i-kon™ Detonator

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1 Identification of the substance / preparation and of the company / undertaking

1.1 Identification of the substance or preparation

i-kon™ Detonator, i-kon™ Detonator VS and i-kon™ Detonator RX

1.2 Use of the substance / preparation

Detonators for initiating commercial explosives

1.3 Company / undertaking identification

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3412 LIERSTRANDA
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1.4 Emergency telephone

+47 91 70 58 50

2 Hazards identification

Classification of Substance / Preparation

Classification according to directive 67/548/EEC or directive 1999/45/EC

R2 – risk of explosion by shock, friction, fire or other sources of ignition

Additional hazard statements for human and environment

By fire, heat, electrostatics and impact the product can explode.
The total amount of explosives in the product is approximately 800 mg.

Shrapnel from detonation may cause burns and wounds.

The yellow insulation of the lead wire contain the following substance of very high concern:

Lead sulfochromate yellow (C.I. Pigment Yellow 34); >0.1 %(w/w) CAS-No: 1344-37-2, EC-No: 215-693-7

3 Composition / information on ingredients

Detonator, electronic, programmable delay time
The function of the detonators is to initiate commercial explosives.
They are initiated by a coded electronic signal.
The detonators have a diameter of about 7 mm and a length of about 100 mm.
They consist of metal shell closed with a tightly pressed plug holding the lead wires.
The shell contains the electronics with attached fuse head and about 800 mg of various explosives.

Dangerous contents	*CAS no.*	*EINECS no.*	*Contents*	*Classification according to directive 67/548/EEC*
P.E.T.N.[*)]	78-11-5	201-084-3		E · R3
TNT[*)]	118-96-7	204-289-6		E; T; N · R 2-23/24/25-33-51/53
or				
P.E.T.N.	78-11-5	201-084-3	<1%(w/w)	E · R3
and				
Lead diazide	13424-46-9	236-542-1	<0.1%(w/w)	E; T; N · R 61-3-20/22-33-50/53-62

Additional remarks

*) Detonators may contain a mixture of P.E.T.N. and TNT (so called Pentolite) or pure P.E.T.N. The amount of Pentolite / P.E.T.N. is <1 % of the total mass.
The ingredient balance up to 100 % is not classified components or under the limit for including in the calculation.

Substances with prescibed EC-limit value : Lead and inorganic compounds (as Pb)

The wording of the cited R-phrases is given in chapter 16.

4 First aid measures

4.1 General references

If in doubt, get medical advice.

4.2 After inhalation

Fresh air and rest. Get medical attention if any discomfort continues.

4.3 After skin contact

Shrapnel from steel, copper or aluminium may cause great damage, possibly blood poisoning. Immediately consult a doctor.

4.4 After eye contact

Shrapnel from detonation may cause burns and wounds. Immediately consult a doctor.

4.5 After swallowing

Rinse mouth thoroughly. Immediately consult a doctor.

4.6 Special references

not applicable

5 Fire-fighting measures

5.1 General references

Keep unauthorised persons away.
Warn neighbourhood announcing risk of explosion.

5.2 Suitable extinguishing media

Extinguish surrounding fires with suitable extinguisher.

5.3 Improper extinguishing media

Do not fight fires involving explosives, risk of explosion!

5.4 Fire and explosion hazards

Risk of explosion by friction, impact, heat or other sources of ignition.

5.5 Personal protective equipment

Use fresh air equipment when the product is involved in fire.
In case of evacuation, an approved protection mask should be used. See also chapter 8.

5.6 Other Information

Evacuate all personnel to a predetermined safe location.
Notify authorities in accordance with emergency response procedures.
Containers close to fire should be removed immediately or cooled with water.

6 Accidental release measures

6.1 General measures

Spill is unproblematic because of the packaging and consistency of the product.

6.2 Personal precautions

Use protection equipment as given in chapter 8.

6.3 Environmental precautions

The product must not be dumped in nature but collected and delivered according to national regulations.

6.4 Methods for cleaning

Detonators must be picked up by hand and put in approved, labelled containers. Sweep up residues with non-sparking tools and remove.
The product is hazardous waste and should be transferred to a closable, labelled salvage container for disposal by an appropriate method (See chapter 13).

7 Handling and storage

7.1 Handling

Only to be handled by authorized personnel. The explosives must be under supervision and unavailable for persons not concerned.
Take precautionary measures against static discharges.
Keep away from sources of ignition - No smoking. Protect against heating.
Protect against physical impact and/or friction.

7.2 Storage

7.2.1 Conditions for a safe storage

Keep substance dry, fire-proof and in a well-ventilated place.
Respect maximum storage temperature and shelf life as given in the Technical Data Sheet.
Storage only according to national regulations.

7.2.2 Recommendations regarding quantity limits

Maximum storage volume should be agreed with national authorities.

7.3 Specific use(s)

Substance is an explosive!
Usage of the article only according to existing laws and official permissions.

8 Exposure controls / personal protection

8.1 Exposure limit values

Component name: TNT: CAS No. 118-96-7, EINECS no. 204-289-6

Country	Limit value - Eight hours		Limit value - Short term	
	ppm	mg/m³	ppm	mg/m³
Austria		0.1 inhalable aerosol		0.2 inhalable aerosol
Belgium		0.1		
Denmark		0.1		0.2
European Union				
France				
Germany (AGS)	0.011	0.1	0.022	0.2
Germany (DFG)				
Hungary		0.09		0.36
Italy				
Poland		1		3
Spain		0.1		
Sweden		0.1		0.2
Switzerland	0.01	0.1	0.02	0.2
The Netherlands				
United Kingdom		0.5		

Component name: Lead and inorganic compounds (as Pb), CAS No. 7439-92-1

Country	Limit value - Eight hours			Limit value - Short term		
	ppm	mg/m³		ppm	mg/m³	
Austria		0.1	inhalable aerosol		0.4	inhalable aerosol
Belgium		0.15				
Denmark		0.05	inhalable aerosol		0.10	inhalable aerosol
European Union		0.15	inhalable aerosol			
France		0.1	inhalable aerosol			
Germany (AGS)		0.15	inhalable aerosol		0.1	
Germany (DFG)						
Hungary		0.15	inhalable aerosol		0.60	inhalable aerosol
		0.05	respirable aerosol		0.2	respirable aerosol
Italy		0.15	inhalable aerosol			
Poland		0.05				
Spain		0.15	inhalable aerosol			
Sweden		0.1	inhalable aerosol		0.15	respirable aerosol
Switzerland		0.1	inhalable aerosol		0.8	inhalable aerosol
The Netherlands						
United Kingdom		0.15				

8.2 Exposure control

Technical arrangements and usage of adequate operation methods, as given in chapter 7, take priority over the application of personal protective equipment.

8.2.1 Occupational exposure controls

a) Respiratory protection

Normally not required.
In case of inadequate ventilation: Use respiratory equipment with particle filter, type P2/P3.

b) Hand protection

Use gloves suitable for the work according to EN 388. Consider national guidelines.

c) Eye protection

Protective goggles according to DIN EN 166. Consider national guidelines.

d) Skin protection (other than of the hands)

Work cloth made from cotton meets the requirements.

The design of the protective clothing which can be made available depends on the result of the risk assessment under the respective operating conditions.

During the selection of the protective clothing it is recommended to keep the following protective goals into consideration:

- Protection from heat effect and open flames (so the protective clothing may not melt with an event if possible or go up in flames).
- Protection from contact with chemicals (Explosive particles should not be taken up by the fabric to decrease inflammability).
- Protection from electrostatic charge.
- Protective clothing concerning extended protection goals (e.g. reflective clothing, weather protection clothing) shouldn't be contrary to the protection goals mentioned above.

e) Other Information

Eye wash facilities should be available when handling this product.
Do not eat, drink or smoke during work. Wash hands at the end of each work shift and before eating, smoking and using the toilet.
Personal protection equipment should be chosen according to the CEN standards and in discussion with the supplier of the personal protective equipment.

8.2.2 Environmental exposure controls

Avoid release to the environment, if necessary carry out measures according to chapter 6 and 7.

9 Physical and chemical properties

9.1 General information

State of aggregation	solid
Colour	Not applicable
Odour	none

9.2 Important health, safety and environmental information

pH	Not applicable
Boiling point / boiling range	Not applicable
Flash point	Not applicable
Flammability	Not applicable
Explosive properties	Explosive
Oxidizing properties	Not applicable
Vapour pressure	Not applicable
Relative density	Not applicable
Solubility	no data aviable
Water solubility	Not applicable
Partition coefficient: (n-octanol / water)	Not applicable
Viscosity	Not applicable
Vapour density	Not applicable
Evaporation rate	Not applicable

9.3 Other information

See Technical Data Sheet for more information.

10 Stability and Reactivity

10.1 Conditions to avoid

Fire, heat, electrostatic or impact may cause the detonators to explode, creating the potential for shrapnel.
If unpacked detonators are ignited, there is a danger of injuries due to shrapnel, shock wave or heat.
1.1B - Mass explosion hazard

1.4B / 1.4S - No mass explosion hazard
- If detonators explode in the original package, the effects are substantially limited to the packaged items.

10.2 Stability

Stable under normal temperature conditions and recommended use.

11 Toxicological information

11.1 Other information regarding health hazards

General:	Shrapnel from detonation may cause considerable burns and wounds to the skin and eyes.
Inhalation:	Gas or vapour may irritate respiratory system.
Skin contact:	Not relevant.
Eye contact:	Moderately irritating.
Ingestion:	Not likely, due to the form of the product.
Chronic effects:	No known chronic or acute health hazards.
Sensitisation:	Sensitizing properties are not known.
Carcinogenicity:	Carcinogenic properties are not known.
Teratogenic properties:	Effects on fetus development are not known.
Reproductive toxicity:	Effects harmful to reproduction are not known.
Mutagenicity:	Mutagenic properties are not known.

11.2 Data of the ingredients

TNT

Acute toxicity (LD_{50} oral, rat (mg/kg)) 795

TNT is an irritant to eyes, skin and respiratory tract.
In the revised form of TRGS 905 TNT is classified as possibly carcinogenic, Category 3.

P.E.T.N.

Acute toxicity (LD_{50} oral, rat (mg/kg)) 1660

Effects by ingestion: Dermatitis. The effects are similar to those of nitroglycerine.

11.3 Experience in practice

No data for the article available.

11.4 Additional Information

The yellow insulation of lead wire contain Lead sulfochromate yellow. This substance is bound in the polypropylen matrix. Because of the carcinogenic (Carc 1B) and reprotoxic (Repr 1A) properties Lead sulfochromate yellow is classified as SVHC.

12 Ecological information

12.1 Ecotoxicity

The product is not classified as dangerous for the environment.

12.2 Mobility

Insoluble in water.

12.3 Persistence and degradability

The product is not biodegradable.

12.4 Bioaccumulative potential

Contains components with the potential to bio accumulate.

12.5 Results of PBT assessment

No PBT-assessments carried out up to now.

12.6 Other adverse effects

Currently there are no further information available.

13 Disposal considerations

13.1 Specify the appropriate methods of disposal

Disposal or destruction of explosives and detonators must be carried out in accordance with national regulations for handling / disposal of explosives.
Residues of explosives must immediately be removed for intermediate storage and disposed for safe destruction in accordance with national regulations for handling / disposal of explosives.

14 Transport information

Depending on the used Package the UN-No and also the transport class is different!

Dangerous goods ADR

Status:	Yes	Yes	Yes
UN no.:	0030	0255	0456
Class:	1.1B	1.4B	1.4S
Proper shipping name:	DETONATORS, ELECTRIC	DETONATORS, ELECTRIC	DETONATORS, ELECTRIC
Hazard Label:	1	1.4	1.4
Packaging methode:	P131	P131	P131
Packing group:	- not applicable -	- not applicable -	- not applicable -
Hazard number	- not applicable -	- not applicable -	- not applicable -
Transport category (Tunnel restriction code)	1 (B1000C)	2 (E)	4 (E)

Dangerous goods RID

Status:	Yes	Yes	Yes
UN no.:	0030	0255	0456
Class:	1.1B	1.4B	1.4S
Proper shipping name:	DETONATORS, ELECTRIC	DETONATORS, ELECTRIC	DETONATORS, ELECTRIC

Dangerous goods IMDG

Status:	Yes	Yes	Yes
UN no.:	0030	0255	0456
Class:	1.1B	1.4B	1.4S
IMDG Marine pollutant:	No	No	No
EmS:	F-B, S-X	F-B, S-X	F-B, S-X
Proper shipping name:	DETONATORS, ELECTRIC	DETONATORS, ELECTRIC	DETONATORS, ELECTRIC

Dangerous goods ICAO/IATA

Status:	Forbidden	Yes	Yes
UN no.:	-	0255	0456
Class:	-	1.4B	1.4S
Proper shipping name:	-	DETONATORS, ELECTRIC	DETONATORS, ELECTRIC

15 Regulatory information

Hazard symbol:

R phrases

R2 - Risk of explosion by shock, friction, fire or other sources of ignition.

S phrases

S35 - This material and its container must be disposed of in a safe way.
S45 - In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).

References (laws/regulations)

Directive 1999/45/EC (Dangerous Preparation Directive)
Directive 67/548/EEC (Dangerous Substance Directive)
Regulation (EC) No. 1907/2006 (REACH)
Regulation on Hazardous Waste.

National Regulations

Approval conditions must be respected.
Compare national regulations for handling of explosives

Chemical safety assessment

A chemical safety assessment for the ingredients is not present.

Preparation contains the following hazardous components

TNT, P.E.T.N., Lead Diazide

16 Other information

R-phrases referred in chapter 2 and 3

R2	Risk of explosion by shock, friction, fire or other sources of ignition.
R3	Extreme risk of explosion by shock, friction, fire or other sources of ignition.
R20/22	Harmful by inhalation and if swallowed.
R23/24/25	Toxic by inhalation, in contact with skin and if swallowed.
R33	Danger of cumulative effects.
R50/53	Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.
R51/53	Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.
R61	May cause harm to the unborn child.
R62	Possible risk of impaired fertility.

Other notes

Used literature: GESTIS- and TOXNET-Database

Changes in relation to the last version

Full review acc. to REACH Regulation

Technical contact point

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This Safety Data Sheet is handed only in the form of a machine-written original document, any copies are not authorized. The information contained is based on the present state of our knowledge. It characterizes the product with regard to the appropriate safety precautions, but does not represent any guarantee with regard to product properties fixed by contract.
As being machine-written this Safety Data Sheet is not signed.