transport, use, store or possess any explosives in San Diego County without first obtaining a permit from the Sheriff.

NAME TOM C DYKE DRILLING & BLASTING, INC.

ADDRESS 1115 TAVERN ROAD

CITY ALPINE STATE CA ZIP 91901

OCCUPATION CONSTRUCTION, DRILLING & BLASTING

REPRESENTING TOM C. DYKE DRILLING & BLASTING COMPANY

ADDRESS 1115 TAVERN ROAD

CITY ALPINE STATE CA ZIP 91901

TYPE OF BUSINESS CONSTRUCTION, DRILLING & BLASTING

VEHICLE USED TO TRANSPORT - VEHICLES LISTED ON BACK OF PERMIT

TRAVEL ROUTE AS PERSCRIBED BY CALIFORNIA HIGHWAY PATROL

WARNING
Notify Local Authorities
Prior to Blasting Operations

THIS PERMIT LIMITED TO ACTIVITIES, STORAGE AND RESTRICTIONS AS INDICATED:

WARNING
Notify Local Authorities
Prior to Blasting Operations

ACTIVITY PERMITED: PARK VEHICLE, RECEIVE, TRANSPORT, SELL, STORE, USE, & DISPOSE _ STORAGE LOCATION: 1115 TAVERN ROAD, ALPINE, CA 91901
PARCEL # 403-380-49, 403-380-50, 402-220-32

RESTRICTIONS: ALL RECEIVING, USING, SELLING, STORING, DISPOSING, PARK VEHICLE AND TRANSPORTING MUST COMPLY WITH ALL RULES, REGULATIONS AND SAFETY STANDARDS AS SET FORTH UNDER THE STATE OF CALIFORNIA AND THE COUNTY OF SAN DIEGO

TERM OF THIS LICENSE IS NOVEMBER 20, 2018 TO NOVEMBER 20, 2019 INCLUSIVE.

THIS LICENSE IS NOT TRANSFERABLE FROM PERSON TO PERSON OR FROM PLACE TO PLACE

This permit does not excuse any owner or operator from complying with all applicable federal, state, county or local laws, ordinances or regulations. The owner or operator is required to determine if another permit or approval from any other agency or department is necessary. The County, by issuing this permit, does not relinquish its right to enforce any violation of law.

SEE ATTACHED FOR APPROVED EXPLOSIVE HANDLERS

William D. Gore
SHERIFF, San Diego County

By B. Morris

Date Issued NOVEMBER 6, 2018

SITE SPECIFIC BLASTING PERMIT PENDING
SUBMITTED 1.28.19

STATE OF CALIFORNIA
DEPARTMENT OF CALIFORNIA HIGHWAY PATROL

HAZARDOUS MATERIALS TRANSPORTATION LICENSE

CHP 360H (REV. 1/00) OPI 062

CONTROL NUMBER	LICENSE NUMBER	ISSUE DATE	EFFECTIVE DATE	EXPIRATION DATE
228163	30454	1/4/2018	3/1/2018	2/28/2019

CHP CARRIER NUMBER	LOCATION		
CA 3963	680	☐ Duplicate	☐ Replacement
		☐ Initial	☑ Renewal

LICENSEE NAME AND PHYSICAL STATION ADDRESS (if different than below)

TOM C DYKE DRILLING & BLASTING
Tom C. Dyke Drilling & Blasting Company
1115 TAVERN RD
ALPINE CA, US 91901

	LICENSEE NAME AND MAILING ADDRESS
	Attention: MIKE BURKETT TOM C DYKE DRILLING & BLASTING Tom C. Dyke Drilling & Blasting Company PO BOX 352 ALPINE CA, US 91903-0352

PROPERTY OF THE CALIFORNIA HIGHWAY PATROL (CHP)

The original valid license must be kept at the licensee's place of business as indicated on the license and a legible copy must be carried in any vehicle or combination transporting hazardous materials and must be presented to any CHP officer upon request. This license is NON-TRANSFERABLE and must be surrendered to the CHP upon demand or as required by law. A majority change in ownership or control of the licensed activity shall require a new license. This license may be renewed by submitting an application and appropriate fee to the CHP. Persons whose licenses have expired or are otherwise no longer valid must immediately cease the activity requiring a license. THERE IS NO GRACE PERIOD. For licensing information contact CHP, Commercial Vehicle Section at (916) 843-3400.

This carrier is on the special routing/safe stopping place mailing lists as indicated below:

- ☐ **(HMX) Explosives subject to Division 14, California Vehicle Code (CVC).**
- ☐ **(HMPH) Poison Inhalation Hazard materials in bulk packages subject to Division 14.3, CVC.**
- ☐ **(HMRCQ) Highway Route Controlled Quantity radioactive materials subject to Division 14.5, CVC.**

Any person who dumps, spills, or causes the release of hazardous materials or hazardous waste upon any highway shall immediately notify the CHP or the agency having jurisdiction for that highway. The minimum fine for failure to make the appropriate notification is $2,000.00. (CVC Section 23112.5)

U.S. Department of Transportation
Federal Motor Carrier Safety

1200 New Jersey Ave., S.E.

Administration

Washington, DC 20590

January 4, 2018

In reply refer to:
USDOT Number: 501781

TERI RAGSDALE
SECRETARY
TOM DYKE DRILLING AND BLASTING CO INC
PO BOX 352
ALPINE, CA 91903

HAZARDOUS MATERIALS SAFETY PERMIT
HM Safety Permit ID: US-501781-CA-HMSP
Effective Date: January 4, 2018

Dear TERI RAGSDALE:

The Hazardous Materials Safety Permit (HMSP) is verification of the motor carrier's permission to engage in the transportation of hazardous materials listed in 49 CFR 385.403 by motor vehicle in interstate, intrastate, or foreign commerce.

This HMSP will be effective beginning January 4, 2018 and remain effective through January 31, 2020 if your company maintains compliance with the requirements pertaining to the safe and secure movement of hazardous materials for the protection of the public (49 CFR 385 and other applicable Federal Motor Carrier Safety Regulations and Hazardous Material Regulations). Failure to maintain compliance will constitute sufficient grounds for suspension or revocation of this authority.

Willful and persistent noncompliance with applicable safety fitness regulations as evidenced by a Department of Transportation safety fitness rating less than "Satisfactory" or by other indicators, could result in a proceeding requiring the holder of this permit to show cause as to why this authority should not be suspended or revoked.

For questions regarding this document you may contact the FMCSA Hazardous Materials Division at 202-366-6121.

Sincerely,

Joseph P. DeLorenzo
Director, Office of Enforcement and Compliance

CALIFORNIA STATE TRANSPORTATION AGENCY

DEPARTMENT OF MOTOR VEHICLES
Registration Operations Division MS H875
P.O. BOX 932370 Sacramento, CA. 94232-3700
(916) 657-8153

04/26/2018

TOM C DYKE DRILLING & BLASTING INC
PO BX 352
ALPINE, CA 91903

STATE OF CALIFORNIA DMV DEPARTMENT OF MOTOR VEHICLES
A Public Service Agency

MOTOR CARRIER PERMIT

DEPARTMENT OF MOTOR VEHICLES
Registration Operations Division
P.O. BOX 932370 Sacramento, CA. 94232-3700

TOM C DYKE DRILLING & BLASTING INC
PO BX 352
ALPINE, CA 91903

Pmt Date:	04/25/2018	Office #:	154
Account #:	369	Tech ID:	CD
Sequence #:	0064	Amt Paid:	$287.00

Valid From:	06/01/2018	Valid Through:	05/31/2019
CA#:	0003963		

The carrier named on this permit, having made written application to the Department of Motor Vehicles for a permit to operate as a motor carrier of property as defined in vehicle code section 34601, and having met the requirements and paid the appropriate fees, is granted a permit of the following classification:

Private
Full Year
Corporation

!!!IMPORTANT REMINDERS!!!

1. Your permit will expire at midnight on the 'Valid Through' date. If you do not receive a renewal notice 30 days prior to the expiration date, please submit an original application and check the "Renewal" box.
2. Your insurance must remain valid through the term of your permit or a suspension action could occur.
3. Changes to your fleet are not required to be reported until your renewal.
4. Changes to your business entity may require a new CA# and application for another Motor Carrier Permit.
5. If you decide to no longer operate as a motor carrier of property, you must submit a 'Voluntary Withdrawal' form.
6. For changes to the address, business name, officers, or authorized representative's name, please complete the 'Notice of Change' form. Changes during your renewal period may be submitted on your renewal application.
7. You may download forms from the Internet at www.dmv.ca.gov or receive further information by calling: (916) 657-8153.

California Relay Telephone Service for the Deaf or Hard of Hearing from TDD Phones: 1-800-735-2929; from Voice Phones: 1-800-735-2922

UNITED STATES OF AMERICA
DEPARTMENT OF TRANSPORTATION
PIPELINE AND HAZARDOUS MATERIALS SAFETY ADMINISTRATION

HAZARDOUS MATERIALS CERTIFICATE OF REGISTRATION FOR REGISTRATION YEAR(S) 2018-2019

Registrant: TOM C DYKE DRILLING & BLASTING
ATTN: TERI RAGSDALE
PO BOX 352
ALPINE, CA 91903

This certifies that the registrant is registered with the U.S. Department of Transportation as required by 49 CFR Part 107, Subpart G.

This certificate is issued under the authority of 49 U.S.C. 5108. It is unlawful to alter or falsify this document.

Reg. No: 053118550178A Effective: July 1, 2018 Expires: June 30, 2019

HM Company ID: 26509

Record Keeping Requirements for the Registration Program

The following must be maintained at the principal place of business for a period of three years from the date of issuance of this Certificate of Registration:

(1) A copy of the registration statement filed with PHMSA; and
(2) This Certificate of Registration

Each person subject to the registration requirement must furnish that person's Certificate of Registration (or a copy) and all other records and information pertaining to the information contained in the registration statement to an authorized representative or special agent of the U. S. Department of Transportation upon request.

Each motor carrier (private or for-hire) and each vessel operator subject to the registration requirement must keep a copy of the current Certificate of Registration or another document bearing the registration number identified as the "U.S. DOT Hazmat Reg. No." in each truck and truck tractor or vessel (trailers and semi-trailers not included) used to transport hazardous materials subject to the registration requirement. The Certificate of Registration or document bearing the registration number must be made available, upon request, to enforcement personnel.

For information, contact the Hazardous Materials Registration Manager, PHH-52, Pipeline and Hazardous Materials Safety Administration, U.S. Department of Transportation, 1200 New Jersey Avenue, SE, Washington, DC 20590, telephone (202) 366-4109.

DEPARTMENT OF CONSUMER AFFAIRS

CONTRACTORS
STATE LICENSE BOARD
ACTIVE LICENSE

License Number **542984** Entity CORP

Business Name TOM C DYKE DRILLING &
BLASTING INC

Classification(s) A B HAZ C12

Expiration Date 10/31/2020

www.cslb.ca.gov

TOM C. DYKE DRILLING & BLASTING
P.O. Box 352 Alpine, CA 91903 • Phone 619.445.2270 • FAX 619.445.4934

AUTHORIZED BLASTERS

MICHAEL JAMES BURKETT
CDL : N5690035
CAL OSHA: 1259
COE: 9905

ANTHONY JOHN CORIROSSI
CDL: B3391795
CAL OSHA: 7974
COE: 109740

CHAD MITCHELL BARTLEY
CDL: D4082276
CAL OSHA: 9953
COE: 11810

EXPLOSIVE TRANSPORTATION VEHICLES

OUR I.D.	YEAR	MAKE	MODEL	LICENSE	VEHICLE I.D. NUMBER
T-45	2003	FORD	F-550	7C12740	1FDAF57F93EB13555
T-46	2004	FORD	F-550	7K10337	1FDAF57P24EB16114
T-47	2004	FORD	F-550	7H83916	1FDAF57P44EB16115
C-57	2006	FORD	F-550	8A30595	1FDAF57P66EB61978

State of California
Division of Occupational Safety and Health
2424 Arden Way, Suite 320
Sacramento, CA 95825 (916) 263-1915

No. 7974

ANTHONY JOHN CORIROSSI D.O.B. 3/24/76

is hereby certified/licensed as a BLASTER

Classification: (B) GENERAL ABOVE GROUND: MINING & CONSTRUCTION

SEE REVERSE

Limitation: NONELECTRIC SHOCK TUBE INITIATION SYSTEM ONLY

This certification or license may be suspended or revoked if the holder violates the safety orders or regulations of the Division.

Signature of Holder Expires: 12/6/22

Issued By John R. Leahy OSP 12 128563 Date of Issue 12/6/17

JH Rev. 2012

SAN DIEGO COUNTY SHERIFF'S DEPARTMENT
EXPLOSIVES HANDLER'S IDENTIFICATION CARD

Name: ANTHONY CORIROSSI

Height: 603 Weight: 190 Hair BRN Eyes: BLU

Under approved License #: EP0002

Issued: 11/20/2018 Expires: 11/20/2019

For: TOM C. DYKE DRILLING & BLASTING

Authorized Activities:

Receive Transport Use

COE: 10974

Issued By:

SHERIFF, San Diego County

State of California
Department of Justice
Bureau of Firearms

CERTIFICATE OF ELIGIBILITY

Number: 10974

Issued To:

Anthony John Corirossi

This is to certify that the Department of Justice, Bureau of Firearms has completed a firearms eligibility check on the above named individual. As of the date of issue, there is nothing that would prohibit the individual from acquiring or possessing a firearm.

Date of Issue: March 22, 2018 **Expiration Date: March 21, 2019**

Signature of Issuing Officer

State of California
Division of Occupational Safety and Health
2424 Arden Way, Suite 320
Sacramento, CA 95825 (916) 263-1915

No. 1259

MICHAEL JAMES BURKETT D.O.B. 10/3/53

is hereby certified/licensed as a BLASTER

Classification: (B) GENERAL ABOVE GROUND: MINING & CONSTRUCTION

SEE REVERSE

Limitation: NONELECTRIC SHOCK TUBE INITIATION SYSTEM ONLY

This certification or license may be suspended or revoked if the holder violates the safety orders or regulations of the Division.

Signature of Holder Expires: 12/11/22

Issued by John R. Leahy Date of Issue 12/11/17 JH

OSP 12 128563 Rev. 2012

EXPLOSIVES HANDLER'S IDENTIFICATION CARD

Name: MICHAEL BURKETT

Height: 508 Weight: 195 Hair BLN Eyes: BRN

Under approved License #: EP0002

Issued: 11/20/2018 Expires: 11/20/2019

For: TOM C. DYKE DRILLING & BLASTING

Authorized Activities:

Receive Transport Use

COE: 9905

Issued By: SHERIFF, San Diego County

State of California
Department of Justice
Bureau of Firearms

CERTIFICATE OF ELIGIBILITY

Number: 9905

Issued To:

Michael James Burkett

This is to certify that the Department of Justice, Bureau of Firearms has completed a firearms eligibility check on the above named individual. As of the date of issue, there is nothing that would prohibit the individual from acquiring or possessing a firearm.

Date of Issue: April 03, 2018 **Expiration Date: April 02, 2019**

Signature of Issuing Officer

State of California
Division of Occupational Safety and Health
2424 Arden Way, Suite 320
Sacramento, CA 95825 (916) 263-1915

No. 9953

CHAD MITCHELL BARTLEY D.O.B. 8/12/84

is hereby certified/licensed as a BLASTER

Classification: (B) GENERAL ABOVE GROUND: MINING & CONSTRUCTION

SEE REVERSE

Limitation: **NONELECTRIC SHOCK TUBE INITIATION SYSTEM ONLY**

This certification or license may be suspended or revoked if the holder violates the safety orders or regulations of the Division.

Signature of Holder Expires: 12/11/22

Issued by John R. Leahy Date of Issue 12/11/17

OSP 12 28563 JH

Rev. 2012

SAN DIEGO COUNTY SHERIFF'S DEPARTMENT
EXPLOSIVES HANDLER'S IDENTIFICATION CARD

Name: CHAD BARTLEY

Height: 603 Weight: 155 Hair BRO Eyes: GRN

Under approved License #: EP0002

Issued: 11/20/2018 Expires: 11/20/2019

For: TOM C. DYKE DRILLING & BLASTING

Authorized Activities:

Receive Transport Use

COE: 11810

Issued By:

SHERIFF, San Diego County

State of California
Department of Justice
Bureau of Firearms

CERTIFICATE OF ELIGIBILITY

Number: 11810

Issued To:

Chad Mitchell Bartley

This is to certify that the Department of Justice, Bureau of Firearms has completed a firearms eligibility check on the above named individual. As of the date of issue, there is nothing that would prohibit the individual from acquiring or possessing a firearm.

Date of Issue: February 07, 2019 **Expiration Date: February 06, 2020**

Signature of Issuing Officer _____

ATTACHMENT C

General Plan for
Blast Warning
Blasting Zone Signage

GENERAL PLAN FOR BLAST WARNING

All personnel working in the blasting area will be notified at the beginning of the work shift of the impending blast.

All residences or businesses within 600 feet or less will be notified in writing two days prior to blasting. Any residence requesting additional notification on the day of the blast will be notified by phone prior to blasting.

Prior to firing a shot, all persons in the danger area will be warned of the blast and be ordered to a safe distance from the area. A competent flagger will be posted at all access points to the danger area. The flaggers will be equipped with radios and will be in constant contact with the blaster in charge.

Blasts shall not be fired without a signal and definite assurance that all surplus explosives are in a safe place, all persons and vehicles are at a safe distance or under sufficient cover and that adequate warning has been given.

The warning signal will be given by use of a compressed air horn, and will be clearly audible at the most distant point in the blast area. The following signals will be used;

WARNING SIGNAL	
5 minutes prior to the blast signal	A series of 6 long audible Signals
BLASTING SIGNAL	
1 minute prior to the shot	A series of short audible signals
ALL - CLEAR SIGNAL	
Following inspection of the blast area	One prolonged audible signal

Blasting signals will be posted at one or more conspicuous locations and all employees shall be made familiar with the signals and instructed accordingly.

The "**ALL CLEAR**" signal will not be sounded until the licensed blaster has made a thorough, visual inspection of the blast area for misfires.


BLASTING AREA DANGER: BLASTING AREA DANGER: BLASTING AREA DANGER: BLASTING AREA DANGER: BLASTING AREA DANGER: BLASTING AREA DANGER: BLAST
BLASTING AREA
STOP
KEEP OUT
BLASTING
KEEP OUT
BLASTING
KEEP OUT
BLASTING
KEEP OUT
BLASTING AREA WARNING SIGNAL
WARNING SIGNAL–FIVE MINUTES PRIOR TO BLAST
"A SERIES OF SIX LONG AUDIBLE SIGNALS"
BLASTING SIGNAL–ONE MINUTE PRIOR TO BLAST
"A SERIES OF SHORT AUDIBLE SIGNALS"
ALL CLEAR SIGNAL–FOLLOWING INSPECTION
"ONE PROLONGED AUDIBLE SIGNAL"
03/28/2008 08:51

ATTACHMENT D

General Plan for Pre-Blast Inspections and Vibration Monitoring

GENERAL PLAN FOR
PRE-BLAST INSPECTIONS AND VIBRATION MONITORING

Pre-Blast Inspections

1. Examine blast or construction site.

2. Determine which structures lie within the 1,000' radius from the proposed blast site.

3. Make appointments with those owners/occupants for the inspection.

4. The inspection consists of photographic prints of representative crack conditions and a micro-cassette tape narrative that describes those conditions. The inspection shall be only for the purpose of determining the existence of any visible or reasonably recognizable preexisting defects or damages in any structure The inspection provides documentation of the existing condition on the interior and exterior of the structure before blasting or construction operations begin to conform with local jurisdictional agencies and regulations. The original tapes and negatives are filed in our office. Photographic prints and copies of the narrative will be given to the specified agent.

5. Documentation of all inspections performed and any refusals will be provided to the specified agent.

6. Post-blast inspections will be conducted in accordance with project specifications or as requested.

Vibration and Overpressure Monitoring

1. NOMIS 5300 and/or Mini Super Graph X2G will be used. The portable seismograph equipment is capable of recording peak particle velocity, frequency, acceleration, displacement, and overpressure (air blast). The machine printouts provide graphic and numerical values.

2. Examine blast site. Determine the distance from it to the nearest structure for each machine used for each blast. A minimum of two seismograph machines will be used to monitor and record data from each blast.

3. The transducer will be placed in the ground when practical. If not, it will be set on a concrete slab or nearest point on the structure.

4. A daily report will be written describing the blast location and monitoring locations. The daily report will also contain detailed information concerning the blast location and the blast design. Our office retains the original daily report and its attached seismographic record(s). A copy of each will be given to the specified representative.

Leland R. Jones
P.O. Box 2366
Alpine, CA 91903
619.520.8085 Ljones58@cox.net

KEY SKILLS:

- Seismic monitoring
- Vibration analysis
- Blast design and layout
- Expert testimony
- Technical reports
- Fluent in Spanish
- Blasting consultant/inspector
- Structural inspections
- Damage claim investigations
- Public relations
- Community education
- Author and Co-author of blasting specifications

PROFESSIONAL EXPERIENCE:

Jones Seismic Services **Alpine, CA**
Owner/Operator **1994 – Present**
Specializing in blasting consulting, seismic monitoring and analysis, community education and public relations.

Oro Blanco Quarry **La Rumorosa, B. C., MEXICO**
Superintendent **1990 – 1998**
Drilling and blasting superintendent in charge of ordering product, blast design, drill pattern layout, and loading of the shots.

Jones Geo Services **San Diego, CA**
Field Specialist **1987 – 1994**
Duties included seismic monitoring, pre/post blast inspections, blasting crew.

EDUCATION:

US Coast Guard Academy, New London, CT 1982 - 1983
Major: Marine Engineering

Northern Arizona University, Flagstaff, AZ 1983-1987
Major: Geology and Civil Engineering

CREDENTIALS:

- Licensed blaster with above ground, underground, electric, non-electric, and fuse initiation qualifications
- Trained in Electronic Initiation
- Training Certificates through ISEE
- Registered for MSHA Instructor training program

AFFILIATIONS: International Society of Explosives Engineers, since 1989

REFERENCES: Upon request

Jones Seismic Services
P. O. Box 2366 • Alpine, California 91903
(619) 659-3020 • FAX: (619) 659-1264

Recent Civil Projects

Project:	County of San Diego, San Vicente Road Realignment & Improvement
Involvement:	Pre-blast and Post-blast Inspections Seismic Monitoring Blast Consulting (blasting less than 50 feet from water main, SDG&E power poles, & existing roadway)
Contractor:	Tom Dyke Drilling & Blasting Co., Mike Burkett, 619-445-2270

Project:	San Vicente Dam Expansion, New Access Road
Involvement:	Pre-blast and Post-blast Inspections Seismic Monitoring On-site Blasting Inspector Blast Consulting (blasting less than 100 feet from Bypass pipeline and Outflow structure)
Contractor:	MJ Baxter Drilling Co., Glenn Inverso, 619-443-7800

Project:	San Vicente Dam Expansion, Improvements
Involvement:	Pre-blast and Post-blast Inspections Seismic Monitoring On-site Blasting Inspector Blast Consulting (blasting less than 100 feet from Bypass pipeline and new Saddle Dam)
Contractor:	MJ Baxter Drilling Co., Glenn Inverso, 619-443-7800

Project:	SDG&E – Los Coches Substation Rebuild
Involvement:	Pre-blast and Post-blast Inspections Seismic Monitoring Blast Consulting (blasting less than 50 feet from new structures and improvements on site)
Contractor:	Tom Dyke Drilling & Blasting Co., Mike Burkett, 619-445-2270

Project: Scripps Ranch Pump Station
Involvement: Pre-blast and Post-blast Inspections
Seismic Monitoring
On-site Blasting Inspector
Blast Consulting
(blasting less than 100 feet from SDCWA aqueduct and OMWD valve structure)
Contractor: MJ Baxter Drilling Co., Glenn Inverso, 619-443-7800

Project: SDG&E – Suncrest Substation
Involvement: Pre-blast and Post-blast Inspections
Seismic Monitoring
Blast Consulting
(blasting less than 100 feet from new structures and improvements on site)
Contractor: Tom Dyke Drilling & Blasting Co., Mike Burkett, 619-445-2270

Project: Cal-Trans – Hwy 76 Expansion, Oceanside, CA
Involvement: Pre-blast and Post-blast Inspections
Seismic Monitoring
Blast Consulting
(blasting less than 50 feet from Hwy 76 and buried pipelines)
Contractor: Tom Dyke Drilling & Blasting Co., Mike Burkett, 619-445-2270

Project: San Vicente Dam Expansion, Access Road
Involvement: Pre-blast and Post-blast Inspections
Seismic Monitoring
On-site Blasting Inspector
Blast Consulting
(blasting less than 100 feet from new dam foundation, dental concrete)
Contractor: ECM, Chuck Bean, 714-897-4326

Project: San Vicente Dam Expansion, Lower Pipeline
Involvement: Pre-blast and Post-blast Inspections
Seismic Monitoring
On-site Blasting Inspector
Blast Consulting
(blasting less than 100 feet from existing dam and on site building)
Contractor: Tom Dyke Drilling & Blasting Co., Mike Burkett, 619-445-2270

Project: Cal-Trans - I-5, Manage Lanes South Segment
Involvement: Pre-blast and Post-blast Inspections
Seismic Monitoring
Blast Consulting
(blasting less than 100 feet from Cal-Trans Bridge Abutment and cast in place Retaining Wall)
Contractor: Tom Dyke Drilling & Blasting Co., Mike Burkett, 619-445-2270

Project:	Olivenhain Reservoir, Access Road
Involvement:	Pre-blast and Post-blast Inspections Seismic Monitoring On-site Blasting Inspector Blast Consulting (blasting less than 100 feet from new dam foundation, dental concrete)
Contractor:	ECM, Chuck Bean, 714-897-4326

Project:	Black Mountain Pipeline 5E
Involvement:	Pre-blast and Post-blast Inspections Seismic Monitoring On-site Blasting Inspector Blast Consulting (blasting less than 50 feet from SDCWA aqueduct)
Contractor:	MJ Baxter Drilling Co., Glenn Inverso, 619-443-7800

Project:	Mercy Road Tunnel Portal
Involvement:	Pre-blast and Post-blast Inspections Seismic Monitoring On-site Blasting Inspector Blast Consulting (blasting less than 50 feet from SDCWA aqueduct)
Contractor:	MJ Baxter Drilling Co., Glenn Inverso, 619-443-7800

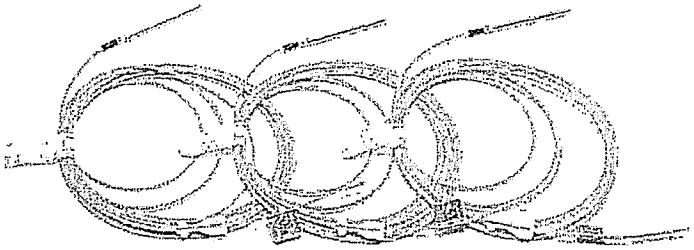
ATTACHMENT E

Explosive Materials Types and Material Safety Data Sheets

NONEL® MS 1.4B

Technical Information

Nonelectric Millisecond Delay Detonator



Product Description

NONEL® nonelectric delay detonator MS 1.4B units consist of a length of orange shock tube, with a Standard (#8) detonator attached to one end and the other end sealed. A white J-hook is affixed near the sealed end, providing easy means of connection to detonating cord. Easy-to-read, color-coded delay tags display the delay number and nominal firing time prominently.

Designed to provide in-hole delay time for underground (non-coal) and surface blast applications in the mining, quarry and construction industries, the NONEL MS can be used in combination with a detonating cord trunkline, NONEL EZTL, NONEL EZ DET and/or NONEL TD detonators for maximum timing flexibility.

Application Recommendations

For detailed application recommendations, ALWAYS request a copy of Dyno Nobel's *Product Manual: NONEL® and PRIMACORD®* from your Dyno Nobel representative.

- ALWAYS use the plastic J-hook when using a detonating cord trunkline to initiate a NONEL MS unit. A minimum 3 g/m (15 gr/ft) detonating cord qualified for surface use is required for use with the J-hook.
- ALWAYS make sure the shock tube is connected to the J-hook and leads back to the hole collar at right angles to the detonating cord trunkline.

Properties

Net Explosive Content per 100 units	0.0570 kg 0.1254 lbs

This product is only available in the United States.

Delay Time (msec)	Delay Tag Color	Delay Time (msec)	Delay Tag Color	Delay Time (msec)	Delay Tag Color
0	Orange	225	White	450	Orange
25	Red	250	Red	475	White
50	Tan	275	White	500	Purple
75	Green	300	Tan	525	White
100	Blue	325	White	600	Gray
125	Orange	350	Green	700	Lt Blue
150	Purple	375	White	800	Red
175	Gray	400	Blue	900	Tan
200	Lt Blue	425	White	1000	Green

Hazardous Shipping Description
Detonator assemblies, nonelectric,
1.4B, UN 0361 PG II, EX 1994040177

NONEL® MS 1.4B

Technical Information

INITIATION SYSTEMS

Transportation, Storage and Handling

- NONEL MS must be transported, stored, handled and used in conformity with all federal, state, provincial and local laws and regulations.
- For maximum shelf life (3 years), NONEL MS must be stored in a cool, dry, well ventilated magazine. Explosive inventory should be rotated. Avoid using new materials before the old. For recommended good practices in transporting, storing, handling and using this product, see the booklet "Prevention of Accidents in the Use of Explosive Materials" packed inside each case and the Safety Library Publications of the Institute of Makers of Explosives.

Packaging

Length		Case Type	Coil Type	Quantity / Case	
m	ft			case	sub
3.5	12	D	Detpak	120	60
4.5	16	D	Detpak	120	60
6	20	D	Detpak	120	60
9†	30	D	Detpak	80	40
12†	40	D	Detpak	60	30
15†	50	D	Detpak	60	30
18†	60	D	Detpak	50	25
24†	80	DC	Detpak	50	–
30†	100	DC	Detpak	40	–
37†	120	DC	Detpak	30	–
40††	130	L	Spool	30	–
46††	150	L	Spool	30	–
55††	180	L	Spool	30	–
61††	200	L	Spool	30	–

- Length rounded to nearest one-half meter.
- Case weight varies by length & delay; see case label for exact weight.

† Available in Super Tube †† Super Tube Only

Case Dimensions

L	56 x 27 x 32 cm	22 x 10 ½ x 12 ½ in
Detpak Case (DC)	48 x 45 x 26 cm	18 ¾ x 17 ¾ x 10 ¼ in
Detpak (D)		
subpack	44 x 22 x 25 cm	17 ½ x 8 ¾ x 10 in
strapped case	44 x 45 x 25 cm	17 ½ x 17 ⅝ x 10 in

Note: This product is also available with a High Strength cap. For more information, please contact your local Dyno Nobel sales representative.

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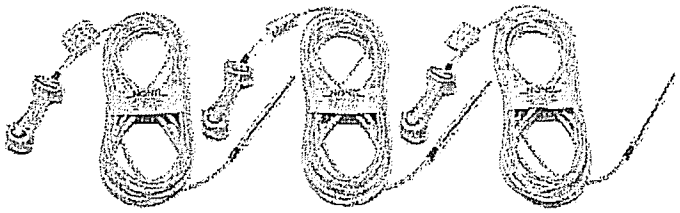
DYNO Dyno Nobel

Groundbreaking Performance

NONEL® EZ DET® 1.4B

Technical Information

Nonelectric Blast Initiation System



Properties

MSDS #122

Net Explosive Content per 100 units 0.0810 kg
0.1782 lbs

Nominal Time (msec)	Nominal Time (msec)	Nominal Time (msec)	Connector Block Color
17 / 350	17 / 500	17 / 700	Yellow
25 / 350	25 / 500	25 / 700	Red
42 / 350	42 / 500	42 / 700	White
25 / 375			Red

Product Description

NONEL® nonelectric delay detonator EZ DET® 1.4B units consist of a length of orange shock tube with a surface detonator attached to one end and a Standard (#8) in-hole detonator on the other. The surface detonator is inside a color-coded plastic EZ™ Connector block to facilitate easy connections to shock tube leads. This block can hold up to 6 shock tube leads. Easy-to-read, color-coded delay tags display the delay number and nominal firing time prominently.

NONEL EZ DET units can be easily connected to one another to satisfy basic blast design requirements in construction, mining, and quarry operations. They can also be used in combination with NONEL MS, NONEL EZTL™ and/or NONEL TD detonators to satisfy complex blast design requirements and minimize inventory of initiation system components.

Application Recommendations

For detailed application recommendations, ALWAYS request a copy of Dyno Nobel's *Product Manual: NONEL® and PRIMACORD®* from your Dyno Nobel representative.

- ALWAYS select a NONEL EZ DET unit having more than enough tubing length to extend from the planned primer location in the borehole to the collar of the next hole.

Hazardous Shipping Description

Detonator assemblies nonelectric,
1.4B, UN 0360 PG II,
3.5 - 18 m EX 2002010272
24 - 37 m EX 2002090260

NONEL® EZ DET® 1.4B

Technical Information

Application Recommendations (continued)

- ALWAYS protect the plastic EZ Connector block and all shock tube leads from impact or damage during the loading and stemming operations. Use care when placing blasting mats and cover material on top of the blasting circuit. The EZ Connector block contains a detonator and is subject to detonation caused by abuse such as impact. Shock tube which has been cut, ruptured or damaged may cause misfires.
- ALWAYS be sure that the shock tube(s) are securely inserted, one at a time, into the EZ Connector block. The head of the EZ Connector block should rise to accept the shock tube and return to a closed position with an audible click.
- ALWAYS ensure that individual shock tubes remain aligned side by side in the connector channel and do not cross one over the another on insertion.
- NEVER use NONEL EZ DET units with detonating cord. The low strength surface detonator will not initiate detonating cord and may cause misfires.
- NEVER attempt to disassemble the delay detonator from the plastic EZ Connector block or use the detonator without the connector.
- NEVER place more than 6 shock tube leads into the plastic EZ Connector block. Misfires may result.
- NEVER pull, stretch, kink or put tension on shock tube such that the tube could break.
- NEVER splice NONEL EZ DET shock tube together to extend between holes.
- NEVER connect NONEL EZ DET units together until all holes have been primed, loaded and stemmed and the blast site has been cleared.

Transportation, Storage and Handling

- NONEL EZ DET must be transported, stored, handled and used in conformity with all federal, state, provincial and local laws and regulations.
- For maximum shelf life (3 years), NONEL EZ DET must be stored in a cool, dry, well ventilated magazine. Explosive inventory should be rotated. Avoid using new materials before the old. For recommended good practices in transporting, storing, handling and using this product, see the booklet "Prevention of Accidents in the Use of Explosive Materials" packed inside each case and the Safety Library Publications of the Institute of Makers of Explosives

Packaging

Length		Case Type	Quantity / Case	
m	ft		case	subpack
3.5	12	D	180	90
4.5	16	D	120	60
7	24	D	120	60
9	30	D	80	40
12	40	D	60	30
15	50	D	60	30
18	60	D	50	25
24	80	DC	50	--
30	100	DC	40	--
37	120	DC	30	--

- Length rounded to nearest one-half meter.
- Case weight varies by length & delay; see case label for exact weight.

Note: This product is also available with a High Strength cap. For more information, please contact your local Dyno Nobel sales representative.

Case Dimensions

Detpak Case (DC)	48 x 45 x 26 cm	18¾ x 17¾ x 10¼ in
Detpak (D)		
subpack	44 x 22 x 25 cm	17 ½ x 8 ¾ x 10 in
strapped case	44 x 45 x 25 cm	17 ½ x 17 ¾ x 10 in

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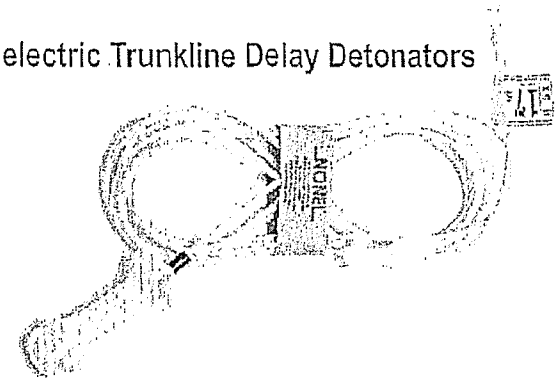
DYNO Dyno Nobel
Groundbreaking Performance

NONEL® EZTL™

Technical Information

Nonelectric Trunkline Delay Detonators



Properties

MSDS #122

Net Explosive Content per 100 units 0.0240 kg
0.0529 lbs

Delay Time (msec)	Connector Block Color
9	Green
17	Yellow
25	Red
33	Green
42	White
67	Blue
100	Black
109	Black

Hazardous Shipping Description
Detonator assemblies nonelectric,
1.4B, UN 0361 PG II, EX 2005070130

Product Description

NONEL® nonelectric delay detonator EZTL™ units consist of a length of yellow shock tube, with a Standard (#8) detonator attached to one end and the other end sealed. The detonator is housed in a plastic EZ Connector block which facilitates easy connection to shock tube. A white J-hook is affixed near the sealed end. Easy-to-read, color-coded delay tags display the delay number and nominal firing time prominently.

EZTL detonators are designed for use with NONEL MS and EZ DET® units to provide effective and accurate surface timing between blastholes and/or rows of blastholes in surface and underground blasting designs.

Application Recommendations

For detailed application recommendations, ALWAYS request a copy of Dyno Nobel's *Product Manual: NONEL® and PRIMACORD®* from your Dyno Nobel representative.

- ALWAYS be sure that the shock tube(s) are securely inserted, one at a time, into the plastic EZ connector. The head of the connector block should rise to accept the tube, and return to a closed position with an audible click.
- ALWAYS ensure that the individual shock tubes remain aligned side by side in the EZ connector channel and do not cross over one another during insertion.
- ALWAYS protect the plastic EZ connector and all shock tube leads from impact or

NONEL® EZTL™

Technical Information

Application Recommendations (continued)

damage. Use care when placing blasting mats and cover material on top of the blasting circuit. The EZ connector contains a detonator and is subject to detonation caused by abuse such as impact. Shock tube which has been cut, ruptured or damaged may cause misfires.

- NEVER use NONEL EZTL detonators with detonating cord. The low strength surface detonator will not initiate detonating cord.
- NEVER attempt to disassemble the delay detonator from the EZ connector block or use the detonator without the connector.
- NEVER place more than 6 shock tube leads into an EZ connector block. Misfires may result.
- NEVER tie-in NONEL EZTL units until all holes have been primed, loaded, stemmed and the blast site has been cleared.

Transportation, Storage and Handling

NONEL EZTL must be transported, stored, handled and used in conformity with all federal, state, provincial and local laws and regulations.

For maximum shelf life (3 years), NONEL EZTL must be stored in a cool, dry, well ventilated magazine. Explosive inventory should be rotated. Avoid using new materials before the old. For recommended good practices in transporting, storing, handling and using this product, see the booklet "Prevention of Accidents in the Use of Explosive Materials" packed inside each case and the Safety Library Publications of the Institute of Makers of Explosives.

Packaging

Length		Case Type	Quantity / Case	
m	ft		case	subpack
2.5	10	D	180	90
3.5	12	D	180	90
6	20	D	150	75
9	30	D	120	60
12	40	D	100	50
15	50	D	90	45
18	60	D	70	35

- Length rounded to nearest one-half meter.
- Case weight varies by length & delay; see case label for exact weight.

Case Dimensions

Detpak (D)

subpack	44 x 22 x 25 cm	17½ x 8¾ x 10 in
strapped case	44 x 45 x 25 cm	17½ x 17⅝ x 10 in

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Groundbreaking Performance

Material Safety Data Sheet

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FOR 24 HOUR EMERGENCY, CALL CHEMTREC (USA) 800-424-9300
CANUTEC (CANADA) 613-996-6666

MSDS # 1122
Date 05/13/05

Supercedes
MSDS # 1122 01/24/05

SECTION I - PRODUCT IDENTIFICATION

Trade Name(s):

NONEL® MS
NONEL® LP
NONEL® SL
NONEL® TD
NONEL® MS CONNECTOR
NONEL® TWINPLEX™
NONEL® STARTER
NONEL® EZ DET®
NONEL® EZTL™
NONEL® EZ DRIFTER ®
OPTIMIZER® OPTISLIDE®
OPTIMIZER® OPTISURFACE®
OPTIMIZER® OPTI-TL®

Product Class: NONEL® Non-electric Delay Detonators

Product Appearance & Odor: Aluminum cylindrical shell with varying length and diameter of attached colored plastic tubing. The detonator may be enclosed in a plastic housing, and an assembly may contain two detonators. Odorless.

DOT Hazard Shipping Description: Detonators, non-electric 1.1B UN0029 II
-or- Detonator assemblies, non-electric 1.1B UN0360 II
-or- Detonator assemblies, non-electric 1.4B UN0361 II

NFPA Hazard Classification: Not Applicable (See Section IV - Special Fire Fighting Procedures)

SECTION II - HAZARDOUS INGREDIENTS

Ingredients	CAS#	Occupational Exposure Limits OSHA PEL-TWA	ACGIH TLV-TWA
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
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
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) 0.5 mg (Ba)/m^3	0.01 mg (Cr)/m^3 0.5 mg (Ba)/m^3
Lead Chromate	7758-97-6	0.05 mg (Pb)/m^3 1 mg (CrO_3)/10m^3 (ceiling)	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
Potassium Perchlorate[3]	7778-74-7	None[1]	None[2]
Silica (crystalline)	61790-53-2	See Note Below	0.05 mg/m^3 (resp frac)
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
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/m^3 ; respirable fraction, 5 mg/m^3 .
[2] Use limit for particulates not otherwise classified (PNOC): Inhalable particulate, 10 mg/m^3 ; respirable part., 3 mg/m^3 .
Note: The OSHA PEL for crystalline silica is calculated as follows:
Quartz, respirable: 10 mg/m$^{3\,e}$ / % SiO_2 + 2 Quartz, total dust: 30 mg/m^3 / % 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 deminimus concentrations (less than 0.1% for carcinogens, less than 1.0% for other hazardous materials).

SECTION III - PHYSICAL DATA

Boiling Point: Not Applicable
Vapor Density: Not Applicable
Percent Volatile by Volume: Not Applicable
Evaporation Rate (Butyl Acetate = 1): Not Applicable
Vapor Pressure: Not Applicable
Density: Not Applicable
Solubility in Water: Not Applicable

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

Flash Point: Not Applicable **Flammable Limits:** Not Applicable
Extinguishing Media: (See Special Fire Fighting Procedures section.)
Special Fire Fighting Procedures: Do not attempt to fight fires involving explosive materials. Evacuate all personnel to a predetermined safe, distant location. Allow fire to burn unless it can be fought remotely or with fixed extinguishing systems (sprinklers).
Unusual Fire and Explosion Hazards: Can explode or detonate under fire conditions. Burning material may produce toxic vapors.

SECTION V - HEALTH HAZARD DATA

Effects of Overexposure

This is a packaged product that will not result in exposure to the explosive material under normal conditions of use. Exposure concerns are primarily with post-detonation reaction products, particularly heavy metal compounds.

Eyes: No exposure to chemical hazards anticipated with normal handling procedures. Particulates in the eye may cause irritation, redness, swelling, itching, pain and tearing.
Skin: No exposure to chemical hazards anticipated with normal handling procedures. Exposure to post-detonation reaction products may cause irritation.
Ingestion: No exposure to chemical hazards anticipated with normal handling procedures. Post-detonation reaction product residue is toxic by ingestion. Symptoms may include gastroenteritis with abdominal pain, nausea, vomiting and diarrhea. See systemic effects below.

Inhalation: Not a likely route of exposure. See systemic effects below.
Systemic or Other Effects: None anticipated with normal handling procedures. Repeated inhalation or ingestion of post-detonation reaction products may lead to systemic effects such as respiratory tract irritation, ringing of the ears, dizziness, elevated blood pressure, blurred vision and tremors. Heavy metal (lead) poisoning can occur.
Carcinogenicity: ACGIH classifies Lead as a "Suspected Human Carcinogen" and insoluble Chromium VI as "Confirmed Human Carcinogen". NTP, OSHA, and IARC consider components contained in this detonator carcinogenic.

Perchlorate: Perchlorate can potentially inhibit iodide uptake by the thyroid and result in a decrease in thyroid hormone. The National Academy of Sciences (NAS) has reviewed the toxicity of perchlorate and has concluded that even the most sensitive populations could ingest up to 0.7 microgram perchlorate per kilogram of body weight per day without adversely affecting health. The USEPA must establish a maximum contaminant level (MCL) for perchlorate in drinking water by 2007, and this study by NAS may result in a recommendation of about 20 ppb for the MCL.

Emergency and First Aid Procedures

Eyes: Irrigate with running water for at least fifteen minutes. If irritation persists, seek medical attention.
Skin: Wash with soap and water.
Ingestion: Seek medical attention.
Inhalation: Not applicable.
Special Considerations: None

SECTION VI - REACTIVITY DATA

Stability: Stable under normal conditions, may explode when subjected to fire, supersonic shock or high-energy projectile impact.
Conditions to Avoid: Keep away from heat, flame, ignition sources, impact, friction, electrostatic discharge and strong shock. Do not attempt to disassemble.
Materials to Avoid (Incompatibility): Corrosives (acids and bases or alkalis).
Hazardous Decomposition Products: Carbon Monoxide (CO), Nitrous Oxides (NO_X), Sulfides, Chromates, Lead (Pb), Antimony (Sb) and various oxides and complex oxides of metals.
Hazardous Polymerization: Will not occur.

SECTION VII - SPILL OR LEAK PROCEDURES

Steps to be taken in Case Material is Released or Spilled: Protect from all ignition sources. In case of fire evacuate all personnel to a safe distant area and allow to burn or fight fire remotely. Notify authorities in accordance with emergency response procedures. Only personnel trained in emergency response should respond. If no fire danger is present, and product is undamaged and/or uncontaminated, repackage product in original packaging or other clean DOT approved container. Ensure that a complete account of product has been made and is verified. If loose explosive powder is spilled, such as from a broken detonator, only properly qualified and authorized personnel should be involved with handling and clean-up activities. Spilled explosive powder is extremely sensitive to initiation and may detonate. Follow applicable Federal, State, and local spill reporting requirements.

Waste Disposal Method: Disposal must comply with Federal, State and local regulations. If product becomes a waste, it is potentially regulated as a hazardous waste as defined under the Resource Conservation and Recovery Act (RCRA) 40 CFR, part 261. Review disposal requirements with a person knowledgeable with applicable environmental law (RCRA) before disposing of any explosive material.

SECTION VIII - SPECIAL PROTECTION INFORMATION

Ventilation: None required for normal handling. Provide enhanced ventilation after use if in underground mines or other enclosed areas.

Respiratory Protection: None required for normal handling.

Protective Clothing: Cotton gloves are recommended.

Eye Protection: Safety glasses are recommended.

Other Precautions Required: None.

SECTION IX - SPECIAL PRECAUTIONS

Precautions to be taken in handling and storage: Store in cool, dry, well-ventilated location. Store in compliance with Federal, State, and local regulations. Only properly qualified and authorized personnel should handle and use explosives. Keep away from heat, flame, ignition sources, impact, friction, electrostatic discharge and strong shock.

Precautions to be taken during use: Use accepted safe industry practices when using explosive materials. Unintended detonation of explosives or explosive devices can cause serious injury or death. Avoid breathing the fumes or gases from detonation of explosives. Detonation in confined or unventilated areas may result in exposure to hazardous fumes or oxygen deficiency.

Other Precautions: It is recommended that users of explosive materials be familiar with the Institute of Makers of Explosives Safety Library Publications.

Material Safety Data Sheet

SECTION X - SPECIAL INFORMATION

These products contain the following substances 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.

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

Range* of Section 313 Chemicals in each product

Product	lb Pb per 1000 detonators	lb Pb compounds per 1000 detonators	lb Ba compounds per 1000 detonators	lb Cr compounds per 1000 detonators
NONEL® MS	0 - 27	0.3 – 1.5	0 – 0.9	0 – 0.9
NONEL® LP	0 - 30	0.3 – 2.0	0 - 1.8	0 - 1.9
NONEL® SL	7 - 27	0.3 – 1.5	0	0
NONEL® TD	0 - 18	0.3 – 0.7	0	0
NONEL® MS Connector	5 - 16	0.3 – 0.4	0	0
NONEL® TWINPLEX™	5 - 15	0.3 – 0.7	0	0
NONEL® STARTER	0	0.3	0	0
NONEL® EZ DET®	22 - 36	2.0	0	0
NONEL® EZTL™	5 - 15	0.5 – 0.7	0	0
NONEL® EZ DRIFTER	39.4	1.3	1.2	1.3
NONEL® OPTISLIDE®	0	0	0	0
NONEL® OPTISURFACE®	0	0	0	0
NONEL® OPTI-TL®	0	0	0	0

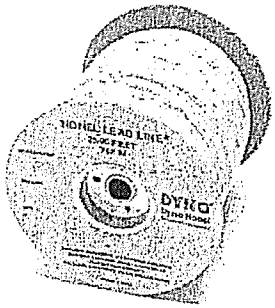
* The exact quantity and weight percent of Section 313 Chemicals in each delay period and tubing length for each product is available upon request.

Disclaimer

NONEL® Lead Line

Technical Information

Nonelectric Shock Tube



Properties

Net Explosive Content per 100 units 0.0795 kg
0.1752 lbs

Length		Spools / Case
m	ft	
762	2500	2

- Length rounded to nearest one-half meter.
- See case label for exact case weight.

Product Description

NONEL LEAD LINE is NONEL shock tube spooled at the factory in 763 meter (2,500 foot) lengths for easy application and deployment. NONEL LEAD LINE shock tube is a small diameter, three-layer plastic tube coated on the innermost wall with a reactive explosive compound. When initiated, NONEL shock tube propagates a low energy signal, similar to a dust explosion, at approximately 2000 m/sec (6,500 ft/sec) along the tube's length with minimal disturbance to the outside of the tube. The signal is transmitted from one NONEL shock tube to another through field-assembled splices.

NONEL LEAD LINE provides maximum flexibility to the blaster in choosing a position of safety from which to initiate nonelectric blast rounds in either underground or surface applications. NONEL LEAD LINE is the only NONEL product that can be cut and spliced into a NONEL detonator product to construct a custom length nonelectric starter assembly.

Application Recommendations

- ALWAYS splice NONEL LEAD LINE to NONEL EZTL™ nonelectric trunkline delay detonators, NONEL EZ DET® nonelectric blast initiation system, NONEL TD or NONEL Starter detonators to make-up the nonelectric starter assembly when using

Hazardous Shipping Description

Articles, Explosives, N.O.S. (HMX, Aluminum), 1.4S, UN 0349, PG II, EX 1997010145

NONEL® Lead Line

Technical Information

Application Recommendations (continued)

NONEL LEAD LINE as the primary initiator for NONEL blast rounds.

- ALWAYS trim at least 3 m [10 ft] of tubing before inserting into a nonelectric shock tube starting device or whenever dirt and/or moisture may have compromised the open tube ends before making a splice connection.
- ALWAYS replace the plastic tube closure over the open end of any NONEL LEAD LINE that remains on the spool and is intended to be used to make up another nonelectric starter assembly.
- ALWAYS make the final hook-up of the nonelectric starter assembly to the blast round only after all equipment and non-essential personnel are clear of the blast area.
- ALWAYS unspool NONEL LEAD LINE by hand if the starter assembly has been spliced to it and is attached to the blast round.
- ALWAYS keep any NONEL LEAD LINE tube ends sealed and free from dirt and moisture since dirt or moisture in the shock tube may cause a misfire.
- NEVER use NONEL LEAD LINE for in-hole use. NONEL LEAD LINE is for use outside the borehole only.
- NEVER attempt to knot different lengths of shock tube together. Shock tube will not initiate itself through knot connections. It must be spliced.
- NEVER remove the plastic tube closure from the NONEL LEAD LINE shock tube until just before splicing.
- NEVER attach the starter assembly to the blast round until after the LEAD LINE deployment is complete whenever NONEL LEAD LINE is to be unspooled by any method other than by hand,
- NEVER run over NONEL LEAD LINE with equipment. This may damage the shock tube and may cause a misfire. ALWAYS replace the NONEL LEAD LINE if it is damaged.
- When making a nonelectric starter assembly using NONEL LEAD LINE, ALWAYS remove the plastic tube closure and save for later use. Splice two freshly-cut ends of NONEL shock tube together (one from the NONEL LEAD LINE and the other from the NONEL detonator) by inserting them into opposite ends of the plastic connector sleeve and pushing them toward one another until they are both at least ½ cm (¼ in) in the splice.

Application Recommendations (continued)

Transportation, Storage and Handling

- NONEL LEAD LINE must be transported, stored, handled and used in conformity with all federal, state, provincial and local laws and regulations.
- For maximum shelf life (3 years), NONEL LEAD LINE must be stored in a cool, dry, well ventilated magazine. Explosive inventory should be rotated. Avoid using new materials before the old. For recommended good practices in transporting, storing, handling and using this product, see the booklet "Prevention of Accidents in the Use of Explosive Materials" packed inside each case and the Safety Library Publications of the Institute of Makers of Explosives.

Case Dimensions

51 x 25 x 28 cm 20 x 9 ⅞ x 10 ⅞ in

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Material Safety Data Sheet

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CANUTEC (CANADA) 613-996-6666

MSDS # 1124
Date 01/24/05

Supercedes
MSDS # 1124 10/20/04

SECTION I - PRODUCT IDENTIFICATION

Trade Name(s): NONEL® LEAD LINE

Product Class: Shock Tube

Product Appearance & Odor: Hollow plastic tubing (normally yellow) with dusty inner coating of HMX and aluminum. No detectable odor.

DOT Hazard Shipping Description: Articles, explosive, n.o.s. (HMX) 1.4S UN0349 II.
For 10,000 ft spools with Wire Lock Terminations only, Not regulated as an explosive, 0000

NFPA Hazard Classification: Not Applicable (See Section IV - Special Fire Fighting Procedures)

SECTION II - HAZARDOUS INGREDIENTS

Ingredients:	CAS#	% (Range)	Occupational Exposure Limits OSHA PEL-TWA	ACGIH TLV-TWA
Cyclotetramethylene Tetranitramine (HMX)	2691-41-0	0.35	None[1]	None[2]
Aluminum (dust)	7429-90-5	0.04	15 mg/m^3 (total) 5 mg/m^3 (respirable)	10 mg/m^3

[1] Use limit for particulates not otherwise regulated (PNOR): Total dust, 15 mg/m^3 ; respirable fraction, 5 mg/m^3.
[2] Use limit for particulates not otherwise classified (PNOC): Inhalable particulate, 10 mg/m^3 ; respirable part., 3 mg/m^3.
Note: The above hazardous dust mixture is present at approximately 15 mg per meter of tubing.

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 deminimus concentrations (less than 0.1% for carcinogens, less than 1.0% for other hazardous materials).

SECTION III - PHYSICAL DATA

Boiling Point: Not Applicable
Vapor Density: Not Applicable
Melting Point: HMX decomposes violently at melting pt., about 278°C
Evaporation Rate (Butyl Acetate = 1): Not Applicable
Vapor Pressure: Not Applicable
Density: Not Applicable
Solubility in Water: Not Soluble
Percent Volatile by Volume: Not Applicable

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

Flash Point: Not Applicable
Flammable Limits: Not Applicable
Extinguishing Media: Water, inert powder, CO_2
Special Fire Fighting Procedures: For shock tube only, consider initial isolation of at least 15 meters (50 feet) in all directions. Fight fire with normal precautions and methods used for plastic fires from a reasonable distance. IF DETONATORS OR OTHER EXPLOSIVES ARE PRESENT, DO NOT FIGHT FIRE.
Unusual Fire and Explosion Hazards: May burn vigorously with localized detonations and projection of fragments, with effects usually confined to the immediate vicinity of packages. Toxic smoke from combustion of the plastic material may be emitted. If product functions, high heat and pressure are released from the end of the tube if not covered or enclosed, typically by a metal device.

SECTION V - HEALTH HAZARD DATA

Effects of Overexposure

This is a packaged product that will not result in exposure to hazardous ingredients (inner coating materials) under normal conditions of use.
Eyes: Not a likely route of exposure. Dust particles may be irritating.
Skin: Not a likely route of exposure. Dust particles may cause skin irritation.
Ingestion: Not a likely route of exposure. Ingestion of large amounts of the reactive powder (HMX) is poisonous and may cause cardiovascular collapse.
Inhalation: Not a likely route of exposure. Breathing dust can cause respiratory irritation. During manufacture and at processing temperatures, irritating fumes may evolve.
Systemic or Other Effects: None known.
Carcinogenicity: No constituents are listed by NTP, IARC or OSHA.

Emergency and First Aid Procedures

Eyes: Irrigate with running water for at least fifteen minutes. If irritation persists, seek medical attention.
Skin: Wash with soap and water.
Ingestion: Not Applicable
Inhalation: Not Applicable
Special Considerations: None.

SECTION VI - REACTIVITY DATA

Stability: Stable
Conditions to Avoid: Keep away from heat, flame, impact, friction, ignition sources and strong shocks. Also avoid stretching to failure.
Materials to Avoid (Incompatibility): Incompatible with strong oxidizers and acids.
Hazardous Decomposition or Combustion Products: Hazardous carbon monoxide (CO), nitrogen oxide (NO_X) gases and products of plastic decomposition produced.
Hazardous Polymerization: Will not occur.

SECTION VII - SPILL OR LEAK PROCEDURES

Steps to be taken in Case Material is Released or Spilled: Protect from all ignition sources. In case of fire evacuate area not less than 50 feet in all directions. Notify authorities in accordance with emergency response procedures. Only personnel trained in emergency response should respond. If no fire danger is present, repackage undamaged devices in original packaging, accounting for every device. If the ends or tube wall have been opened such that powder may have

been released from the tube, isolate the spill area. Contamination of the HMX/Aluminum powder with sand, grit or dirt will render the material more sensitive to detonation. Carefully wet down and clean "loose" powder spills using a damp sponge or rag, avoid applying friction or pressure to the explosive, and place in a (Velostat) electrically conductive bag. Follow applicable Federal, State, and local spill reporting requirements.
Waste Disposal Method: Disposal must comply with Federal, State and local regulations. If product becomes a waste, it is potentially regulated as a hazardous waste as defined under the Resource Conservation and Recovery Act (RCRA) 40 CFR, part 261. Review disposal requirements with a person knowledgeable with applicable environmental law (RCRA) before disposing of any explosive material.

SECTION VIII - SPECIAL PROTECTION INFORMATION

Ventilation: None normally required. Provide enhanced ventilation if used in underground mines, indoors or other enclosed areas.
Respiratory Protection: None normally required. Extended testing of the product indoors or in enclosed areas may necessitate respiratory protection.
Protective Clothing: None normally required. Wear chemical-resistant gloves during post-detonation cleanup or spill cleanup operations.
Eye Protection: Safety glasses or goggles are recommended for handling, testing or cleanup.
Other Precautions Required: None

SECTION IX - SPECIAL PRECAUTIONS

Precautions to be taken in handling and storage: Store in cool, dry, well-ventilated location. Store in compliance with Federal, State, and local regulations. Keep away from heat, flame, ignition sources and strong shock. Only properly qualified and authorized personnel should handle and use Shock Tube.
Precautions to be taken during use: Use accepted safe industry practices when using explosive materials. Unintended detonation of explosives or explosive devices can cause serious injury or death. Avoid breathing the fumes or gases from detonation of explosives. Detonation in confined or unventilated areas may result in exposure to hazardous fumes or oxygen deficiency.
Other Precautions: It is recommended that users of explosive materials be familiar with the Institute of Makers of Explosives Safety Library Publications.

SECTION X - SPECIAL INFORMATION

This product contains the following substances 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.

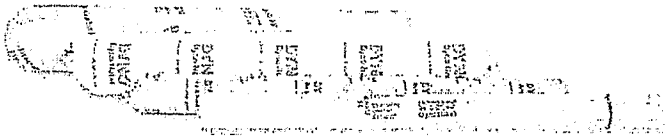
Chemical Name	CAS Number	% By Weight
None		

Disclaimer

DYNO® AP

Technical Information

Small Diameter Detonator Sensitive Emulsion



Product Description

DYNO AP and DYNO AP PLUS are detonator sensitive, all-purpose, water resistant, packaged emulsion explosives that are recommended for underground drifting, quarry and construction blasting applications in medium rock types.

DYNO AP and AP PLUS are available in the following package types:

- Chub/PMP Film
- Chub/Valeron Film
- Paper Convolute Shell
- Paper Tube Shell

Application Recommendations

- DYNO AP will perform in temperatures from -20° to +50° C (-4° to 122° F). At internal product temperatures higher than -18° C (0° F), ALWAYS use a Dyno Nobel high strength detonator or equivalent. At internal product temperatures below -18° C (0° F) and higher than -23° C (-10° F), ALWAYS use a 10 gram or larger cast booster. For internal product temperatures below -23° C (-10° F), consult your Dyno Nobel representative for the recommended cast booster size.
- Use with detonating cord is not recommended. Consult your Dyno Nobel representative for details.
- Emulsion explosives are susceptible to "dynamic shock" and may detonate at low order or fail completely when applied in very wet conditions where explosive charges or decks are closely spaced and/or where geological conditions promote this effect. Consult your Dyno Nobel representative for alternate product recommendations when these conditions exist.

Properties

	DYNO AP	DYNO AP PLUS
Density (g/cc) Avg	1.15	1.15
Energy[a] (cal/g)	775	860
(cal/cc)	890	990
Relative Weight Strength[a]	0.88	0.98
Relative Bulk Strength[a,b]	1.24	1.38
Velocity[c] (m/s)	4,700	4,600
(ft/s)	15,400	15,100
Detonation Pressure[c] (Kbars)	63	61
Gas Volume[a] (moles/kg)	41	39
Shelf Life Maximum	1 year (from date of production)	
Maximum Water Depth	90 m (300 ft)	
Water Resistance	Excellent	
Fume Class	IME1[e] & NRCan1[d]	

[a] All Dyno Nobel Inc. energy and gas volume values are calculated using PRODET™ the computer code developed by Dyno Nobel Inc. for its exclusive use. Other computer codes may give different values.
[b] ANFO = 1.00 @ 0.82 g/cc
[c] Unconfined @ 32 mm (1 1/4 in) diameter
[d] Approved by Natural Resources Canada as Fume Class 1 in chub/PMP packaging only.
[e] DYNO® AP is IME Fume Class 1.

Hazardous Shipping Description
Explosive, Blasting, Type E, 1.1D, UN 0241 II

DYNO® AP

Technical Information

Transportation, Storage and Handling

- DYNO AP and DYNO AP PLUS must be transported, stored, handled and used in conformity with all applicable federal, state, provincial and local laws and regulations.
- Packaged emulsions have a shelf life of one (1) year when stored at temperatures between -18° C and 38° C (0° F and 100° F). Explosive inventory should be rotated. Avoid using new materials before the old. For recommended good practices in transporting, storing, handling and using this product, see the booklet "Prevention of Accidents in the Use of Explosive Materials" packed inside each case and the Safety Library Publications of the Institute of Makers of Explosives.

Packaging

Diameter x Length		Nominal Cartridge Count / 25 kg (55 lb) case		Case Type
mm	in	Chub	Paper	
25 x 300	1 x 12	160 - 170	N/A	A
32 x 200	1 ¼ x 8	142 - 152	141 - 148	A
32 x 300	1 ¼ x 12	92 - 102	97 - 102	A
32 x 400	1 ¼ x 16	69 - 77	70 - 79	B
40 x 300	1 ½ x 12	65 - 71	68 - 69	A
40 x 400	1 ½ x 16	49 - 54	50 - 55	B
50 x 200	2 x 8	54 - 56	59 - 60	A
50 x 400	2 x 16	25 - 27	28 - 29	B
65 x 400	2 ½ x 16	16 - 18	17 - 19	A
75 x 400	3 x 16	11 - 13	12 - 14	A

- Package diameter and type affect product density. Use cartridge count to determine actual explosive charge weight. Note: All weights are approximate.
- DYNO AP and DYNO AP PLUS are available in a wide variety of sizes. Custom sizes are subject to surcharge and may require longer than usual lead times.
- Check with your Dyno Nobel representative should you have any questions.

Case Dimensions

A	44 x 36 x 25 cm	17 ⅜ x 14 x 9 ⅞ in
B	44 x 38 x 21 cm	17 ⅜ x 15 x 8 ¼ in

Dyno Nobel Inc.
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DYNO Dyno Nobel

Groundbreaking Performance

Material Safety Data Sheet

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FOR 24 HOUR EMERGENCY, CALL CHEMTREC (USA) 800-424-9300
CANUTEC (CANADA) 613-996-6666

MSDS # 1030
Date 12/20/12

Supercedes
MSDS # 1030 12/15/11

SECTION I - PRODUCT IDENTIFICATION

Trade Name(s):

DYNO® AP
DYNO® AP PLUS
DYNO® AP PLUS LD
DYNO® E5
DYNO® MC
DYNO® MC PLUS
DYNO® SL
DYNO® SL PLUS
DYNO® TX
DYNO® XTRA
DYNOSPLIT® AP
POWERMITE®
POWERMITE® AP
POWERMITE® Canadian
POWERMITE® LD
POWERMITE® LD PLUS
POWERMITE® PLUS
POWERMITE® RAISE BOMB™
POWERMITE® SL
POWERMITE® SL PLUS

Product Class: Emulsion Explosives, Packaged

Product Appearance & Odor: White or pink opaque semi-solid, which will appear gray if product contains aluminum. Little or no odor. Typically paper or plastic chub packaging.

DOT Hazard Shipping Description: Explosive, Blasting, Type E 1.1D UN0241 II

NFPA Hazard Classification: Not Available (See Section IV - Special Fire Fighting Procedures)

SECTION II - HAZARDOUS INGREDIENTS

			Occupational Exposure Limits	
Ingredients:	CAS#	% (Range)	ACGIH TLV-TWA	OSHA PEL-TWA
Ammonium Nitrate	6484-52-2	60-80	None	None
Sodium Nitrate	7631-99-4	10-18	None	None
Aluminum	7429-90-5	0-15	10 mg/m^3 (dust)	15 mg/m^3 (total)
Mineral Oil	64742-35-4	0-3	5 mg/m^3 (mist)	None

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 deminimus concentrations (less than 0.1% for carcinogens, less than 1.0% for other hazardous materials).

SECTION III - PHYSICAL DATA

Boiling Point: Not Applicable

Vapor Pressure: Not Applicable

Vapor Density: (Air = 1) Not Applicable

Density: 0.95-1.25 g/cc

Percent Volatile by Volume: <20 (water)

Solubility in Water: Product partially dissolves very slowly in water.

Evaporation Rate (Butyl Acetate = 1): <1

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

Flash Point: >100°C **Flammable Limits:** Not Applicable
Extinguishing Media: (See Special Fire Fighting Procedures section.)
Special Fire Fighting Procedures: Do not attempt to fight fires involving explosive materials. Evacuate all personnel to a predetermined safe location, no less than 2,500 feet in all directions.
Unusual Fire and Explosion Hazards: Can explode or detonate under fire conditions. Burning material may produce toxic vapors.

SECTION V - HEALTH HAZARD DATA

Effects of Overexposure

Eyes: May cause irritation, redness and tearing.
Skin: Prolonged contact may cause irritation.
Ingestion: Large amounts may be harmful if swallowed.
Inhalation: Not a likely route of exposure.
Systemic or Other Effects: None known.

Emergency and First Aid Procedures

Eyes: Irrigate with running water for at least fifteen minutes. If irritation persists seek medical attention.
Skin: Remove contaminated clothing. Wash with soap and water.
Ingestion: Seek medical attention.
Inhalation: If irritation occurs, remove to fresh air.
Special Considerations: None.

SECTION VI - REACTIVITY DATA

Stability: Stable under normal conditions, may explode when subjected to fire, supersonic shock or high-energy projectile impact, especially when confined or in large quantity.
Conditions to Avoid: Keep away from heat, flame, ignition sources and strong shock.
Materials to Avoid (Incompatibility): Corrosives (strong acids and strong bases or alkalis).
Hazardous Decomposition Products: Nitrogen Oxides (NO_X), Carbon Monoxide (CO)
Hazardous Polymerization: Will not occur.

SECTION VII - SPILL OR LEAK PROCEDURES

Steps to be taken in Case Material is Released or Spilled: Protect from all ignition sources. In case of fire evacuate area not less than 2,500 feet in all directions. Notify authorities in accordance with emergency response procedures. Only personnel trained in emergency response should respond. If no fire danger is present, and product is undamaged and/or uncontaminated, repackage product in original packaging or other clean DOT approved container. Ensure that a complete account of product has been made and is verified. Follow applicable Federal, State, and local spill reporting requirements.

Waste Disposal Method: Disposal must comply with Federal, State and local regulations. If product becomes a waste, it is potentially regulated as a hazardous waste as defined under the Resource Conservation and Recovery Act (RCRA) 40 CFR, part 261. Review disposal requirements with a person knowledgeable with applicable environmental law (RCRA) before disposing of any explosive material.

SECTION VIII - SPECIAL PROTECTION INFORMATION

Ventilation: Not required for normal handling.
Respiratory Protection: None normally required.
Protective Clothing: Gloves and work clothing that reduce skin contact are suggested.
Eye Protection: Safety glasses are recommended.
Other Precautions Required: None.

SECTION IX - SPECIAL PRECAUTIONS

Precautions to be taken in handling and storage: Store in cool, dry, well-ventilated location. Store in compliance with Federal, State and local regulations. Keep away from heat, flame, ignition sources and strong shock.

Precautions to be taken during use: Avoid breathing the fumes or gases from detonation of explosives. Use accepted safe industry practices when using explosive materials. Unintended detonation of explosives or explosive devices can cause serious injury or death.

Other Precautions: It is recommended that users of explosive materials be familiar with the Institute of Makers of Explosives Safety Library Publications.

SECTION X - SPECIAL INFORMATION

The reporting requirements of Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR 372 may become applicable if the physical state of this product is changed to an aqueous solution. If an aqueous solution of this product is manufactured, processed, or otherwise used, the nitrate compounds category and ammonia listing of the previously referenced regulation should be reviewed.

Disclaimer

UNIGEL®

Technical Information

Semi-Gelatin Nitroglycerin Dynamite

Product Description

UNIGEL is a semi-gelatin dynamite designed to satisfy the vast majority of explosive applications in soft to medium rock types. It is particularly suited for application in horizontally bedded, laminated and/or fractured formations and where water conditions are not excessive. In addition to use as the main charge in the borehole, UNIGEL is also an excellent primer for ANFO.

Application Recommendations

- UNIGEL is an excellent primer for Dynomix (ANFO), Dynomix-WR (WR ANFO) or other detonator sensitive packaged product and can be used as a secondary primer in hard seams or at the top of the explosive column.
- Minimum diameter is 29 mm (1 in).
- Minimum detonator is No. 8 strength.
- Depending on storage conditions, dynamites may become difficult to punch. This does not affect performance. Use softer cartridges to make up primers.
- Dynamites are susceptible to sympathetic detonation when applied in very wet conditions where boreholes are closely spaced and/or where geological conditions promote this effect. Consult your Dyno Nobel representative for recommendations where these conditions exist.

Properties

Density (g/cc) Avg	1.30
Energy[a] (cal/g)	955
(cal/cc)	1,240
Relative Weight Strength[a]	1.09
Relative Bulk Strength[a,b]	1.72
Velocity[c] (m/s)	4,300
(ft/s)	14,100
Detonation Pressure[c] (Kbars)	60
Gas Volume[a] (moles/kg)	37
Water Resistance	Good
Fume Class	IME1 & NRCan1[d]

[a] All Dyno Nobel Inc. energy and gas volume values are calculated using PRODET™ the computer code developed by Dyno Nobel Inc. for its exclusive use. Other computer codes may give different values.
[b] ANFO = 1.00 @ 0.82 g/cc
[c] Unconfined @ 32 mm (1¼ in) diameter.
[d] Approved by Natural Resources Canada as Fume Class 1.

Hazardous Shipping Description
Explosive, Blasting, Type A, 1.1D, UN 0081 II

UNIGEL®

Technical Information

Transportation, Storage and Handling

- UNIGEL must be transported, stored, handled and used in conformity with all applicable federal, state, provincial and local laws and regulations.
- For maximum shelf-life, dynamite must be stored in cool, dry and well-ventilated magazines. Dynamite inventory should always be rotated by using the oldest materials first. For recommended good practices in transporting, storing, handling and using this product, see the booklet "Prevention of Accidents in the Use of Explosive Materials" packed inside each case and the Safety Library Publications of the Institute of Makers of Explosives.

Packaging

Diameter x Length		Nominal Cartridge Count / 25 kg (55 lb) case	Case Type
mm	in		
25 x 200	1 x 8	171 - 184	A
29 x 200	1 1/8 x 8	147 - 156	A
32 x 200	1 1/4 x 8	120 - 127	A
40 x 200	1 1/2 x 8	84 - 90	B
50 x 200	2 x 8	45 - 50	B
50 x 400	2 x 16	22 - 24	A
60 x 400	2 1/4 x 16	18 - 20	A
65 x 400	2 1/2 x 16	14 - 15	A
70 x 400	2 3/4 x 16	13 - 14	A
75 x 400	3 x 16	10 - 12	B

- UNIGEL is available in a wide variety of sizes. Custom sizes are subject to surcharge and may require longer than usual lead times.
- Note: All weights are approximate.
- Check with your Dyno Nobel representative should you have any questions.

Case Dimensions

A	44 x 35 x 21 cm	17 1/8 x 13 5/8 x 8 1/4 in
B	44 x 38 x 21 cm	17 1/8 x 15 x 8 1/4 in

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DYNO Dyno Nobel
Groundbreaking Performance

Material Safety Data Sheet

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CANUTEC (CANADA) 613-996-6666

MSDS # 1019
Date 12/20/12

Supercedes
MSDS # 1019 12/15/11

SECTION I - PRODUCT IDENTIFICATION

Trade Name(s):

D-GEL™ 1000
DYNOSPLIT® D
DYNOSPLIT®: D-1
DYNOMAX PRO™
EXTRA GELATIN: 40%, 75%
GELAPRIME® F
IP: 724, 738
Oil Well Explosive 80%
RED H®A
RED H®B
STONECUTTER™
UNIGEL®
UNIMAX®
VIBROGEL®: 1, 3
Z POWDER™
60% Hi-Pressure Gelatin

Product Class: Dynamites and Blasting Gelatins
Product Appearance & Odor: Powdery to gelatinous solid, light tan to dark brown color. Faint, waxy odor.
DOT Hazard Shipping Description: Explosive, blasting, type A 1.1D UN0081 II
NFPA Hazard Classification: Not Available (See Section IV - Special Fire Fighting Procedures)

SECTION II - HAZARDOUS INGREDIENTS

Ingredients:	CAS#	% (Range)	Occupational Exposure Limits ACGIH TLV-TWA	Occupational Exposure Limits OSHA PEL-TWA
Nitroglycerin (NG)	55-63-0	3-30	0.05 ppm	0.05 ppm
Ethylene Glycol Dinitrate (EGDN)	628-96-6	5-50	0.05 ppm	0.05 ppm
Nitrocellulose	9004-70-0	0-6	None	None
Ammonium Nitrate	6484-52-2	0-75	None	None
Sodium Nitrate	7631-99-4	0-50	None	None
Sulfur[1]	7704-34-9	0-4	None	None

[1] This ingredient is not found in most of the products listed above.

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 deminimus concentrations (less than 0.1% for carcinogens, less than 1.0% for other hazardous materials).

SECTION III - PHYSICAL DATA

Boiling Point: Not Applicable

Vapor Pressure: Not Applicable

Vapor Density: Not Applicable
Percent Volatile by Volume: Not Applicable

Evaporation Rate (Butyl Acetate = 1): Not Applicable

Density: 0.8-1.48 g/cc
Solubility in Water: Ammonium and sodium nitrates are completely soluble. NG and EGDN are very slightly soluble.

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

Flash Point: Not Applicable
Flammable Limits: Not Applicable
Extinguishing Media: (See Special Fire Fighting Procedures section.)
Special Fire Fighting Procedures: Do not attempt to fight fires involving explosive materials. Evacuate all personnel to a predetermined safe location, no less than 2,500 feet in all directions.
Unusual Fire and Explosion Hazards: Can explode or detonate under fire conditions. Burning material may produce toxic vapors.

SECTION V - HEALTH HAZARD DATA

Effects of Overexposure

Eyes: May cause irritation, redness and tearing.
Skin: Contact may result in headache, nausea and blood vessel dilation.
Ingestion: May result in headache, nausea, intestinal upset and blood vessel dilation.
Inhalation: May result in headache, nausea and blood vessel dilation.
Systemic or Other Effects: None known.

Emergency and First Aid Procedures

Eyes: Irrigate with running water for at least fifteen minutes. If irritation persists, seek medical attention.
Skin: Remove contaminated clothing. Wash with soap and water.
Ingestion: Seek medical attention.
Inhalation: Remove to fresh air. If irritation persists, seek medical attention.
Special Considerations: None.

SECTION VI - REACTIVITY DATA

Stability: Stable under normal conditions. May explode when subjected to fire, supersonic shock, or high-energy projectile impact, especially when confined or in large quantities.
Conditions to Avoid: Keep away from heat, flame, ignition sources and strong shock.
Materials to Avoid (Incompatibility): Corrosives (mineral acids, bases, strong acids).
Hazardous Decomposition Products: Carbon Monoxide (CO), Hydrogen Sulfide (H_2S), Nitrous Oxides (NO_X), and Sulfur Oxides (SO_X).
Hazardous Polymerization: Will not occur.

SECTION VII - SPILL OR LEAK PROCEDURES

Steps to be taken in Case Material is Released or Spilled: Protect from all ignition sources. In case of fire evacuate area not less than 2,500 feet in all directions. Notify authorities in accordance with emergency response procedures. Only personnel trained in emergency response should respond. If no fire danger is present, and product is undamaged and/or uncontaminated, repackage product in original packaging or other clean DOT approved container. Ensure that a complete account of product has been made and is verified. Follow applicable Federal, State, and local spill reporting requirements. Contact of this product with water may result in a reportable release.

Waste Disposal Method: Disposal must comply with Federal, State and local regulations. If product becomes a waste, it is potentially regulated as a hazardous waste as defined under the Resource Conservation and Recovery Act (RCRA) 40 CFR, part 261. Review disposal requirements with a person knowledgeable with applicable environmental law (RCRA) before disposing of any explosive material.

SECTION VIII - SPECIAL PROTECTION INFORMATION

Ventilation: Forced ventilation may be necessary where natural ventilation is limited. Magazines containing NG and/or EGDN based explosives must be ventilated before entry.
Respiratory Protection: None normally required.
Protective Clothing: Chemical resistant (nitrile) gloves are suggested.
Eye Protection: Safety glasses are recommended.
Other Precautions Required: Inhalation and skin contact should be minimized to avoid headaches, nausea, and blood vessel dilation. Protective clothing should be changed daily, more often if contaminated.

SECTION IX - SPECIAL PRECAUTIONS

Precautions to be taken in handling and storage: Store in cool, dry, well-ventilated location. Store in compliance with Federal, State, and local regulations. Keep away from heat, flame, ignition sources, and strong shock.
Precautions to be taken during use: Avoid breathing the fumes or gases from detonation of explosives. Use accepted safe industry practices when using explosive materials. Unintended detonation of explosives or explosive devices can cause serious injury or death.
Other Precautions: It is recommended that users of explosive materials be familiar with the Institute of Makers of Explosives Safety Library Publications.

SECTION X - SPECIAL INFORMATION

Chemical Name	CAS Number	% By Weight
Nitroglycerin	55-63-0	3-40

The reporting requirements of Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR 372 may become applicable if the physical state of this product is changed to an aqueous solution. If an aqueous solution of this product is manufactured, processed, or otherwise used, the nitrate compounds category and ammonia listing of the previously referenced regulation should be reviewed.

Technical Information

ALPHAMIX Blasting Agent

Description

ALPHAMIX is a premixed, prilled ammonium nitrate/fuel oil-type, 65% weight-strength blasting agent[1] suitable for use under dry borehole conditions. It can be used for quarry, open-pit and construction or underground blasting operations, and can be either blown into the borehole by pneumatic loading devices or poured.

This highly economical blasting agent has an average poured density of about 0.82 g/cm^3, or 50 lbs./ft^3. When holes are loaded pneumatically, average density is about 0.95 g/cm^3 or 60 lbs./ft^3.

ALPHAMIX blasting agent, as packed and when used under dry borehole conditions, will produce Class 1 fumes.

[1]Blasting agent: Any material or mixture consisting of a fuel and oxidizer, intended for blasting, not otherwise classified as an explosive, provided that the finished product, as mixed for use or shipment, cannot be detonated by means of a No. 8 test blasting cap when unconfined.

Typical Characteristics

Measured energy, ft-lbs/lb X10^5	1.10
Measured energy, ft-lbs/ft^3	54

APPROXIMATE LOADING DENSITY AND RATE OF DETONATION

Borehole Diameter,		Approximate Weight per Foot of Borehole When Poured,		Approximate Detonation Velocity (confined),	
In.	mm	lbs	kg	fps	mps
2	51	1.1	0.50	10,700	3,261
3	76	2.4	1.09	10,900	3,322
4	102	4.4	2.00	11,800	3,597
5	127	6.8	3.08	12,400	3,780
6	152	9.8	4.44	12,800	3,901
7	179	13.3	6.02	13,100	3,993
8	203	17.4	7.88	13,300	4,054
9	229	22.0	9.97	13,400	4,084
10	254	27.2	12.32	13,500	4,115
11	279	32.9	14.90	13,600	4,145
12	305	39.2	17.76	13,650	4,160
13	330	46.0	20.80	13,700	4,176
14	356	53.3	24.14	13,700	4,176
15	381	61.2	27.72	13,750	4,191
16	406	69.6	31.53	13,750	4,191
17	432	78.6	36.61	13,750	4,191
18	457	88.1	39.91	13,750	4,191

(over)

Priming Recommendations

For optimum results, we recommend that Alphamix blasting agent be initiated with either Cast Boosters or high-impulse, high-detonation-velocity, nitroglycerin-type explosive primers. Cast Boosters are high-impulse, relatively insensitive, cast (nonnitroglycerin) explosives designed for detonating either blasting agents or desensitized explosives in conjunction with detonating cord, electric blasting caps, or nonelectric delay devices. Suggested application is as follows:

Borehole Diameter, In.	mm	Recommended Type of Titan Booster	Recommended Nitroglycerin-Type Primers	It Is Recommended That Two Primers Be Used per Hole When the Powder Column Exceeds the Following Lengths[a]
2-2½	57-64	1/3 lb. Cast Booster	Unimax, Unigel, 2x12/2x16 in., or Gelaprime, 2 x 7½ in.	10 ft. (3.05 m)
2½-3	64-76	1/3 lb. Cast Booster	Unimax, Unigel, 2 x 12/2 x 16 in., or Gelaprime, 2 x 7½ in.	15 ft. (4.6 m)
3-3½	76-89	3/4 lb. Cast Booster	Unimax, Unigel, 2 x 12/2 x 16 in., or Gelaprime, 2 x 7½ in.	20 ft. (6.1 m)
3½-6	89-152	3/4 lb. Cast Booster	Unimax, Unigel, 2 x 12/2 x 16 in., or Gelaprime, 2 x 7½ in.	25 ft. (7.6 m)
6 in. (152 mm) and up		1 lb. Cast Booster		25 ft. (7.6 m)

[a]When two boosters are necessary, place one near the bottom and one near the top of the main charge in the borehole. Additional boosters may be required if the blaster feels that separations or blockages may occur as the borehole is being loaded. It is imperative that each booster be threaded on the detonating cord downline or be individually primed with a detonator.

Packaging

Alphamix blasting agent is furnished in 50-lb. (22.7-kg) net polyethylene-lined, multiwall paper bags, or 9½ x 50-lb. waterproof polyethylene bags for underground use.

Transportation, Storage, and Handling

This blasting agent is not initiation-sensitive to No. 8 blasting caps or rifle bullets, and thus need not be stored in bullet-resistant magazines unless so required by relevant laws or regulations. Storage magazines should be located to conform to the American Table of Distances and the Table of Separation Distances of Ammonium Nitrate and Blasting Agents From Explosives or Blasting Agents.

Alphamix is classified by the U.S. Department of Transportation as Blasting Agent, and must be transported, stored, handled, and used in conformity with all applicable Federal, state, and local laws and regulations. The proper shipping description and hazard classification for Alphamix as described in this bulletin is:

Ammonium Nitrate, Fuel Oil Mixture—Blasting Agent

This product should be kept dry, and stock should be rotated so that the oldest material is used first. Use only proper primers, and never load in wet holes or where there is not adequate confinement. If these restrictions are observed, the formation of toxic fumes will be minimized. This product, as manufactured, conforms to the Institute of Makers of Explosives Fume Class 1 rating.

For additional recommended good practices in transporting, storing, handling, and using this product, consult the Safety Library Publications of the Institute of Makers of Explosives.

Alpha Explosives
P.O. Box 310, Lincoln, California 95648
(916) 645-3377

Alpha Dyno Nobel
3400 Nader Road
P.O. Box 310
Lincoln, CA 95648

MATERIAL SAFETY DATA SHEET

FOR 24 HOUR EMERGENCY CALL (800)535-5053

MSDS# 0100
Date: 9/28/2006

SECTION I – PRODUCT IDENTIFICATION

Trade Name: ANFO (BULK), Fragmax
Alpha Mix, Fragpak SD,

Product Class: Bulk or packaged ANFO

Product Appearance & Odor: Pale or pink, oil-covered prills with fuel oil odor.

DOT Hazard Shipping Description: Ammonium nitrate-fuel oil mixture 1.5D NA 0331 II

SECTION II – HAZARDOUS INGREDIENTS

Ingredients:	CAS#	% (Range)	TLV-ACGIH
Ammonium Nitrate	6484-52-2	92-95	No Value Established
Fuel Oil	68478-34-6	4-7	No Value Established

SECTION III – PHYSICAL DATA

Boiling Point: N/A
Vapor Pressure: <5mm Hg ~ 75°F
Vapor Density: >1
Density: 0.8 to 1.0 g/cc bulk
Percent Volatile by Volume: <8 (Fuel Oil)
Solubility in Water: Ammonium Nitrate Very Soluble
Evaporation Rate: (Butyl Acetate = 1): <1

NFPA Hazard Classification: N/A (See Section IV – Special Fire Fighting Procedures)
N/A = Not Applicable or Not Available

SECTION IV – FIRE AND EXPLOSION HAZARD DATA

Flash Point: >100°F
Flammable Limits: N/A
Extinguishing Media: (See Special Fire Fighting Procedures section.)
Special Fire Fighting Procedures: Do not fight fires involving explosive materials. Evacuate personnel to a predetermined safe location, no less than 2,500 feet in all directions.

Unusual Fire and Explosion Hazards: Can explode under fire conditions. Burning material may produce toxic vapors.

SECTION V – HEALTH HAZARD DATA

Effects of Overexposure
Eyes: May cause irritation, redness, and tearing.
Skin: Prolonged contact may cause irritation.
Ingestion: Large amounts may be harmful if swallowed.
Inhalation: May cause dizziness, nausea, intestinal upset.
Systemic or Other Effects: None known.
Emergency and First Aid Procedures
Eyes: Irrigate with running water for at least 15 minutes. If irritation persists, seek medical attention.
Skin: Wash with soap and water.
Ingestion: Seek medical attention.
Inhalation: Remove to fresh air.
Special Considerations: None.

SECTION VI – REACTIVITY DATA

Stability: Stable under normal conditions.
May explode when subjected to fire, supersonic, shock, or high energy projectile impact especially when confined or in large quantities.
Conditions to Avoid: Keep away from heat, flame, ignition sources, and strong shock.
Materials to Avoid (Incompatibility): Strong acids and strong alkalis.
Hazardous Decomposition Products: Carbon Monoxide (CO) and Nitrogen Oxides (NO)
Hazardous Polymerization: N/A

SECTION VII – SPILL OR LEAK PROCEDURES

Steps to be taken in case material is Released or Spilled: In case of fire, evacuate area not less than 2,500 feet in all directions. Protect from all ignition sources. Notify authorities in accordance to emergency response procedures. Only personnel trained in emergency response should respond. If no fire danger is present, and product is undamaged and/or contaminated, repackage product in original packaging or other clean DOT approved container. Ensure that a complete account of product has been made and is verified. Follow applicable Federal, State, and Local spill reporting requirements.

Waste Disposal Method: Disposal must comply with Federal, State, and Local regulations. If product becomes a waste, it is potentially regulated as a hazardous waste as defined under the Resource Conservation and Recovery Act (RCRA) Title II, Subtitle C.

SECTION VIII – SPECIAL PROTECTION INFORMATION

Ventilation: General room ventilation is normally adequate.
Respiratory Protection: None normally required.

Protective Clothing: Gloves and work clothing which reduce skin contact are suggested.
Eye Protection: Safety glasses are suggested.
Other Precautions Required: None.

SECTION IX – SPECIAL PRECAUTIONS

Precautions to be taken in handling and storage: Store in cool, dry, well-ventilated locations. Store in compliance with Federal, State, and Local regulations. Keep away from heat, flame, ignition sources, and strong shock.

Other Precautions: It is recommended that users of explosive materials be familiar with the Institute of Makers of Explosives Safety Library publications.

SECTION X – SPECIAL INFORMATION

The reporting requirements of Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR 372 may become applicable if the physical state of this product is changed to an aqueous solution. If an aqueous solution of this product is manufactured, processed, or otherwise used, the nitrate compounds category and ammonia listing of the previously referenced regulation should be reviewed.

Material Safety Data Sheet

Dyno Nobel Inc.
2650 Decker Lake Boulevard, Suite 300
Salt Lake City, Utah 84119
Phone: 801-364-4800 Fax: 801-321-6703
E-Mail: dnna.hse@am.dynonobel.com
FOR 24 HOUR EMERGENCY, CALL CHEMTREC (USA) 800-424-9300
CANUTEC (CANADA) 613-996-6666

MSDS # 1009
Date 04/26/07

Supercedes
MSDS # 1009 01/31/05

SECTION I - PRODUCT IDENTIFICATION

Trade Name(s): ANFO
DYNOMIX™, DYNOMIX™ (U.G.)
DYNOMIX™ WR
DYNOMIX™ HD
FRAGMAX™

Product Class: ANFO, Bulk or Packaged

Product Appearance & Odor: White, free-flowing solid prills with fuel oil odor. May be tinged pink or other color to distinguish from solid prills without fuel.

Hazard Shipping Description (U.S. DOT and Canada TDGR)
For ANFO, DYNOMIX™, DYNOMIX™ (U.G.), FRAGMAX™ : Ammonium nitrate-fuel oil mixture 1.5D NA0331 II
Or Explosive, blasting, type B 1.5D UN0331 II

Note: Either description is acceptable, but if already packaged, refer to packaging for which description to use.

For DYNOMIX™ WR : Explosive blasting, type B 1.5D UN0331 II
For DYNOMIX™ HD (Canada only): Explosive blasting, type B 1.1D UN0082 II

NFPA Hazard Classification: Not Available (See Section IV - Special Fire Fighting Procedures)

SECTION II - HAZARDOUS INGREDIENTS

Ingredients:	CAS#	% (Range)	Occupational Exposure Limits ACGIH TLV-TWA	OSHA PEL-TWA
Ammonium Nitrate	6484-52-2	92-95	None[1]	None[2]
Fuel Oil	68476-34-6	4-7	100 ppm	None
Guar Gum*	9000-30-0	0-3	None[1]	None[2]

[1] Use limit for particulates not otherwise regulated (PNOR): Total dust, 15 mg/m^3 ; respirable fraction, 5 mg/m^3 .
[2] Use limit for particulates not otherwise classified (PNOC): Inhalable particulate, 10 mg/m^3 ; respirable part., 3 mg/m^3 .

* DYNOMIX™ WR is the only product containing guar gum.

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 deminimus concentrations (less than 0.1% for carcinogens, less than 1.0% for other hazardous materials).

SECTION III - PHYSICAL DATA

Boiling Point: Not Applicable
Vapor Density: > 1
Percent Volatile by Volume: < 8 (Fuel oil)

Evaporation Rate (Butyl Acetate = 1): < 1

Vapor Pressure: <5 mm Hg @ 75^0 F
Density: 0.8 to 1.1 g/cc bulk density
Solubility in Water: Ammonium Nitrate component completely soluble

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

Flash Point: >120° F (49°C)
Flammable Limits: Not Available
Extinguishing Media: (See Special Fire Fighting Procedures section.)
Special Fire Fighting Procedures: Do not attempt to fight fires involving explosive materials. Evacuate all personnel to a predetermined safe location, no less than 2,500 feet in all directions.
Unusual Fire and Explosion Hazards: Can explode or detonate under fire conditions. Burning material may produce toxic vapors.

SECTION V - HEALTH HAZARD DATA

Effects of Overexposure

Eyes: May cause irritation, redness and tearing.
Skin: Prolonged contact may cause irritation.
Ingestion: Large amounts may be harmful if swallowed.
Inhalation: May cause dizziness, nausea or intestinal upset.
Systemic or Other Effects: None known.

Emergency and First Aid Procedures

Eyes: Irrigate with running water for at least 15 minutes. If irritation persists, seek medical attention.
Skin: Wash with soap and water.
Ingestion: Seek medical attention.
Inhalation: Remove to fresh air.
Special Considerations: None.

SECTION VI - REACTIVITY DATA

Stability: Stable under normal conditions. May explode when subjected to fire, supersonic shock or high-energy projectile impact, especially when confined or in large quantities.
Conditions to Avoid: Keep away from heat, flame, ignition sources and strong shock.
Materials to Avoid (Incompatibility): Corrosives (strong acids and strong bases or alkalis).
Hazardous Decomposition Products: Carbon Monoxide (CO) and Nitrogen Oxides (NO_X)
Hazardous Polymerization: Will not occur.

SECTION VII - SPILL OR LEAK PROCEDURES

Steps to be taken in Case Material is Released or Spilled: In case of fire evacuate area not less than 2,500 feet in all directions. Protect from all ignition sources. Notify authorities in accordance with emergency response procedures. Only personnel trained in emergency response should respond. If no fire danger is present, and product is undamaged and/or uncontaminated, repackage product in original packaging or other clean DOT approved container. Ensure that a

complete account of product has been made and is verified. If possible, plug drains or dike channels to prevent either material or water runoff from entering storm drains or surface waters. Follow applicable Federal; State and local spill reporting requirements.

Waste Disposal Method: Disposal must comply with Federal, State and local regulations. If product becomes a waste, it is potentially regulated as a hazardous waste as defined under the Resource Conservation and Recovery Act (RCRA) 40 CFR, part 261. Review disposal requirements with a person knowledgeable with applicable environmental law (RCRA) before disposing of any explosive material.

SECTION VIII - SPECIAL PROTECTION INFORMATION

Ventilation: Not required for normal handling. Forced ventilation may be necessary where natural ventilation is limited.
Respiratory Protection: None normally required. In a dusty environment, or in hot, enclosed areas, respiratory protection may be needed.
Protective Clothing: Gloves and work clothing that reduce skin contact are suggested.
Eye Protection: Safety glasses are recommended.
Other Precautions Required: None.

SECTION IX - SPECIAL PRECAUTIONS

Precautions to be taken in handling and storage: Store in cool, dry, well-ventilated locations. Store in compliance with Federal, State, and local regulations. Keep away from heat, flame, ignition sources and strong shock.
Precautions to be taken during use: Avoid breathing the fumes from detonation of explosives. Use accepted safe industry practices when using explosive materials. Unintended detonation of explosives or explosive devices can cause serious injury or death.
Other Precautions: It is recommended that users of explosive materials be familiar with the Institute of Makers of Explosives Safety Library publications.

SECTION X - SPECIAL INFORMATION

The reporting requirements of Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR 372 may become applicable if the physical state of this product is changed to an aqueous solution. If an aqueous solution of this product is manufactured, processed, or otherwise used, the nitrate compounds category and ammonia listing of the previously referenced regulation should be reviewed.

Disclaimer

Conforms to ANSI Z400.5-2004 Standard (United States, Canada, Mexico).

Material Safety Data Sheet

DEXPAN (Non-Explosive Demolition Agent)

1. Product and company identification

Product name	:	DEXPAN (Non-Explosive Demolition Agent)
Material uses	:	For controlled demolition, reinforced concrete cutting, rock breaking, quarrying, stone dimension, mining, excavating...
Supplier/Manufacturer	:	Archer Co. USA, Inc. 1665 Futurity Dr. Sunland Park NM. 88063 Phone # 575-874-9188 Fax: # 575-874-9108 Toll Free: 866-272-4378
MSDS authored by	:	KMK Regulatory Services inc.
In case of emergency	:	+1-575-874-9188
Product type	:	Powder.

2 . Hazards identification

Emergency overview

Color	:	Gray.
Physical state	:	Solid. [Powder.]
Odor	:	Odorless.
Signal word	:	WARNING!
Hazard statements	:	CAUSES EYE AND SKIN IRRITATION. MAY CAUSE RESPIRATORY TRACT IRRITATION.
Precautions	:	Avoid breathing dust. Avoid contact with eyes, skin and clothing. Use only with adequate ventilation. Keep container tightly closed and sealed until ready for use. Wash thoroughly after handling.
OSHA/HCS status	:	This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).
Routes of entry	:	Dermal contact. Eye contact. Inhalation. Ingestion.

Potential acute health effects

Inhalation	:	Slightly irritating to the respiratory system.
Ingestion	:	No known significant effects or critical hazards.
Skin	:	Irritating to skin.
Eyes	:	Irritating to eyes.

Potential chronic health effects

Chronic effects	:	Repeated or prolonged inhalation of dust may lead to chronic respiratory irritation.
Carcinogenicity	:	No known significant effects or critical hazards.
Mutagenicity	:	No known significant effects or critical hazards.
Teratogenicity	:	No known significant effects or critical hazards.
Developmental effects	:	No known significant effects or critical hazards.
Fertility effects	:	No known significant effects or critical hazards.
Target organs	:	No known significant effects or critical hazards.

Over-exposure signs/symptoms

Inhalation	:	Adverse symptoms may include the following: respiratory tract irritation coughing
Ingestion	:	No specific data.

2. Hazards identification

Skin	: Adverse symptoms may include the following: irritation redness
Eyes	: Adverse symptoms may include the following: pain or irritation watering redness
Medical conditions aggravated by over-exposure	: None known.

See toxicological information (section 11)

3. Composition/information on ingredients

United States

Name	CAS number	%
Calcium hydroxide	1305-62-0	60 - 100
Silica, vitreous	60676-86-0	5 - 10
Diiron trioxide	1309-37-1	1 - 5
Aluminum oxide	1344-28-1	1 - 5

Canada

Name	CAS number	%
Calcium hydroxide	1305-62-0	60 - 100
Silica, vitreous	60676-86-0	5 - 10
Diiron trioxide	1309-37-1	1 - 5
Aluminum oxide	1344-28-1	1 - 5

Mexico

					Classification			
Name	CAS number	UN number	%	IDLH	H	F	R	Special
Calcium hydroxide	1305-62-0	Not regulated.	60 - 100	-	1	0	0	
Diiron trioxide	1309-37-1	Not regulated.	1 - 5	2500 mg/m³	1	0	0	
Silica, vitreous	60676-86-0	Not regulated.	5 - 10	-	0	0	0	
Aluminum oxide	1344-28-1	Not regulated.	1 - 5	-	0	0	0	

There are no additional ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified as hazardous to health or the environment and hence require reporting in this section.

4. First aid measures

Eye contact	: Immediately flush eyes with plenty of water for at least 20 minutes, occasionally lifting the upper and lower eyelids. Get medical attention.
Skin contact	: In case of contact, immediately flush skin with plenty of water for at least 20 minutes. Get medical attention.
Inhalation	: Move exposed person to fresh air. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. Get medical attention.
Ingestion	: Wash out mouth with water. Do not induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. Get medical attention immediately.
Protection of first-aiders	: No action shall be taken involving any personal risk or without suitable training.
Notes to physician	: No specific treatment. Treat symptomatically.

5. Fire-fighting measures

Flammability of the product : No specific fire or explosion hazard.

Extinguishing media

Suitable : Use an extinguishing agent suitable for the surrounding fire.

Not suitable : None known.

Hazardous decomposition products : No specific data.

Special protective equipment for fire-fighters : Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

6. Accidental release measures

Personal precautions : Avoid breathing dust. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment (see section 8).

Environmental precautions : Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).

Methods for cleaning up

Small spill : Vacuum or sweep up material and place in a designated, labeled waste container. Dispose of via a licensed waste disposal contractor.

Large spill : Prevent entry into sewers, water courses, basements or confined areas. Vacuum or sweep up material and place in a designated, labeled waste container. Avoid creating dusty conditions and prevent wind dispersal. Dispose of via a licensed waste disposal contractor. Note: see section 1 for emergency contact information and section 13 for waste disposal.

7 . Handling and storage

Handling : Put on appropriate personal protective equipment (see section 8). Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Do not ingest. Avoid contact with eyes, skin and clothing. Avoid breathing dust. Use only with adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Empty containers retain product residue and can be hazardous. Do not reuse container.

Storage : Store in accordance with local regulations. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see section 10) and food and drink. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabeled containers. Use appropriate containment to avoid environmental contamination.

8. Exposure controls/personal protection

United States

Ingredient	Exposure limits
Calcium hydroxide	OSHA PEL (United States, 11/2006). TWA: 5 mg/m³ 8 hour(s). Form: Respirable fraction TWA: 15 mg/m³ 8 hour(s). Form: Total dust ACGIH TLV (United States, 1/2009). TWA: 5 mg/m³ 8 hour(s). NIOSH REL (United States, 6/2009). TWA: 5 mg/m³ 10 hour(s). OSHA PEL 1989 (United States, 3/1989). TWA: 5 mg/m³ 8 hour(s).
Silica, vitreous	OSHA PEL 1989 (United States, 3/1989). TWA: 0,1 mg/m³ 8 hour(s). Form: Respirable dust

8. Exposure controls/personal protection

Diiron trioxide	NIOSH REL (United States, 6/2009). TWA: 5 mg/m³, (as Fe) 10 hour(s). Form: Dust and fumes ACGIH TLV (United States, 1/2009). TWA: 5 mg/m³ 8 hour(s). Form: Respirable fraction OSHA PEL 1989 (United States, 3/1989). TWA: 5 mg/m³ 8 hour(s). Form: Respirable fraction TWA: 10 mg/m³ 8 hour(s). Form: Total dust STEL: 10 ppm, (as Fe) 15 minute(s). Form: Total particulates OSHA PEL (United States, 11/2006). TWA: 10 mg/m³ 8 hour(s).
Aluminum oxide	OSHA PEL 1989 (United States, 3/1989). TWA: 10 mg/m³ 8 hour(s). Form: Dust TWA: 5 mg/m³ 8 hour(s). Form: Respirable fraction NIOSH REL (United States, 6/2009). TWA: 5 mg/m³, (as Al) 10 hour(s). Form: PYRO POWDERS AND WELDING FUMES OSHA PEL (United States, 11/2006). TWA: 5 mg/m³ 8 hour(s). Form: Respirable fraction TWA: 15 mg/m³ 8 hour(s). Form: Total dust ACGIH TLV (United States). TWA: 1 mg/m³, (Al) 8 hour(s). Form: Respirable fraction

Canada

Occupational exposure limits		TWA (8 hours)			STEL (15 mins)			Ceiling			
Ingredient	List name	ppm	mg/m³	Other	ppm	mg/m³	Other	ppm	mg/m³	Other	Notations
Calcium hydroxide	US ACGIH 1/2009	-	5	-	-	-	-	-	-	-	
	AB 4/2009	-	5	-	-	-	-	-	-	-	[3]
	BC 9/2009	-	5	-	-	-	-	-	-	-	
	ON 8/2008	-	5	-	-	-	-	-	-	-	
	QC 6/2008	-	5	-	-	-	-	-	-	-	
Silica, vitreous	ON 8/2008	-	0.1	-	-	-	-	-	-	-	[a]
	QC 6/2008	-	0.1	-	-	-	-	-	-	-	[b]
Diiron trioxide	US ACGIH 1/2009	-	5	-	-	-	-	-	-	-	[c]
Diiron trioxide, as Fe	AB 4/2009	-	5	-	-	-	-	-	-	-	[d]
	BC 9/2009	-	5	-	-	-	-	-	-	-	[e]
		-	5	-	-	10	-	-	-	-	[f]
		-	3	-	-	-	-	-	-	-	[g]
		-	10	-	-	-	-	-	-	-	[h]
Diiron trioxide	ON 8/2008	-	5	-	-	-	-	-	-	-	[a]
		-	10	-	-	-	-	-	-	-	[i]
Diiron trioxide, as Fe	QC 6/2008	-	5	-	-	-	-	-	-	-	[j]
Aluminum oxide, Al	US ACGIH	-	1	-	-	-	-	-	-	-	[c]
Aluminum oxide	AB 4/2009	-	10	-	-	-	-	-	-	-	
	ON 8/2008	-	10	-	-	-	-	-	-	-	[i]
Aluminum oxide, as Al	QC 6/2008	-	10	-	-	-	-	-	-	-	[k]

Form: [a]Respirable particulate [b]Respirable dust [c]Respirable fraction [d]Dust and fumes [e]Dust [f]Fume [g]Total dust [h]Al

Mexico

Ingredient	Exposure limits
Calcium hydroxide	NOM-010-STPS (Mexico, 9/2000). LMPE-PPT: 5 mg/m³ 8 hour(s).
Silica, vitreous	NOM-010-STPS (Mexico, 9/2000). LMPE-PPT: 0.1 mg/m³ 8 hour(s).
Diiron trioxide	NOM-010-STPS (Mexico, 9/2000). LMPE-CT: 10 mg/m³, (as Fe) 15 minute(s). LMPE-PPT: 5 mg/m³, (as Fe) 8 hour(s).
Aluminum oxide	NOM-010-STPS (Mexico, 9/2000). LMPE-PPT: 10 mg/m³ 8 hour(s).

Consult local authorities for acceptable exposure limits.

Recommended monitoring procedures : Personal, workplace atmosphere or biological monitoring may be required to determine the effectiveness of the ventilation or other control measures and/or the necessity to use respiratory protective equipment.

8. Exposure controls/personal protection

Engineering measures	: Use only with adequate ventilation. Use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits. The engineering controls also need to keep gas, vapor or dust concentrations below any lower explosive limits.
Hygiene measures	: Ensure that eyewash stations and safety showers are close to the workstation location. Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period.
Respiratory	: Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator. Recommended: Use appropriate NIOSH approved dust respirator if PEL/TLV may be exceeded.
Hands	: Use gloves appropriate for work or task being performed. Recommended: Impervious gloves.
Eyes	: Safety eyewear should be used when there is a likelihood of exposure. If operating conditions cause high dust concentrations to be produced, use dust goggles. Recommended: Safety glasses with side shields.
Skin	: Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product. Recommended: Cotton-blend coveralls.
Environmental exposure controls	: Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.

9 . Physical and chemical properties

Physical state	: Solid. [Powder.]
Color	: Gray.
Odor	: Odorless.
Melting/freezing point	: 1000°C (1832°F)
Specific gravity	: 3.2 g/cm^3
Relative density	: 3.2
VOC	: 0 % (w/w)
Solubility	: Very slightly soluble in the following materials: cold water.

10. Stability and reactivity

Chemical stability	: The product is stable.
Conditions to avoid	: No specific data.
Materials to avoid	: Reactive or incompatible with the following materials: oxidizing materials, acids and moisture.
Hazardous decomposition products	: No specific data.
Possibility of hazardous reactions	: Under normal conditions of storage and use, hazardous reactions will not occur.
Hazardous polymerization	: Under normal conditions of storage and use, hazardous polymerization will not occur.

11. Toxicological information

Acute toxicity

Product/ingredient name	Result	Species	Dose	Exposure
Calcium hydroxide	LD50 Oral	Rat	7340 mg/kg	-

Chronic toxicity

Classification

Product/ingredient name	ACGIH	IARC	EPA	NIOSH	NTP	OSHA
Silica, vitreous	-	3	-	-	-	-
Diiron trioxide	A4	3	-	-	-	-
Aluminum oxide	A4	-	-	-	-	-

12. Ecological information

Environmental effects : Not established

Aquatic ecotoxicity

Product/ingredient name	Result	Species	Exposure
Calcium hydroxide	Acute LC50 33884.4 ug/L Fresh water Chronic NOEC 56 mg/L Marine water	Fish - Clarias gariepinus - Fingerling Fish - Poecilia reticulata - Young - 3 weeks	96 hours 96 hours

Other adverse effects : No known significant effects or critical hazards.

13. Disposal considerations

Waste disposal : The generation of waste should be avoided or minimized wherever possible. This material and its container must be disposed of in a safe way. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Empty containers or liners may retain some product residues. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor.

Disposal should be in accordance with applicable regional, national and local laws and regulations.

Refer to Section 7: HANDLING AND STORAGE and Section 8: EXPOSURE CONTROLS/PERSONAL PROTECTION for additional handling information and protection of employees.

14 . Transport information

DOT/TDG/MXT/IMDG/IATA : Not regulated.

15 . Regulatory information

United States

HCS Classification : Irritating material

U.S. Federal regulations : United States inventory (TSCA 8b): All components are listed or exempted.

SARA 302/304/311/312 extremely hazardous substances: No products were found.
SARA 302/304 emergency planning and notification: No products were found.
SARA 302/304/311/312 hazardous chemicals: Silica, vitreous; Diiron trioxide; Aluminum oxide; Calcium hydroxide
SARA 311/312 MSDS distribution - chemical inventory - hazard identification: Silica, vitreous: Immediate (acute) health hazard; Diiron trioxide: Delayed (chronic) health hazard; Aluminum oxide: Immediate (acute) health hazard; Calcium hydroxide: Immediate (acute) health hazard, Delayed (chronic) health hazard

Clean Water Act (CWA) 307: No products were found.
Clean Water Act (CWA) 311: No products were found.
Clean Air Act (CAA) 112 accidental release prevention: No products were found.
Clean Air Act (CAA) 112 regulated flammable substances: No products were found.
Clean Air Act (CAA) 112 regulated toxic substances: No products were found.

15 . Regulatory information

Clean Air Act Section 112(b) Hazardous Air Pollutants (HAPs) : Not listed

Clean Air Act Section 602 Class I Substances : Not listed

Clean Air Act Section 602 Class II Substances : Not listed

DEA List I Chemicals (Precursor Chemicals) : Not listed

DEA List II Chemicals (Essential Chemicals) : Not listed

SARA 313

	Product name	CAS number	Concentration
Form R - Reporting requirements	Aluminum oxide	1344-28-1	1 - 5
Supplier notification	Aluminum oxide	1344-28-1	1 - 5

SARA 313 notifications must not be detached from the MSDS and any copying and redistribution of the MSDS shall include copying and redistribution of the notice attached to copies of the MSDS subsequently redistributed.

State regulations : **Connecticut Carcinogen Reporting**: None of the components are listed.
Connecticut Hazardous Material Survey: None of the components are listed.
Florida substances: None of the components are listed.
Illinois Chemical Safety Act: None of the components are listed.
Illinois Toxic Substances Disclosure to Employee Act: None of the components are listed.
Louisiana Reporting: None of the components are listed.
Louisiana Spill: None of the components are listed.
Massachusetts Spill: None of the components are listed.
Massachusetts Substances: The following components are listed: Calcium hydroxide; Silica, vitreous; Diiron trioxide; Aluminum oxide
Michigan Critical Material: None of the components are listed.
Minnesota Hazardous Substances: None of the components are listed.
New Jersey Hazardous Substances: The following components are listed: Calcium hydroxide; Silica, vitreous; Diiron trioxide; Aluminum oxide
New Jersey Spill: None of the components are listed.
New Jersey Toxic Catastrophe Prevention Act: None of the components are listed.
New York Acutely Hazardous Substances: None of the components are listed.
New York Toxic Chemical Release Reporting: None of the components are listed.
Pennsylvania RTK Hazardous Substances: The following components are listed: Calcium hydroxide; Diiron trioxide; Aluminum oxide
Rhode Island Hazardous Substances: None of the components are listed.

Canada

WHMIS (Canada) : Class D-2B: Material causing other toxic effects (Toxic).

Canadian lists : **CEPA Toxic substances**: None of the components are listed.
Canadian ARET: None of the components are listed.
Canadian NPRI: The following components are listed: Aluminum oxide
Alberta Designated Substances: None of the components are listed.
Ontario Designated Substances: None of the components are listed.
Quebec Designated Substances: None of the components are listed.

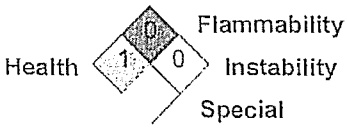
Canada inventory : All components are listed or exempted.

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the MSDS contains all the information required by the Controlled Products Regulations.

15 . Regulatory information

Mexico

Classification :



International regulations

International lists : Australia inventory (AICS): All components are listed or exempted.
China inventory (IECSC): All components are listed or exempted.
Japan inventory: All components are listed or exempted.
Korea inventory: All components are listed or exempted.
New Zealand Inventory of Chemicals (NZIoC): All components are listed or exempted.
Philippines inventory (PICCS): All components are listed or exempted.

16 . Other information

United States

Label requirements : CAUSES EYE AND SKIN IRRITATION. MAY CAUSE RESPIRATORY TRACT IRRITATION.

Hazardous Material Information System (U.S.A.) : Health : 1 Flammability : 0 Physical hazards : 0

Caution: HMIS® ratings are based on a 0-4 rating scale, with 0 representing minimal hazards or risks, and 4 representing significant hazards or risks Although HMIS® ratings are not required on MSDSs under 29 CFR 1910.1200, the preparer may choose to provide them. HMIS® ratings are to be used with a fully implemented HMIS® program. HMIS® is a registered mark of the National Paint & Coatings Association (NPCA). HMIS® materials may be purchased exclusively from J. J. Keller (800) 327-6868.

The customer is responsible for determining the PPE code for this material.

National Fire Protection Association (U.S.A.) : Health : 1 Flammability : 0 Instability : 0

Canada

WHMIS (Canada) :

References : ANSI Z400.1, MSDS Standard, 2004. - Manufacturer's Material Safety Data Sheet. - 29CFR Part1910.1200 OSHA MSDS Requirements. - 49CFR Table List of Hazardous Materials, UN#, Proper Shipping Names, PG. - Canada Gazette Part II, Vol. 122, No. 2. Registration SOR/88-64, 31 December 1987. Hazardous Products Act "Ingredient Disclosure List" - Canadian Transport of Dangerous Goods, Regulations and Schedules, Clear Language version 2005. - Official Mexican Standards NOM-018-STPS-2000 and NOM-004-SCT2-1994.

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Notice to reader

To the best of our knowledge, the information contained herein is accurate. However, neither the above-named supplier, nor any of its subsidiaries, assumes any liability whatsoever for the accuracy or completeness of the information contained herein.
Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that exist.

16 . Other information