

## **Прилог IV**

### **СУРОВИНИ И ПОМОШНИ МАТЕРИЈАЛИ И ЕНЕРГИИ УПОТРЕБЕНИ ИЛИ ПРОИЗВЕДЕНИ ВО ИНСТАЛАЦИЈАТА**

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## IV.1 Опис на суровини

Во процесот на производство и преработка се користат неметални минерални суровини кои се добиваат преку ископување и предходно примарно дробење. Суровините кои се користат и можат да се преработат имаат тврдина 8 по Мосовата скала.

Доставувањето на суровините е од сопствениот ископ на мермеризирани варовници на месноста “Краста ” во кругот на самата инсталација и преку добавувачи

Суровините воглавно се поделени на две групи според својата природа и намена:

### 1. Карбонатни суровини:

- калцити
- сив варовник

#### IV.1.1 Калцит

Карбонатниот минерал калцит е хемиски или биохемиски калциум карбонат со хемиска формула  $\text{CaCO}_3$  и е еден од најраспространетите минерали во земјината кора. Исто така делумно влегува во состав на седиментните стени и варовникот.

Исто така е примарен минерал во метаморфниот мермер. Се појавува во наслагите од геотермални води, пештери као сталактит и сталагмит. Калцитот преставува стабилна форма на калциум карбонат; аргонитот преминува во калцит на  $470^{\circ}\text{C}$  , додека ватеритот  $\mu\text{-CaCO}_3$  е понестабилен. Се појавува во фиброзна, грануларна, ламеларна или компактна форма.

По Мосовата скала има тврдина од 2,71, Бојата му е бела или безбојна со нијанси на сива, црвена. жолта. Зелена. Сина, виолетова, кафеава па дури и црна во случаи кога минералот содржи примеси.

#### IV.1.2 Сив варовник

Карбонатна стена со сива боја со финозрнеста структура составена од мермеризирани варовници што бурно реагира со ладна (10%) HCl киселина што се карактеризира за ситнозрни калцитни мермери.

Од хемиските анализи може да се констатира дека мермерестите варовници од лежиштето “Краста” се многу чисти карбонатни карпи со изразито калцитски состав при што  $\text{CaCO}_3$  се движи од 97.09 – 99.44%. Ретки се пробите кои покажале присуство на  $\text{MgCO}_3$  од 0.38-2.11% додека штетните компоненти (глиновито лимонитска супстанција, кварцот манганот,  $\text{SO}_3$  и  $\text{P}_2\text{O}_5$ ) се многу ретки или воопшто ги нема.

Хемискиот состав на сивиот варовник е прикажан во Табелата 1

Оксиди	%
CaO	54.2-56.65
MgO	0.2-1.0
MnO	-
SiO <sub>2</sub>	0.06-2.00
Al <sub>2</sub> O <sub>3</sub>	0.06-0.5
Fe <sub>2</sub> O <sub>3</sub>	0.01-0.26
Na <sub>2</sub> O	0.16-0.28
K <sub>2</sub> O	-
P <sub>2</sub> O <sub>5</sub>	0.01-0.04
Z.Z. 1000°C	43.3-43.82

## **IV.2 Помошни материјали**

Користењето на помошните материјали се однесува на:

- Минерски активности
- одржувањето на механизацијата и опремата,
- средства за одржување на хигиена како и
- средства за заштита при работа.

### **IV.2.1 Материјали за минерски работи**

Стопанскиот експлозив се набавува за потребите за минирање на површинскиот коп и се изведува од овластена компанија за изведување на минерски активности. Годишната потрошувачка е 5 тони, која вклучува бавно горечки фитил, детонатори, експлозив

#### **IV.2.1.1 Пластични експлозиви**

Пластичниот експлозив содржи токсични компоненти како нитрогликол, динитро и тринитро толуол, кои можат да го загорат здравјето на вработените со вдишувања на испарувањата и нивната апсорбција преку кожата. Прашкатаите експлозиви како бризантна компонента содржат динитро и тринитро- толуол. Иако се патронирани на скоро идентичен начин како и пластичните експлозиви, можно е присуство на испарувања и онечистувања на амбалажата со експлозив. Затоа не е дозволена манипулација со пластичниот и прашкастиот експлозив без гумени ракавици.

По завршената манипулација со експлозивот работниците треба да ги исперат рацете. Пластичниот експлозив е осетлив на зголемена температура над +30 °C кога може да дојде до издвојување на нитроглицеринот и нитрогликолот од експлозивот, а при помала температура од -20 °C може да дојде до смрзнување на нитроестрите. и во двата случаи експлозивот е опасен за манипулација и несмее да се издава за користење.

#### **IV.2.1.2 Прашкасти експлозиви**

За прашкастиот експлозив се непожелни температури над +30 °C, кога промената на кристалната структура, амониум нитратот стврднува и го прави експлозивот неупотреблив. Иста состојба е при диспергираниот прашкаст експлозив, а слична и при АНФО експлозивот, како кај прашкастите експлозиви. Основна експлозивна компонента на детонаторскиот фитил е пентритот, кој не е токсичен. Добро амбалажиран не може да предизвика последици кај вработените.

#### **IV.2.1.3 Бавногоречки фитил**

се користи за иницирање на рударските каписла и има јадро од црн димен барут обмотан со повеќе памучни конци и изолација од ПВЦ или битумен, против влага. Се пали со помош на кибрит.

#### **IV.2.2 Одржување на механизација**

Резервните делови како масти и мазива за подмачкување и одржување на опремата и механизацијата се складираат во склад за резервни делови во механичарската работилница.

Моторно масло и хидраулично масло за одржување на механизацијата се чуваат во механичарската работилница на соодветно место за таа намена.

Во Табелата 1 се прикажани количините на помошни материјали за одржување на механизацијата.

#### **IV.2.3 Средства за хигиена и заштита при работа**

Средствата за хигиена како и средствата за заштита при работа се чуваат во магацин за таа намена и се состојат од средства за лична хигиена (детергенти и пасти за одмастување) како и заштитни ракавици, чевли и заштитна облека.

### **IV.3 Енергенси**

#### **IV.3.1 Дизел гориво**

Се користи за потребите на мобилната механизација и дизел агрегатот. Дизел горивото се складира во буриња и се користи само за дневна потрошувачка. Показателите на потрошувачката се прикажани во Табелата 1

#### **IV.3.2 Електрична енергија**

Напојувањето се електрична енергија е преку дизел агрегат со снага од 160 kWA со потрошувачка надизел гориво од 20л/час

## IV.4 Вода

Водоснабдувањето со технолошка и санитарна вода во инсталацијата се врши од општинската водоводна мрежа на град Гостивар преку дополнување со цистерни на резервоарот од 16 тона. Средната годишна потрошувачка на санитарна и технолошка вода изнесува 1200 м<sup>3</sup>.

Снабдувањето со техничка вода се врши со сопствена авто цистерна со зафаќање на вода од реката Вардар.

Вода се користи само за перење на објектот и околината и попрскување на гранулатите заради превенција од создавање прашина . Отпадната санитарна вода се испушта во сопствена септичка јама за таа намена.

Во Табелата 1 се прикажани количините на помошни материјали за одржување на механизацијата.

Табела 1: Потрошен материјал за одржување на мобилната механизација

Ред. број	Потрошен материјал	Един. мера	Дупчење минирање	Копање утовар	Транспорт	Вкупно
1.	Гориво	L/t	0.12	0.17	0.96	1.25
2.	М.масло	L/t	0.006	0.008	0.048	0.062
3.	Дифер. Масло	L/t	0.0036	0.0051	0.029	0.0377
4.	Тов.маст	Kg/t	0.0024	0.0034	0.019	0.0248
5.	Хидр.масло	L/t	0.012	0.0017	0.096	0.125
6.	Гуми	Par/t	/	/	1.2 x 10 <sup>-5</sup>	1.2 x 10 <sup>-5</sup>
7.	Експлозив	Kg/m <sup>3</sup>	0.85	/	/	0.85
8.	Нонел цевки	Par/t	0.005	/	/	0.005
9.	Нонел спојн.	Par/t	0.002	/	/	0.002
10.	Нонел детон.	Par/t	0.005	/	/	0.005
11.	Круни	Par/t	3.8 x 10 <sup>-5</sup>	/	/	3.8 x 10 <sup>-5</sup>
12.	Цевки	Par/t	1.9 x 10 <sup>-5</sup>	/	/	1.9 x 10 <sup>-5</sup>



## IV.5 Производи

1. Дробен каменит (0 – 63 мм)
2. Фракционен дробен агрегат
  - 0 – 4 мм
  - 4 – 8 мм
  - 8 – 16 мм
  - 16 – 32 мм

Гранулатот се користи како финален производ наменет за изработка на бетон, армиран бетон и тампонски слој за посипување на патишта.

Од годишното производство на дробен каменит од 100 000 тони производите учествуваат со:

- Дробен каменит (0 – 63 мм) со 30 %
- Фракционен агрегат (0 – 4 мм) со 25 %
- Фракционен агрегат (4 – 8 мм) со 25 %
- Фракционен агрегат (8 – 16 мм) со 15 %
- Фракционен агрегат (16 – 32 мм) со 10 %

Готовите производи се складираат на плац за готови производи

Складирањето на производите и полупроизводите како и помошните материјали се обележани на мапа во **Прилог IV.6.3**

## IV.6 Прилози

### IV.6.1 Карактеристики на сировини/производи

#### IV.6.1.1 Физичко хемиски карактеристики на сив варовник

Реден број	Особини на средината	Мерка	Мермеризирани Варовници
1.	Минеролошко-петролошки		Калцитски зрна со ретки примеси од ситен кварц и глиновита материја
2.	Содржина на сулфур		Како SO <sub>3</sub> во карпестата маса не е најдена
3.	Цврстина на притисок во сува состојба	gr/cm <sup>2</sup>	306 - 390
4.	Впивање на вода	%	1,09 - 1,29
5.	Зафатнишка маса во природна влажна состојба	kg/m <sup>3</sup>	2,690
6.	Специфична маса	kg/m <sup>3</sup>	2,75
7.	Постојаност на мраз до 4 mm над 4 mm	%	2,16
		%	1,98
8.	Кохезија	kN/m <sup>2</sup>	23 000
9.	Отпорност против дробење	%	21,4-27,4
10.	Отпорност против дробење и абеење (Лос Анџелес)	%	24,7-26,8

#### IV.6.1.2 Физичко хемиски карактеристики на супстанциите содржани во експлозивот

### ETHYLENE GLYCOL DINITRATE 1056

October 1999

**CAS No: 628-96-6**

RTECS No: KW5600000

EC No: 603-032-00-9

Glycol dinitrate

EGDN

Nitroglycol

$C_2H_4N_2O_6$  /  $NO_2-OCH_2CH_2O-NO_2$

Molecular mass: 152.1

**TYPES OF  
HAZARD/  
EXPOSURE**

#### **ACUTE HAZARDS/SYMPTOMS PREVENTION FIRST AID/FIRE FIGHTING**

**FIRE** Explosive. Gives off irritating or toxic fumes (or gases) in a fire.

NO open flames, NO sparks, and

NO smoking.

Powder, water spray, foam, carbon dioxide, Note: Evacuate area, fight fires only from an explosion-resistant location.

**EXPLOSION** Risk of fire and explosion. Prevent build-up of electrostatic charges (e.g., by grounding). Use non-sparking handtools. Do NOT expose to friction or shock. In case of fire: cool drums, etc., by spraying with water but avoid contact of the substance with water. Combat fire from a sheltered position.

#### **EXPOSURE STRICT HYGIENE!**

**Inhalation** Headache. Dizziness. Nausea. Weakness. Flushing of the face. Chest pain. Symptoms may be delayed (see Notes). Ventilation, local exhaust, or breathing protection. Fresh air, rest. Refer for medical attention. **Skin** MAY BE ABSORBED! (See Inhalation). Protective gloves. Protective clothing. Remove contaminated clothes. Rinse and then wash skin with water and soap. Refer for medical attention. **Eyes** Face shield, or eye protection in combination with breathing protection. First rinse with plenty of water for several minutes (remove contact lenses if easily possible), then take to a doctor. **Ingestion** (See Inhalation). Do not eat, drink, or smoke during work. Wash hands before eating. Rinse mouth. Induce vomiting (ONLY IN CONSCIOUS PERSONS!). Refer for medical attention.

#### **SPILLAGE DISPOSAL PACKAGING & LABELLING**

Evacuate danger area! Consult an expert! Collect leaking and spilled liquid in sealable containers as far as possible. Absorb remaining liquid in sand or inert absorbent and remove to safe place. Do NOT let this chemical enter the environment. (Extra personal protection: complete protective clothing including self-contained breathing apparatus).

E Symbol

T+ Symbol

R: 2-26/27/28-33

S: (1/2)-33-35-36/37-45

Do not transport with food and feedstuffs.

#### **EMERGENCY RESPONSE STORAGE**

Fireproof. Store in a separate building. Separated from acids, food and feedstuffs. Cool. Well closed.

## NITROGLYCERIN 0186

October 2005

**CAS No: 55-63-0**

RTECS No: QX2100000

UN No: 0143 (Desensitized)

EC No: 603-034-00-X

Glyceryl trinitrate

Glycerol trinitrate

1,2,3-Propanetriol trinitrate

Blasting oil

$C_3H_5N_3O_9$  /  $C_3H_5(NO_3)_3$

Molecular mass: 227.1

**TYPES OF  
HAZARD/  
EXPOSURE**

### **ACUTE HAZARDS/SYMPTOMS PREVENTION FIRST AID/FIRE FIGHTING FIRE**

Explosive. Many reactions may cause fire or explosion. Gives off irritating or toxic fumes (or gases) in a fire. NO open flames, NO sparks, and NO smoking. NO contact with hot surfaces. Powder, water spray, foam, carbon dioxide.

### **EXPLOSION**

Risk of fire and explosion. Closed system, ventilation, explosion-proof electrical equipment and lighting. Use non-sparking handtools. Do NOT expose to friction or shock. In case of fire: keep drums, etc., cool by spraying with water. Combat fire from a sheltered position.

### **EXPOSURE STRICT HYGIENE! IN ALL CASES CONSULT A DOCTOR!**

**Inhalation** Headache. Flushing of the face. Dizziness. Ventilation, local exhaust, or breathing protection. Fresh air, rest. Refer for medical attention. **Skin** MAY BE ABSORBED! (Further see Inhalation). Protective gloves. Protective clothing. Remove contaminated clothes. Rinse and then wash skin with water and soap. Refer for medical attention.

**Eyes** Redness. Pain. Face shield or eye protection in combination with breathing protection. First rinse with plenty of water for several minutes (remove contact lenses if easily possible), then take to a doctor. **Ingestion** Flushing of the face. Headache. Dizziness. Nausea. Vomiting. Shock or collapse. Do not eat, drink, or smoke during work. Wash hands before eating. Rinse mouth. Induce vomiting (ONLY IN CONSCIOUS PERSONS!). Give a slurry of activated charcoal in water to drink. Refer for medical attention immediately.

### **SPILLAGE DISPOSAL PACKAGING & LABELLING**

Evacuate danger area! Consult an expert! Remove all ignition sources. Personal protection: complete protective clothing including self-contained breathing apparatus. Do NOT wash away into sewer. Do NOT let this chemical enter the environment. Collect leaking and spilled liquid in sealable containers as far as possible. Absorb remaining liquid in sand or inert absorbent and remove to safe place.

E Symbol

T+ Symbol

N Symbol

R: 3-26/27/28-33-51/53

S: (1/2-)33-35-36/37-45-61

UN Hazard Class: 1.1D

(Desensitized)

UN Subsidiary Risks: 6.1

(Desensitized)

Do not transport with food and feedstuffs.

### **EMERGENCY RESPONSE SAFE STORAGE**

Transport Emergency Card: TEC (R)-10G1.1

NFPA Code: H2; F3; R4

Store only if stabilized. Store in an area without drain or sewer access. Fireproof. Well closed. Separated from food and feedstuffs.

## AMMONIUM NITRATE 0216

March 2001

**CAS No: 6484-52-2**

RTECS No: BR9050000

UN No: 1942

Nitric acid, ammonium salt

$\text{NH}_4\text{NO}_3$

Molecular mass: 80.1

**TYPES OF**

**HAZARD/**

**EXPOSURE**

### **ACUTE HAZARDS/SYMPTOMS PREVENTION FIRST AID/FIRE FIGHTING FIRE**

Not combustible but enhances combustion of other substances. Explosive. Gives off irritating or toxic fumes (or gases) in a fire. NO contact with combustibles or reducing agents. Water in large amounts. NO other extinguishing agents. In case of fire in the surroundings: use flooding amounts of water in the early stages.

### **EXPLOSION**

Risk of fire and explosion under confinement and high temperatures. Evacuate danger area! In case of fire: keep drums, etc., cool by spraying with water. Combat fire from a sheltered position.

### **EXPOSURE PREVENT DISPERSION OF DUST!**

**Inhalation** Cough. Headache. Sore throat. See Ingestion. Local exhaust or breathing protection. Fresh air, rest. Artificial respiration may be needed. Refer for medical attention. **Skin** Redness. Protective gloves. First rinse with plenty of water, then remove contaminated clothes and rinse again. Refer for medical attention. **Eyes** Redness. Pain. Safety goggles. First rinse with plenty of water for several minutes (remove contact lenses if easily possible), then take to a doctor. **Ingestion** Abdominal pain. Blue lips or fingernails. Blue skin. Convulsions. Diarrhoea. Dizziness. Vomiting. Weakness. Do not eat, drink, or smoke during work. Rinse mouth. Refer for medical attention.

### **SPILLAGE DISPOSAL PACKAGING & LABELLING**

Evacuate danger area! Consult an expert! Sweep spilled substance into non-combustible containers. Wash away remainder with plenty of water.

UN Hazard Class: 5.1

UN Pack Group: III

### **EMERGENCY RESPONSE SAFE STORAGE**

Transport Emergency Card: TEC (R)-51S1942 or

51GO2-I+II+III

NFPA Code: H 2; F 0; R 3; OX

Provision to contain effluent from fire extinguishing. Separated from combustible and reducing substances. Dry.

## 2,4-DINITROTOLUENE 0727

April 2005

**CAS No: 121-14-2**

RTECS No: XT1575000

UN No: 3454

EC No: 609-007-00-9

1-Methyl-2,4-dinitrobenzene

2,4-DNT

$C_7H_6N_2O_4$  /  $C_6H_3CH_3(NO_2)_2$

Molecular mass: 182.1

**TYPES OF HAZARD/ EXPOSURE**

### **ACUTE HAZARDS/SYMPTOMS PREVENTION FIRST AID/FIRE FIGHTING**

**FIRE** Combustible. Gives off irritating or toxic fumes (or gases) in a fire. NO open flames. Powder, water spray, foam, carbon dioxide.

### **EXPLOSION**

Finely dispersed particles form explosive mixtures in air. Risk of explosion on contact with many substances. Prevent deposition of dust; closed system, dust explosion-proof electrical equipment and lighting. In case of fire: keep drums, etc., cool by spraying with water. Combat fire from a sheltered position.

### **EXPOSURE PREVENT DISPERSION OF DUST! STRICT HYGIENE!**

**Inhalation** Blue lips or finger nails. Blue skin. Headache. Dizziness. Nausea. Confusion. Convulsions. Unconsciousness. Local exhaust or breathing protection. Fresh air, rest. Artificial respiration may be needed. Refer for medical attention. **Skin** MAY BE ABSORBED! (See Inhalation). Protective gloves. Protective clothing. Remove contaminated clothes. Rinse and then wash skin with water and soap. Refer for medical attention. **Eyes** Safety goggles. First rinse with plenty of water for several minutes (remove contact lenses if easily possible), then take to a doctor. **Ingestion** (See Inhalation). Do not eat, drink, or smoke during work. Wash hands before eating. Rinse mouth. Give plenty of water to drink. Refer for medical attention.

### **SPILLAGE DISPOSAL PACKAGING & LABELLING**

Consult an expert! Personal protection: chemical protection suit including self-contained breathing apparatus. Do NOT let this chemical enter the environment. Sweep spilled substance into containers; if appropriate, moisten first to prevent dusting. Carefully collect remainder, then remove to safe place.

T Symbol

N Symbol

R: 45-23/24/25-48/22-62-68-51/53

S: 53-45-61

Note: E

UN Hazard Class: 6.1

UN Pack Group: II

Do not transport with food and feedstuffs.

### **EMERGENCY RESPONSE SAFE STORAGE**

Transport Emergency Card: TEC (R)-61S3454; 61GT2-II NFPA Code: H3; F1; R3 Fireproof. Separated from strong bases, food and feedstuffs oxidants, strong reducing agents. Well closed. Keep in a well-ventilated room. Store in an area without drain or sewer access.

## 2,3-DINITROTOLUENE 0726

April 2005

**CAS No: 602-01-7**

RTECS No: XT1400000

UN No: 3454

EC No: 609-050-00-3

1-Methyl-2,3-dinitrobenzene 2,3-DNT  $C_6H_3CH_3(NO_2)_2$  /  $C_7H_6N_2O_4$

Molecular mass: 182.1

**TYPES OF HAZARD/ EXPOSURE**

### **ACUTE HAZARDS/SYMPTOMS PREVENTION FIRST AID/FIRE FIGHTING**

**FIRE** Combustible. Gives off irritating or toxic fumes (or gases) in a fire. NO open flames. Powder, water spray, foam, carbon dioxide.

### **EXPLOSION**

Finely dispersed particles form explosive mixtures in air. Risk of explosion on contact with many substances.

Prevent deposition of dust; closed system, dust explosion-proof electrical equipment and lighting. In case of fire: keep drums, etc., cool by spraying with water. Combat fire from a sheltered position.

### **EXPOSURE PREVENT DISPERSION OF DUST!**

**Inhalation** Blue lips or finger nails. Blue skin. Headache. Dizziness. Nausea. Confusion. Convulsions. Unconsciousness. Local exhaust or breathing protection. Fresh air, rest. Artificial respiration may be needed. Refer for medical attention. **Skin** MAY BE ABSORBED! Redness. (Further see Inhalation). Protective gloves. Remove contaminated clothes. Rinse and then wash skin with water and soap. Refer for medical attention. **Eyes** Safety goggles. First rinse with plenty of water for several minutes (remove contact lenses if easily possible), then take to a doctor. **Ingestion** (Further see Inhalation). Do not eat, drink, or smoke during work. Wash hands before eating. Rinse mouth. Give plenty of water to drink. Refer for medical attention.

### **SPILLAGE DISPOSAL PACKAGING & LABELLING**

Consult an expert! Personal protection: chemical protection suit including self-contained breathing apparatus. Do NOT let this chemical enter the environment. Sweep spilled substance into containers; if appropriate, moisten first to prevent dusting. Carefully collect remainder, then remove to safe place.

T Symbol

N Symbol

R: 45-23/24/25-48/22-62-68-50/53

S: 53-45-60-61

Note: E

UN Hazard Class: 6.1

UN Pack Group: II

Do not transport with food and feedstuffs.

### **EMERGENCY RESPONSE SAFE STORAGE**

Transport Emergency Card: TEC (R)-61S3454; 61GT2-II NFPA Code: H3; F1; R3

Fireproof. Separated from strong bases, food and feedstuffs oxidants, strong reducing agents. Well closed. Keep in a well-ventilated room. Store in an area without drain or sewer access.

## 2,4,6-TRINITROTOLUENE 0967

April 2000

**CAS No: 118-96-7**

RTECS No: XU0175000

UN No: 0209

EC No: 609-008-00-4

2-Methyl-1,3,5-trinitrobenzene

1-Methyl-2,4,6-trinitrobenzene

TNT

$C_7H_5N_3O_6$  /  $C_6H_2(CH_3)(NO_2)_3$

Molecular mass: 227.1

**TYPES OF HAZARD/ EXPOSURE**

**ACUTE HAZARDS/SYMPTOMS PREVENTION FIRST AID/FIRE FIGHTING FIRE** Explosive. Many reactions may cause fire or explosion. NO open flames, NO sparks, and NO smoking. Water in large amounts. Do not attempt to extinguish large fire, evacuate area.

### **EXPLOSION**

Risk of fire and explosion upon rapid heating or strong shock. Do NOT expose to friction or shock. Do not expose to heat and keep wet with at least 30% water. In case of fire: keep drums, etc., cool by spraying with water. Combat fire from a sheltered position.

### **EXPOSURE PREVENT DISPERSION OF DUST!**

### **STRICT HYGIENE!**

### **IN ALL CASES CONSULT A DOCTOR!**

**Inhalation** Headache. Blue lips or finger nails. Blue skin. Cough. Sore throat. Laboured breathing. Vomiting. Abdominal cramps. Unconsciousness. Symptoms may be delayed (see Notes). Local exhaust or breathing protection. Fresh air, rest. Artificial respiration may be needed. Refer for medical attention. **Skin** MAY BE ABSORBED! Redness. Pain. Yellowish staining. (Further see Inhalation). Protective gloves. Protective clothing. Remove contaminated clothes. Rinse and then wash skin with water and soap. Refer for medical attention. Wear protective gloves when administering first aid. **Eyes** Redness. Pain. Face shield or eye protection in combination with breathing protection. First rinse with plenty of water for several minutes (remove contact lenses if easily possible), then take to a doctor. **Ingestion** (Further see Inhalation). Do not eat, drink, or smoke during work. Wash hands before eating. Rinse mouth. Induce vomiting

(ONLY IN CONSCIOUS PERSONS!). Wear protective gloves when inducing vomiting.

### **SPILLAGE DISPOSAL PACKAGING & LABELLING**

Evacuate danger area! Consult an expert! Wet spilled material before picking it up, do not attempt to sweep up dry material. Do NOT wash away into sewer. Carefully collect remainder, then remove to safe place. Do NOT let this chemical enter the environment. Chemical protection suit including self-contained breathing apparatus.

E Symbol

T Symbol

N Symbol

R: 2-23/24/25-33-51/53

S: (1/2-)35-45-61

UN Hazard Class: 1.1D

Unbreakable packaging; put breakable packaging into closed unbreakable container. Do not transport with food and feedstuffs.

### **EMERGENCY RESPONSE SAFE STORAGE**

Transport Emergency Card: TEC (R)-10G1.1

NFPA Code: H 2; F 4; R 4

Fireproof. Separated from initiator explosives, food and feedstuffs, incompatible materials. See Chemical Dangers. Well closed.



## 2,5-DINITROTOLUENE 1591

June 2006

**CAS No: 619-15-8**

RTECS No: XT1750000

UN No: 3454

EC No: 609-055-00-0

2-Methyl-1,4-dinitrobenzene 2,5-DNT Toluene, 2,5-dinitro-  $C_7H_6N_2O_4$

Molecular mass: 182.14

**TYPES OF HAZARD/ EXPOSURE**

### **ACUTE HAZARDS/SYMPTOMS PREVENTION FIRST AID/FIRE FIGHTING**

**FIRE** Combustible. Gives off irritating or toxic fumes (or gases) in a fire. NO open flames. Powder, water spray, foam, carbon dioxide.

### **EXPLOSION**

Finely dispersed particles form explosive mixtures in air. Prevent deposition of dust; closed system, dust explosion-proof electrical equipment and lighting. In case of fire: keep drums, etc., cool by spraying with water. Combat fire from a sheltered position.

### **EXPOSURE AVOID ALL CONTACT!**

**Inhalation** Cough. Sore throat. Blue lips or finger nails. Local exhaust or breathing protection. Fresh air, rest. Refer for medical attention. **Skin** MAY BE ABSORBED! Redness. Pain. Protective clothing. Protective gloves. Remove contaminated clothes. Rinse and then wash skin with water and soap. Refer for medical attention. **Eyes** Redness. Pain. Safety goggles. First rinse with plenty of water (remove contact lenses if easily possible). **Ingestion** Blue lips or fingernails. Blue skin. Dizziness. Headache. Nausea. Confusion. Convulsions. Unconsciousness. Do not eat, drink, or smoke during work. Rinse mouth. Give a slurry of activated charcoal in water to drink. Refer for medical attention.

### **SPILLAGE DISPOSAL PACKAGING & LABELLING**

Consult an expert! Personal protection: Chemical protection suit including self-contained breathing apparatus. Sweep spilled substance into sealable containers. Carefully collect remainder, then remove to safe place. Do NOT let this chemical enter the environment.

### **EU classification**

T Symbol

N Symbol

R: 45-23/24/25-48/22-62-68-51/53

S: 53-45-61

### **UN classification**

UN Hazard Class: 6.1

UN Pack Group: II

Unbreakable packaging; put breakable packaging into closed unbreakable container. Severe marine pollutant. Do not transport with food and feedstuffs.

### **EMERGENCY RESPONSE SAFE STORAGE**

Transport Emergency Card: TEC (R)-61GT2-II

Transport Emergency Card: TEC (R)-61S3454

NFPA Code: H3; F1; R3

Fireproof. Separated from strong oxidants, food and feedstuffs, and incompatible materials. See Chemical Dangers. Well closed. Keep in a well-ventilated room. Store in an area without drain or sewer access. Provision to contain effluent from fire extinguishing.

## 2,6-DINITROTOLUENE 0728

April 2005

**CAS No: 606-20-2**

RTECS No: XT1925000

UN No: 3454

EC No: 609-049-00-8

1-Methyl-2,6-dinitrobenzene

2,6-DNT

$C_7H_6N_2O_4$  /  $C_6H_3CH_3(NO_2)_2$

Molecular mass: 182.1

**TYPES OF HAZARD/ EXPOSURE**

### **ACUTE HAZARDS/SYMPTOMS PREVENTION FIRST AID/FIRE FIGHTING FIRE**

Combustible. Gives off irritating or toxic fumes (or gases) in a fire. NO open flames. Powder, water spray, foam, carbon dioxide.

### **EXPLOSION**

Finely dispersed particles form explosive mixtures in air. Risk of explosion on contact with many substances.

Prevent deposition of dust; closed system, dust explosion-proof electrical equipment and lighting. In case of fire: keep drums, etc., cool by spraying with water. Combat fire from a sheltered position.

### **EXPOSURE PREVENT DISPERSION OF DUST! AVOID ALL CONTACT! AVOID EXPOSURE OF (PREGNANT) WOMEN!**

**Inhalation** Blue lips or finger nails. Blue skin. Headache. Dizziness. Nausea. Confusion. Convulsions. Unconsciousness. Local exhaust or breathing protection. Fresh air, rest. Artificial respiration may be needed. Refer for medical attention. **Skin** MAY BE ABSORBED! (See Inhalation). Protective gloves. Protective clothing. Remove contaminated clothes. Rinse and then wash skin with water and soap. Refer for medical attention. **Eyes** Face shield. First rinse with plenty of water for several minutes (remove contact lenses if easily possible), then take to a doctor. **Ingestion** (See Inhalation). Do not eat, drink, or smoke during work. Wash hands before eating. Rinse mouth. Give plenty of water to drink. Refer for medical attention.

### **SPILLAGE DISPOSAL PACKAGING & LABELLING**

Consult an expert! Personal protection: chemical protection suit including self-contained breathing apparatus. Sweep spilled substance into containers; if appropriate, moisten first to prevent dusting. Carefully collect remainder, then remove to safe place.

T Symbol

R: 45-23/24/25-48/22-62-68-52/53

S: 53-45-61

Note: E

UN Hazard Class: 6.1

UN Pack Group: II

Do not transport with food and feedstuffs.

### **EMERGENCY RESPONSE SAFE STORAGE**

Transport Emergency Card: TEC (R)-61S3454; 61GT2-II

NFPA Code: H3; F1; R3

Fireproof. Separated from strong bases, food and feedstuffs oxidants, strong reducing agents. Well closed. Keep in a well-ventilated room.

## 3,4-DINITROTOLUENE 0729

April 2005

**CAS No: 610-39-9**

RTECS No: XT2100000

UN No: 3454

EC No: 609-051-00-9

1-Methyl-3,4-dinitrobenzene

3,4-DNT  $C_7H_6N_2O_4$  /  $C_6H_3CH_3(NO_2)_2$

Molecular mass: 182.1

**TYPES OF HAZARD/ EXPOSURE**

### **ACUTE HAZARDS/SYMPTOMS PREVENTION FIRST AID/FIRE FIGHTING FIRE**

Combustible. Gives off irritating or toxic fumes (or gases) in a fire. NO open flames. Powder, water spray, foam, carbon dioxide.

### **EXPLOSION**

Finely dispersed particles form explosive mixtures in air. Risk of explosion on contact with many substances.

Prevent deposition of dust; closed system, dust explosion-proof electrical equipment and lighting. In case of fire: keep drums, etc., cool by spraying with water. Combat fire from a sheltered position.

### **EXPOSURE PREVENT DISPERSION OF DUST!**

**Inhalation** Blue lips or finger nails. Blue skin. Headache. Dizziness. Nausea. Confusion. Convulsions. Unconsciousness. Local exhaust or breathing protection. Fresh air, rest. Artificial respiration may be needed. Refer for medical attention. **Skin** MAY BE ABSORBED! Redness. (Further see Inhalation). Protective gloves. Remove contaminated clothes. Rinse and then wash skin with water and soap. Refer for medical attention. **Eyes** Safety goggles. First rinse with plenty of water for several minutes (remove contact lenses if easily possible), then take to a doctor. **Ingestion** (Further see Inhalation). Do not eat, drink, or smoke during work. Rinse mouth. Give plenty of water to drink. Refer for medical attention.

### **SPILLAGE DISPOSAL PACKAGING & LABELLING**

Consult an expert! Personal protection: chemical protection suit including self-contained breathing apparatus. Do NOT let this chemical enter the environment. Sweep spilled substance into containers; if appropriate, moisten first to prevent dusting. Carefully collect remainder, then remove to safe place.

T Symbol

N Symbol

R: 45-23/24/25-48/22-62-68-51/53

S: 53-45-61

Note: E

UN Hazard Class: 6.1

UN Pack Group: II

Do not transport with food and feedstuffs.

### **EMERGENCY RESPONSE SAFE STORAGE**

Transport Emergency Card: TEC (R)-61S3454; 61GT2-II

NFPA Code: H3; F1; R3

Fireproof. Separated from strong bases, food and feedstuffs oxidants, strong reducing agents. Well closed. Keep in a well-ventilated room. Store in an area without drain or sewer access.

## IV.6.2 Safety Data sheets

### IV.6.2.1 Калциум карбонат

Safety (MSDS) data for calcium carbonate

Safety data for calcium carbonate

[Click here for data on calcium carbonate in student-friendly format, from the HSci project](#)

Glossary of terms on this data sheet.

The information on this web page is provided to help you to work safely, but it is intended to be an overview of hazards, not a replacement for a full Material Safety Data Sheet (MSDS). MSDS forms can be downloaded from the web sites of many chemical suppliers.

#### General

Synonyms: limestone, marble, calcite, chalk, carbonic acid calcium salt, blackboard chalk

Molecular formula:  $\text{CaCO}_3$

CAS No: 471-34-1

EINECS No: 207-439-9

#### Physical data

Appearance: white or colourless crystals or white powder or chunks

Melting point: 825 C

Boiling point:

Vapour density:

Vapour pressure:

Density (g cm<sup>-3</sup>): 2.83

Flash point:

Explosion limits:

Autoignition temperature:

Water solubility: negligible

#### Stability

Stable. Incompatible with acids, fluorine, ammonium salts, alum.

#### Toxicology

Dust may cause irritation. Typical TLV/TWA 10 mg m<sup>-3</sup>.

Risk phrases

R36 R37 R38.

#### Transport information

Non-hazardous for air, sea and road freight.

#### Personal protection

Minimise exposure to dust.

Safety phrases

S26 S36.

#### **IV.6.2.2 Дизел екстра лесно гориво**

Safety data for diesel

##### General

Synonyms: diesel fuel, diesel oil

Molecular formula: depends upon formulation, typically composed of a hydrocarbon mix together with (often proprietary) additives. May contain a dye to indicate, for example, whether or not excise duty has been paid on the product.

CAS No: 68334-30-5

EC No:

##### Physical data

Appearance: clear colourless or dyed liquid

Melting point:

Boiling point: typically > 149 C

Vapour density:

Vapour pressure: at 20 C typically < 1 mm

Specific gravity:

Flash point: typically > 52 C

Explosion limits:

Autoignition temperature:

##### Stability

Stable. Flammable. Incompatible with strong acids, strong oxidizing agents, halogens.

##### Toxicology

Respiratory and skin irritant. The product may contain polycyclic aromatic hydrocarbons which may be carcinogenic. Generally regarded as being of low toxicity unless contact is repeated and/or prolonged.

Toxicity data

ORL-RAT LD50 >2000 mg kg-1

Risk phrases

R10.

##### Personal protection

Avoid skin contact and inhalation. Ensure good ventilation.

### IV.6.2.3 Глицерол - мазива

Safety data for glycerol

#### General

Synonyms: glycerin, glycerol USP, glycerine, 1,2,3-propanetriol, propanetriol, 1,2,3-trihydroxypropane, bulbold, citifluor AF 2, cristal, emergy 916, glyrol, glycerol opthalgan, glyciterol, glycyol alcohol, osmoglyn, pricerine 9091

Use: Widely used as a food additive (emulsifier, thickener, stabilizer), cosmetic agent, lubricating agent, antifreeze etc.

Molecular formula: C<sub>3</sub>H<sub>8</sub>O<sub>3</sub> [structural: CH<sub>2</sub>OHCHOHCH<sub>2</sub>OH]

CAS No: 56-81-5

EC No: 200-289-5

#### Physical data

Appearance: viscous colourless or pale yellow liquid

Melting point: 17.8 C

Boiling point: 290 C

Vapour density: 3.17 g/l

Vapour pressure: < 1mm Hg at 20 C

Specific gravity: 1.261

Flash point: 160 C (closed cup)

Explosion limits: lower 0.9%

Autoignition temperature: 370 C

Critical temperature: 492.2 C

Critical pressure: 42.5 atm

#### Stability

Stable. Incompatible with perchloric acid, lead oxide, acetic anhydride, nitrobenzene, chlorine, peroxides, strong acids, strong bases. Combustible.

#### Toxicology

Mist is a respiratory irritant at high concentrations. Repeated contact may cause dehydration of skin. Typical TLV 10 mg/m<sup>3</sup> (nuisance). Not hazardous according to directive 67/548/EC.

#### Toxicity data

IPR-RAT LD<sub>50</sub> 8700 mg kg<sup>-1</sup>

ORL-RAT LD<sub>50</sub> 12600 mg kg<sup>-1</sup>

SCU-RAT LD<sub>50</sub> 100 mg kg<sup>-1</sup>

ORL-MUS LD<sub>50</sub> 8700 mg kg<sup>-1</sup>

#### Risk phrases

#### Personal protection

Minimize contact.

#### Safety phrases

S26 S36.

## Safety (MSDS) data for glycerol-D8

### General

Synonyms:

Use:

Molecular formula: C<sub>3</sub>D<sub>8</sub>O<sub>3</sub>

CAS No: 7325-17-9

EINECS No:

### Physical data

Appearance: colourless viscous liquid

Melting point: 20 C

Boiling point: 182 C at 20 mm Hg

Vapour density:

Vapour pressure:

Density (g cm<sup>-3</sup>): 1.37

Flash point: 113 C (closed cup)

Explosion limits: 0.9% (lower)

Autoignition temperature: 370 C

Water solubility: complete

### Stability

Stable, but moisture sensitive. Incompatible with strong bases, strong oxidizing agents.

### Toxicology

Not hazardous according to Directive 67/548/EEC.

Toxicity data

(The meaning of any toxicological abbreviations which appear in this section is given here.)

Risk phrases

### Transport information

(The meaning of any UN hazard codes which appear in this section is given here.)

Non-hazardous for air, sea and road freight.

### Personal protection

Minimize exposure.

Safety phrases

#### IV.6.2.4 Тринитротолуол

##### Safety data for 2,4,6-trinitrotoluene

###### General

Synonyms: 2-methyl-1,3,5-trinitrobenzene, TNT, alpha-trinitrotoluol, tolite, tritol, entsufon, trotyl

Use:

Molecular formula:  $C_6H_2(CH_3)(NO_2)_3$

CAS No: 118-96-7

EC Index No: 609-008-00-4

###### Physical data

Appearance: yellow crystals

Melting point: 80 C

Boiling point: 240 C (decomposes explosively)

Vapour density:

Vapour pressure:

Density ( $g\ cm^{-3}$ ): 1.65

Flash point:

Explosion limits:

Autoignition temperature:

Water solubility: insoluble

###### Stability

Unstable. Risk of explosion if heated or struck. Reacts violently - potentially explosively - with reducing agents. Reacts with heavy metals.

###### Toxicology

Harmful if inhaled or swallowed and in contact with the skin. Readily absorbed through the skin. Irritant.

###### Toxicity data

(The meaning of any abbreviations which appear in this section is given [here](#).)

###### Risk phrases

(The meaning of any risk phrases which appear in this section is given [here](#).)

R2 R23 R24 R25 R33.

###### Transport information

(The meaning of any UN hazard codes which appear in this section is given [here](#).)

Hazard class 1.1D.

###### Personal protection

Safety glasses, adequate ventilation. Suitable protection against explosion. Ensure a full risk assessment is prepared before work starts.

###### Safety phrases

(The meaning of any safety phrases which appear in this section is given [here](#).)

S35 S44.



#### IV.6.2.5 Динитротолуол

##### Safety data for 2,4-dinitrotoluene

###### General

Synonyms: 1-methyl-2,4-dinitrobenzene  
Molecular formula:  $C_7H_6N_2O_4$   
CAS No: 121-14-2  
EC No: 204-450-0

###### Physical data

Appearance: solid  
Melting point: 67 - 70 C  
Boiling point:  
Vapour density:  
Vapour pressure: 1 mm Hg at 103C  
Specific gravity:  
Flash point:  
Explosion limits:  
Autoignition temperature:

###### Stability

Stable. Incompatible with oxidizing agents, reducing agents, strong bases.

###### Toxicology

Highly toxic. Possible carcinogen. Reproductive hazard. Danger of cumulative effects. May cause sensitization by inhalation or skin contact.

###### Toxicity data

(The meaning of any toxicological abbreviations which appear in this section is given [here](#).)  
ORL-RAT LD50 268 mg kg<sup>-1</sup>

###### Risk phrases

(The meaning of any risk phrases which appear in this section is given [here](#).)  
R23 R24 R25 R33 R42 R43 R45.

###### Personal protection

Safety glasses, gloves, work in a fume cupboard. Handle as a possible carcinogen.

###### Safety phrases

(The meaning of any safety phrases which appear in this section is given [here](#).)  
S26 S27 S36 S37 S39 S45

## Safety data for 2,4-dinitrotoluene

### General

Synonyms: 1-methyl-2,4-dinitrobenzene

Molecular formula:  $C_7H_6N_2O_4$

CAS No: 121-14-2

EC No: 204-450-0

### Physical data

Appearance: solid

Melting point: 67 - 70 C

Boiling point:

Vapour density:

Vapour pressure: 1 mm Hg at 103C

Specific gravity:

Flash point:

Explosion limits:

Autoignition temperature:

### Stability

Stable. Incompatible with oxidizing agents, reducing agents, strong bases.

### Toxicology

Highly toxic. Possible carcinogen. Reproductive hazard. Danger of cumulative effects. May cause sensitization by inhalation or skin contact.

### Toxicity data

(The meaning of any toxicological abbreviations which appear in this section is given [here.](#))

ORL-RAT LD50 268 mg kg<sup>-1</sup>

### Risk phrases

(The meaning of any risk phrases which appear in this section is given [here.](#))

R23 R24 R25 R33 R42 R43 R45.

### Personal protection

Safety glasses, gloves, work in a fume cupboard. Handle as a possible carcinogen.

### Safety phrases

(The meaning of any safety phrases which appear in this section is given [here.](#))

S26 S27 S36 S37 S39 S45

## Safety data for 2,6-dinitrotoluene

### General

Synonyms: 2-methyl-1,3-dinitrobenzene

Molecular formula:  $C_7H_6N_2O_4$

CAS No: 606-20-2

EC No: 210-106-0

### Physical data

Appearance: tan crystals

Melting point: 64 - 66 °C

Boiling point:

Vapour density:

Vapour pressure:

Specific gravity:

Flash point:

Explosion limits:

Autoignition temperature:

### Stability

Stable, but shock sensitive. Incompatible with oxidizing agents, reducing agents, strong bases. Heating may cause explosion.

### Toxicology

Highly toxic. Possible carcinogen. Reproductive hazard. Neurological hazard. Danger of cumulative effects. May cause sensitization by inhalation or skin contact. Corrosive. Readily absorbed through skin.

#### Toxicity data

(The meaning of any toxicological abbreviations which appear in this section is given [here](#).)

ORL-RAT LD50 177 mg kg<sup>-1</sup>

#### Risk phrases

(The meaning of any risk phrases which appear in this section is given [here](#).)

R5 R22 R23 R24 R33 R42 R43 R45.

### Personal protection

Safety glasses, gloves, fume cupboard.

#### Safety phrases

(The meaning of any safety phrases which appear in this section is given [here](#).)

S26 S27 S36 S37 S39 S45

#### IV.6.3 Диспозиција на објекти на локацијата-сегашна состојба

