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SECTION 1. PRODUCT AND COMPANY IDENTIFICATION


1.1 Product Identifier	Detonating cord, Daveycord, Seicord Types supplied: Daveycord 5, Daveycord 10, Daveycord 20, Daveycord 40, Daveycord 70, Seicord 100. The number indicates the PETN content of the cord in g/m
1.2 Use of the Product:	<p><i>Recommended use:</i> the product is generally used in excavation and demolition work and in the mining industry. It can also be used as a linear charge explosive whenever allowed by the current state of the art, for example to produce isolated blocks of rock, for controlled demolitions, for contour and preliminary cutting, and detonation transmission. Never use in the presence of firedamp. <i>Not recommended use:</i> the intended use is specified above. Other uses are not recommended unless an evaluation is conducted before starting use, which provides evidence that the associated risks are being monitored</p>
1.3 Details of the Supplier of the MSDS:	
Name	EPC-UK plc
Address:	ROUGH CLOSE WORKS CARNFIELD HILL SOUTH NORMANTON ALFRETON, DERBYSHIRE, DE55 2BE
Telephone Number:	01773 832253
Contact e-mail	info@epc-groupe.co.uk
1.4 Emergency Telephone Number:	01773 832253

SECTION 2. HAZARD IDENTIFICATION

2.1 Classification of the Substance or Mixture

Explosive Div 1.1

H201: Explosive, mass explosion hazard

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2.2 Label elements

Pictogram



- Signal word
- Hazard Statement
- Precautionary Statements

GHS01

Danger

H201: Explosive, mass explosion hazard

P210 : keep away from heat /sparks / open flames / hot surfaces - no smoking

P250 : do not subject to grinding / shock / friction

P370+P380: In case of fire, evacuate area. (Seicord

P372 : explosion risk in case of fire

P401 : store at a temperature between -30 and 50°C

P501 : dispose of contents / container according to the rules relating to the explosives

2.3 Other Hazards

vPvB substances: none

Substances PBT: none

OTHER HAZARDS. If used improperly, it can explode and cause fires.

SECTION 3. COMPOSITION/INFORMATION ON THE INGREDIENTS

3.1 Mixtures

The detonating fuse consists of an explosive core (dry PETN with the addition of up to 0.5% graphite) covered with fibres and tapes of polyester, polypropylene or other synthetic material. and covered with a PVC or polyethylene sheath. In addition to contain the explosive

PETN: pure PETN can be added with up to 0.5% graphite.

Polyethylene and/or Polypropylene and/or PVC plastic components



All the synthetic materials are treated with additives that make them antistatic.

The components are perfectly contained in a suitable casing.

Hazardous components within the meaning of CLP regulations:

Name	CAS №	EINECS	Classification
PETN	78-11-5	201-084-3	Expl 1.1 H201

Additional information: for the full text of hazard H, see section 16.

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SECTION 4. FIRST AID MEASURES

4.1 Description of First Aid Measures

General

Call first aid in the event of an accidental detonation. Protect yourself and move the victim to safety.

Untrained and uninstructed persons shall not handle this material nor its packaging. In the event of contact with PETN held in the cord:

First Aid – Inhalation:

- Remove the victim from the contaminated area and allow him to rest in a ventilated room or in the open air. If symptoms persist, such as coughing, consult a physician.
- Perform artificial respiration if breathing has stopped and summon a doctor.

First Aid – Skin:

Does not occur under normal handling conditions.

If the container breaks and product comes into contact with the skin:

- Remove contaminated clothing immediately.
- Wash the affected areas thoroughly with water.
- Seek medical advice.

First Aid – Eyes:

Does not occur under normal handling conditions.

In case of contact of the product with eyes:

- Immediately flush eyes with running water for 15 minutes, keeping the eyelids open.
- Consult an ophthalmologist.

First Aid – Ingestion:

Does not occur under normal handling conditions.

- Rinse the mouth with water, but only if the victim is fully conscious.
- Never induce vomiting
- Summon a doctor, who will assess the need for a stomach lavage.

4.2. Most Important Symptoms and Effects, Both Acute and Delayed


Effects do not occur under normal handling conditions. Effects refer to coming into contact with the PETN content of the cord. Nausea and vomiting are reported following excessive exposure to PETN powder. Before giving aid, take care to wear personal protection equipment.

Eye contact:

PETN causes slight irritation to the eyes

Skin contact

PETN causes slight irritation to skin and continuous contact with the skin leads to sensitisation. Information on PETN is limited. Headache,

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4.2. *Most Important Symptoms and Effects, Both Acute and Delayed (cont)*

Inhalation

PETN causes slight irritation to mucous membranes. It is moderately toxic by inhalation, causes irritation in respiratory tracts, coughing, breathing difficulties, sensations of burning, possible pulmonary oedema, possible obstruction of upper respiratory tracts, and may affect breathing. May cause headaches and dizziness. Inhaling dust/vapours may also affect the central nervous system, cardiovascular system, and urinary system

ingestion

May cause irritation in the gastrointestinal tracts, causing nausea, vomiting, and diarrhoea. May cause headaches and dizziness. May affect the liver, blood, and eyes

General

PETN is a vasodilator. Prolonged or repeated exposure may cause symptoms similar to acute exposure and may affect hearing and the endocrine system.

4.3. *Indication of Any Immediate Medical Attention and Special Treatment Needed*

Treat symptomatically. Please follow the instructions in section 4.1 above.

SECTION 5. FIRE FIGHTING MEASURES

5.1 Extinguishing Media:

Large quantities of water.

Do not fight fire when it is near or reaches explosives: explosion risk! Burning explosives cannot be extinguished with any fire-fighting equipment.

**DO NOT ATTEMPT TO EXTINGUISH THE BURNING EXPLOSIVES!
RISK OF EXPLOSION.**


Try to remain calm and extinguish the fire before it reaches the product. In case of the risk of an explosion, do not attempt to extinguish the fire. Evacuate to a shelter located at least 300m away. Secure the site against unauthorized access.

5.2 Special Hazards Arising from Product:

If one or more products are enveloped in flames, there is an immediate risk of a mass explosion, so evacuate as quickly as possible to at least 300 metres from the flames and, if possible, seek shelter behind a natural or artificial barrier.

Product combustion generates toxic fumes and gases, mainly carbon monoxide and nitrous fumes.

After the fire has been extinguished, the site where it took place may only be entered after ascertaining that the entire area has completely cooled. Damaged live detonators may be present in the area



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- 5.3 Advice for Firefighters:** If the flames do not involve the product directly, extinguish them using the media recommended for the specific type of fire (water, dry chemicals or CO₂, sand, etc.).
Move the product away from the fire area if possible.
If the fire cannot be extinguished immediately and it directly involves the product:
- Do not attempt to put the fire out as an explosion is likely.
 - Evacuate the area immediately.
 - Take shelter and alert local authorities.
 - Only if possible, fight the fire from a protected position using large quantities of water

SECTION 6. ACCIDENTAL RELEASE MEASURES

The following measures should be taken in the unlikely event that the containing cord breaks or the explosive inside is dispersed and/or fallen on the ground.

- 6.1. Personal precautions, protective equipment and emergency procedures:**
- For non-emergency personnel*
- Don suitable clothing, see section 8.2.
 - Eliminate any potential sources of ignition nearby.
- For emergency personnel*
- Don appropriate PPE and gather the dispersed product using rigorously anti-sparking tools and equipment (wood, plastic).
 - Remove all potential sources of ignition and avoid any action that could cause an impact, friction, sparking or a sudden raise in temperature
- 6.2 Environmental Precautions:**
- Avoid contaminating the soil and water.
Call the fire brigade if soil or water is contaminated.
Please refer to section 13 for product disposal instructions.
- 6.3. Methods and material for containment and cleaning up**
- Place the product in a suitable container, preferably a cardboard box or canister that can be sealed after removal of the product.
Avoid any impact, friction, or anything that may lead to a spark or electrostatic discharge.
Never use tools that generate sparks.
Keep anyone not involved in the operation well away from the danger area and inform them of the risk of explosion.
Contamination of the spilled product with materials such as powder, sand or metal particles may increase the explosive's sensitivity to impact or friction. Keep away from incompatible chemicals
- 6.4. Reference to other sections**
- Also see sections 7, 8 and 13.

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SECTION 7. HANDLING AND STORAGE

7.1 Precautions for Safe Handling:

Precautionary measures:

- Handle with care, bearing in mind the potential hazards.
- Earth all electrical equipment present and any conductive item.
- Keep the product well away from heat, direct sunlight and other sources of ignition, including combustible materials.

User information:

- The boxes must be handled with care and opened using tools that do not produce sparks and do not damage the contents.
- DO NOT SMOKE (including electronic cigarettes) and do not use naked flame during handling.
- Risk of explosion due to impact, friction, fire or other sources of ignition.

Occupational health and safety:

- When handling the product, avoid ingesting or inhaling any solid particles that are formed.
- If the product comes into contact with the skin, due for example to container breakage, wash the area thoroughly with soap and water.
- Do not eat, drink or smoke when handling the product.
- Wash your hands thoroughly after handling the product.
- Remove contaminated clothes and PPE before entering areas where food and drink are consumed.

7.2 Conditions for safe storage , including any incompatibilities:

Precautionary measures:

- Store only in licensed stores that are suitable for the purpose, in accordance with the Explosive Regulation,
- Take measures to avoid the generation and accumulation of electrostatic charges.
- Keep the storage areas closed.
- Do not smoke or do anything else that can lead to impact, friction or a sudden rise in temperature.

Storage temperature -30°C to +50°C

Storage limits for which COMAH applies for Explosives:

10 tonnes Lower Tier;


50 tonnes Upper Tier

Incompatible materials:

Store in a magazine suitable for explosives and only with other explosives of a compatible category.



7.3 Specific end use(s)

The PETN detonating cord is supplied for use, testing and analysis in civil work excavation, demolition and in the mining industry by qualified personnel who have been fully trained to handle explosives.

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SECTION 8. EXPOSURE CONTROL / PERSONAL PROTECTION

8.1 Control Parameter:	<p><i>Occupational exposure limits:</i> Not applicable under normal handling conditions.</p> <p><i>Information about the main explosive substance (PETN):</i> Not Available</p> <p><i>Biological limit values:</i> Does not contain materials with a known current value for biological limits.</p> <p><i>Limit values for occupational exposure and/or biological limit values for atmospheric contaminants:</i> No contaminants are produced under normal handling conditions. If the product is enveloped by fire and starts to combust, beware of the fumes released, mainly NO_x and CO, which can cause hazardous consequences if they are inhaled or come into contact with the eyes.</p> <p><i>DNEL exposure limit values</i> Not Available</p> <p><i>DNEL exposure limit values</i> Not Available</p>
8.2 Exposure controls	
Technical measures:	The generation and accumulation of electrostatic charge on people and equipment must be avoided by means of effective earthing. Provide good ventilation.
Industrial hygiene:	Do not eat, drink or smoke when handling the product. Do not swallow or inhale any solid particles that have formed when handling the product.
Respiratory protection:	Not required during normal handling. Do not breathe fumes after detonation
Eye protection	Not required during normal handling, but recommended.
Skin protection:	Not required during normal handling. Work clothes must be antistatic, made of cotton for instance, and flame retardant.
Hand protection	Not required during normal handling. It is advisable to use appropriate work gloves anyway, even with sealed products.
Other	Use appropriate anti-static safety footwear.
Environmental exposure monitoring:	Not required during normal handling.

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SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

9.1 Basic physical and chemical properties

(a) Appearance/ colour:	Plasticised cord of different colour, diameter and length, wound up around a suitable reel. The plastic coating has a characteristic colour and varies depending on the type of approved fuse.
(b) Odour:	no characteristic odour
(c) Odour threshold	Not applicable
(d) pH:	Not applicable
(e) Melting point / Freezing Point	Not applicable to cord. PETN: 141.3°C
(f) Initial Boiling point and boiling range	No data available for cord. PETN: 190°C
(g) Flash point:	Not applicable
(h) Evaporation Rate:	Not applicable
(i) Flammability:	No data available
(j) Upper / lower flammability or explosive limits	Not applicable
(k) Vapour pressure,:	Not applicable
(l) Vapour density	Not applicable
(m) Relative Density	At least 1.1 kg/dm. PETN is 1.773
(n) Solubility(ies)	Water solubility: Not applicable. PETN not soluble Lipid solubility: PETN is soluble in the main organic solvents (e.g. 20g/100 ml of acetone); the remaining components are dissolved by specific solvents
(o) Partition coefficient (n-octanol / water):	Not available
(p) Auto-ignition temperature	Ca 200°C
(q) Decomposition temperature	Not applicable
(r) Viscosity:	Not applicable
(r) Explosive properties	Detonation speed: ≥ 6000 m/s Explosion heat: 6402 kJ/kg Sensitivity to impacts 3 Nm Sensitivity to friction: 60 N
(s) Oxidising properties	Not applicable

9.2 Other information

Mixability:	Not applicable
Conductivity:	Not applicable


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SECTION 10. STABILITY AND REACTIVITY

- 10.1 Reactivity:** Impact, friction, electrostatic discharge, excessive temperature rise, naked flames and other causes of ignition can cause explosion. Fire can lead to explosion.
- 10.2 Chemical Stability** Stable within the storage temperatures recommended in section 7 and within the item's usage limitations (expiration date)
- 10.3 Possibility of hazardous Reactions** When the product is exposed to heat, there is a risk for the product inside to explode at temperatures well below the auto-ignition temperature. Explosion in the event of shock, pressure, impact, friction, fire, sparks, electrostatic discharges, or other sources of ignition
- 10.4 Conditions to avoid** Keep away from heat, sparks, naked flames and hot surfaces. Do not smoke. Avoid impact, shock and friction.
- 10.5 Incompatible materials** All explosives and explosive devices are chemically incompatible with acids, alkalis and highly reactive materials such as reducing agents and highly oxidising agents. Explosives and explosive devices are physically incompatible with nitrophenols and materials that can sensitize the explosive and lead to an uncontrollable reaction. Combinations with phosphorous, ammonium, amines, metal powders, chlorates, mercury, and organic compounds or solvents must be avoided.
- 10.6 Hazardous Decomposition Products:** Nitrous fumes and carbon monoxide during combustion.

SECTION 11. TOXICOLOGICAL INFORMATION

- 11.1 Information on toxicological effects** Under normal conditions, the explosive is enclosed in special wrapping. If the wrapping breaks, the toxicity of the contents is similar to that of the component present in the highest percentage, namely PETN
- (a) acute toxicity
- PETN:**
LD50 (oral, rat): 1660 mg/kg, Not classifiable based on the information available. PETN is moderately harmful by inhalation or ingestion.
 Can cause slight irritation to the mucous membranes.
 PETN powder is a vasodilator, hence in case of inhalation causes effects similar to those of nitroglycerine, i.e. headache, fatigue, decrease in blood pressure, nausea.
- 11.1 Information on toxicological effects (cont)**

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(b) skin corrosion / irritation	PETN: skin irritation
(c) Serious eye damage / irritation	PETN: Slight irritation
(d) Respiratory or skin sensitisation	No data available
(e) Germ Cell Mutagenicity	No data available
(f) carcinogenicity	No data available
(g) reproduction toxicity	No data available
(h) STOT – single exposure	Not applicable
(i) STOT –repeated exposure	Not applicable
(j) aspiration hazard	Not applicable

In relation to the product

(a) acute toxicity	Not applicable
(b) skin corrosion / irritation	Not applicable
(c) Serious eye damage / irritation	Not applicable
(d) Respiratory or skin sensitisation	Not applicable
(e) Germ Cell Mutagenicity	Not applicable
(f) carcinogenicity	Not applicable
(g) reproduction toxicity	Not applicable
(h) STOT – single exposure	Not applicable
(i) STOT –repeated exposure	Not applicable
(j) aspiration hazard	Not applicable

SECTION 12. ECOLOGICAL INFORMATION

- 12.1 Toxicity:** Under normal conditions, the explosive is enclosed in a special wrapping. If the wrapping breaks, refer to the following eco-toxicological properties of PETN.
Eco-toxicological information relating to the main substances contained in the explosive mixture:
Pentaerythritol tetra nitrate (P.E.T.N.) - CAS: 78-11-5, EC: 201-084-3
LC50 (fish, *Pimephales promelas*, 96 hours): 27000 mg/l
LC50 (*Daphnia magna*, 48 hours): 8500 mg/l
- 12.2 Persistence and Degradability:** Hydrolysis is not expected to significantly affect the environmental fate of **PETN**. The primary physical degradation mechanism of PETN in aqueous solution is photolysis. PETN is expected to persist at length in clear illuminated surface water. Formaldehyde and nitrosamines have been identified as photoproducts. Nitrosamines could be of primary importance for the environment due to their mutagenic/carcinogenic potential. In these products, however, conversion only occurs in a limited portion if the product itself is photoreactive. Biodegradation of PETN occurs in water and soil, mainly in anaerobic conditions.
- 12.3 Bioaccumulation potential;** Data not available
- 12.4 Mobility in soil** Data not available

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12.5 Result of PBT and vPvB Assessment: The product does not meet the classification criteria for PBT.
The product does not meet the classification criteria for VPvB.

12.6 Other Adverse Effects Toxicity for water (referring to the PETN content and not the finished product): harmful to aquatic organisms. It can lead to long-term, harmful effects under water.

SECTION 13. DISPOSAL CONSIDERATIONS

13.1 Waste treatment methods: Considering the potential risk associated with the kind of product, it must only be disposed by personnel specifically trained for the purpose. Avoid or reduce the generation of waste to a minimum. Collect waste in appropriate containers in accordance with the applicable regulations, ready for disposal using approved methods. The buildings where containers of waste are kept must be properly equipped and authorised by the competent authorities. Waste must never be discharged into the drains, waterways or general waste. See the CBI/EIG "Guidance for the Safe Management and Disposal of Explosives"

Product

Packaging

Packaging must be destroyed in accordance with the applicable regulations. Always check packaging for residual explosives before burning

SECTION 14. TRANSPORT INFORMATION

14.1 UN Number : UN 0065

14.2 UN Proper Shipping Name : Detonating cord, flexible


14.3 Transport Hazard Classes: 1.1D

14.4 Packing Group : Not applicable

14.5 Environmental Hazards Not classified

14.6 Special Precautions for User As an explosive, the product is a high consequence dangerous good and adequate transport precaution must be taken for its security
For IMDG code EmS: F-B, S-X
Transport by air under ICAO/IATA is forbidden

14.7 Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code Not applicable

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SECTION 15. REGULATORY INFORMATION

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture

UK Legislation: Carriage of Dangerous Goods Regulations 2009, as amended – implementing ADR
Control of Substances Hazardous to Health regs 2002, as amended
Explosives Regulations 2014
Control of Major Accident Hazard Regulations 2015

EC Regulations Registration Evaluation, Authorisation and Restriction of Chemicals Regulations 2006, as amended
Classification Labelling and Packaging Regulations 2008, as amended

15.2 Chemical Safety Assessment Not envisaged for one article, pursuant to EC Regulation no. 1906/2007.

SECTION 16. OTHER INFORMATION

MSDS first issued: 03/96

(a) Changes

Issue	Issue Date	Changes
11	26/02/2017	Completely re-written
12	15/03/18	3.1 Description modified to cover both manufacturers Explosive classification changed to 1.1 H201 in line with suppliers MSDSs 4.1 removed reference to contact with eyes in ingestion section

(b) Abbreviations and acronyms

ADR: European Agreement concerning the International Carriage of Dangerous Goods by Road.

CAS: Chemical Abstracts Service (American Chemical Society).

CLP: Classification, Labelling, Packaging.

DNEL: Derived No Effect Level.

GHS: Globally Harmonized System of Classification and Labelling of Chemicals.

IATA: International Air Transport Association.

IATA-DGR: Dangerous Goods Regulation by the "International Air Transport Association" (IATA).

ICAO: International Civil Aviation Organization.

ICAO T.I. : International Civil Aviation Organization Technical Instructions.

IC₅₀ : Inhibition Concentration for 50 percent of the test population.

IMDG: International Maritime Dangerous Goods Code.

LC₅₀ : Lethal Concentration for 50 percent of the test population.

LD₅₀ : Lethal Doses for 50 percent of the test population.

MARPOL 73/78: International Convention for the Prevention of Pollution From Ships, 1973 as modified by the Protocol of 1978.



NIOSH-REL: National Institute for Occupational Safety and Health (USA) – Recommended Exposure Limits.

NOEC: No Observed Effect Concentration.

OSHA-PEL: Occupational Safety & Health Administration (USA) - Permissible Exposure Limits.

PNEC: Predicted No-Effect Concentration.

RID: Regulations concerning the International Carriage of Dangerous Goods by Rail.

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STEL: Short-Term Exposure Level

STOT: Specific Target Organ Toxicity.

TLV: Threshold Level Value.

TLV-TWA: Threshold Level Value for the average time weighted over 8 hours

VLEP: Occupational exposure limit values

(c) References

ADR

IMDG

IATA

Guidance for the Safe Management and Disposal of Explosives, 2007

ECDIN - Environmental Chemicals Data and Information Network - Joint Research Centre,
Commission of the European Communities

SAX's DANGEROUS PROPERTIES OF INDUSTRIAL MATERIALS - Eighth Edition - Van
Nostrand Reinold

National Institute of Health – National Chemicals Inventor

(d) Relevant hazard Statements and Precautionary statements

Meanings of Hazard Phrases

H200 Unstable explosive

H201 Explosive; mass explosive hazard

(e) Advice on training

Handling of this product should only be allowed by qualified persons.

Notice:

**FOR FURTHER INFORMATION CONTACT
EPC-UK EXPLOSIVES EXPLOSIVE ENGINEERING DEPARTMENT**
