

Safety Data Sheet

acc. to OSHA HCS (29 CFR 1910.1200)

Printing date 08/19/2015

Reviewed on 08/19/2015

1 Identification

- **Product identifier**
- **Trade name:** MODEL 4556 CTG 40mm OC
- **Article number:** Model 4556
- **Recommended use and restriction on use**
- **Recommended use:** Explosive product.
- **Restrictions on use:** Contact manufacturer.
- **Details of the supplier of the Safety Data Sheet**
- **Manufacturer/Supplier:**
Combined Systems, Inc.
388 Kinsman Rd.
Jamestown, PA 16134
Phone: (724) 932-2177
- **Emergency telephone number:**
ChemTel Inc.
(800)255-3924, +1 (813)248-0585

2 Hazard(s) identification

- **Classification of the substance or mixture**



GHS01 Exploding bomb

Expl. 1.4 H204 Fire or projection hazard.

- **Additional information:**

There are no other hazards not otherwise classified that have been identified.
0 percent of the mixture consists of ingredient(s) of unknown toxicity.

-
- **Label elements**

- **GHS label elements**

The product is classified and labeled according to the Globally Harmonized System (GHS).

- **Hazard pictograms**



GHS01

- **Signal word** Warning

- **Hazard statements**

H204 Fire or projection hazard.

- **Precautionary statements**

P210 Keep away from heat, sparks, open flames, and hot surfaces. - No smoking.

P250 Do not subject to grinding/shock/friction.

P280 Wear face protection.

P240 Ground/bond container and receiving equipment.

P373 DO NOT fight fire when fire reaches explosives.

P370+P380 In case of fire: Evacuate area.

P374 Fight fire with normal precautions from a reasonable distance.

P372 Explosion risk in case of fire.

(Contd. on page 2)

Safety Data Sheet

acc. to OSHA HCS (29 CFR 1910.1200)

Printing date 08/19/2015

Reviewed on 08/19/2015

Trade name: **MODEL 4556 CTG 40mm OC**

(Contd. of page 1)

- P401 Store in accordance with local/regional/national/international regulations.
 P501 Dispose of contents/container in accordance with local/regional/national/international regulations.

- **Classification system:**

- **NFPA ratings (scale 0 - 4)**



- **HMIS-ratings (scale 0 - 4)**

HEALTH	1	Health = 1
FIRE	2	Fire = 2
REACTIVITY	3	Reactivity = 3

- **Other hazards**

- **Results of PBT and vPvB assessment**

- **PBT:** Not applicable.

- **vPvB:** Not applicable.

- **Explosive Product Notice**

PREVENTION OF ACCIDENTS IN THE USE OF EXPLOSIVES - The prevention of accidents in the use of explosives is a result of careful planning and observance of the best known practices. The explosives user must remember that he is dealing with a powerful force and that various devices and methods have been developed to assist him in directing this force. He should realize that this force, if misdirected, may either kill or injure both him and his fellow workers.

WARNING - All explosives are dangerous and must be carefully handled and used following approved safety procedures either by or under the direction of competent, experienced persons in accordance with all applicable federal, state, and local laws, regulations, or ordinances. If you have any questions or doubts as to how to use any explosive product, DO NOT USE IT before consulting with your supervisor, or the manufacturer, if you do not have a supervisor. If your supervisor has any questions or doubts, he should consult the manufacturer before use.

3 Composition/information on ingredients

- **Chemical characterization: Mixtures**

- **Description:** Mixture of the substances listed below with nonhazardous additions.

- **Dangerous components:**

1309-48-4	magnesium oxide	50-100%
68611-44-9	silica dimethyl silyate	<10%
9004-70-0	Nitrocellulose, colloided, granular	<5%
	⚠ Expl. 1.1, H201	
55-63-0	glycerol trinitrate / nitroglycerin	<1%
	⚠ Unst. Expl., H200	
	⚠ Flam. Liq. 2, H225	
	⚠ Acute Tox. 2, H300; Acute Tox. 1, H310; Acute Tox. 2, H330	
	⚠ STOT RE 2, H373	

(Contd. on page 3)

Safety Data Sheet

acc. to OSHA HCS (29 CFR 1910.1200)

Printing date 08/19/2015

Reviewed on 08/19/2015

Trade name: MODEL 4556 CTG 40mm OC

(Contd. of page 2)


• **Additional information:**


For the wording of the listed Hazard Statements refer to section 16.


For the listed ingredient(s), the identity and exact percentage(s) are being withheld as a trade secret.

• **Notable Trace Components (0,1% w/w)**

15245-44-0	lead 2,4,6-trinitro-m-phenylene dioxide/ lead styphnate
------------	---

	 Unst. Expl., H200
--	---

	 Repr. 1A, H360; STOT RE 2, H373
--	---

	 Acute Tox. 4, H302; Acute Tox. 4, H332
--	--

4 First-aid measures

• **Description of first aid measures**

• **General information:**

Immediately remove any clothing soiled by the product.

In case of irregular breathing or respiratory arrest provide artificial respiration.

Take affected persons out into the fresh air.

• **After inhalation:**

Supply fresh air; consult doctor in case of complaints.

In case of unconsciousness place patient stably in side position for transportation.

• **After skin contact:**

Do not pull solidified product away from the skin.

Immediately wash with water and soap and rinse thoroughly.

If skin irritation continues, consult a doctor.

• **After eye contact:**

Remove contact lenses if worn.

Rinse opened eye for several minutes under running water. If symptoms persist, consult a doctor.

• **After swallowing:**

Unlikely route of exposure.

Rinse out mouth and then drink plenty of water.

Do not induce vomiting; immediately call for medical help.

• **Information for doctor:**

• **Most important symptoms and effects, both acute and delayed**

Blast injury if mishandled.

Coughing

Dizziness

Disorientation

• **Danger** Danger of blast or crush-type injuries.

• **Indication of any immediate medical attention and special treatment needed**

Product may produce physical injury if mishandled. Treatment of these injuries should be based on the blast and compression effects.

Medical supervision for at least 48 hours.

If necessary oxygen respiration treatment.

(Contd. on page 4)

Safety Data Sheet

acc. to OSHA HCS (29 CFR 1910.1200)

Printing date 08/19/2015

Reviewed on 08/19/2015

Trade name: MODEL 4556 CTG 40mm OC

(Contd. of page 3)

5 Fire-fighting measures

- **Extinguishing media**
- **Suitable extinguishing agents:**
Flood area with water. If no water is available, carbon dioxide, dry chemical or earth may be used. If the fire reaches the cargo, withdraw and let fire burn.
- **For safety reasons unsuitable extinguishing agents:** None.
- **Special hazards arising from the substance or mixture**
Product may explode if burned in confined space. Individual cartridges may explode. Mass explosion of many cartridges at once is unlikely.
Hazardous combustions products: Metal Compounds, Carbon Monoxide, Carbon Dioxide, Nitrous Oxides, Various complex oxides of metals, Nitrogen.
- **Advice for firefighters**
- **Protective equipment:**
Wear self-contained respiratory protective device.
Do not inhale explosion gases or combustion gases.
Wear fully protective suit.
- **Additional information**
Eliminate all ignition sources if safe to do so.
Cool endangered receptacles with water spray.
Evacuate area and fight fire from from the upwind side.
Flammability Classification: (defined by 29 CFR 1910.1200) Explosive. Can explode under fire conditions. Individual devices will randomly explode. Will not mass explode if multiple devices are involved. Burning material may produce toxic and irritating vapors. In unusual cases, shrapnel may be thrown from exploding devices under containment. See 2008 Emergency response Guidebook for further information.
In case of major fire and large quantities: Evacuate area. Fight fire remotely due to the risk of explosion.

6 Accidental release measures

- **Personal precautions, protective equipment and emergency procedures**
Use respiratory protective device against the effects of fumes/dust/aerosol.
Keep away from ignition sources.
Remove persons from danger area.
Wear protective equipment. Keep unprotected persons away.
Ensure adequate ventilation.
Protect from heat.
Isolate area and prevent access.
- **Environmental precautions:** Do not allow to enter sewers/ surface or ground water.
- **Methods and material for containment and cleaning up:**
Pick up mechanically.
Send for recovery or disposal in suitable receptacles.
Dispose contaminated material as waste according to item 13.
- **Reference to other sections**
See Section 7 for information on safe handling.
See Section 8 for information on personal protection equipment.
See Section 13 for disposal information.

(Contd. on page 5)

Safety Data Sheet

acc. to OSHA HCS (29 CFR 1910.1200)

Printing date 08/19/2015

Reviewed on 08/19/2015

Trade name: MODEL 4556 CTG 40mm OC

(Contd. of page 4)

7 Handling and storage

- **Handling:**
- **Precautions for safe handling**
Handle with care. Avoid jolting, friction and impact.
Ensure good ventilation/exhaustion at the workplace.
- **Information about protection against explosions and fires:**
Protect against electrostatic charges.
Prevent impact and friction.
Keep respiratory protective device available.
Emergency cooling must be available in case of nearby fire.
- **Conditions for safe storage, including any incompatibilities**
- **Storage:**
- **Requirements to be met by storerooms and receptacles:**
Avoid storage near extreme heat, ignition sources or open flame.
- **Information about storage in one common storage facility:**
Store away from foodstuffs.
Store away from oxidizing agents.
Do not store together with acids.
Store away from flammable substances.
- **Further information about storage conditions:**
Store in cool, dry conditions in well sealed receptacles.
Protect from heat and direct sunlight.
Store in dry conditions.
- **Specific end use(s)** No further relevant information available.

8 Exposure controls/personal protection

- **Additional information about design of technical systems:** No further data; see item 7.
- **Control parameters**

Components with limit values that require monitoring at the workplace:

1309-48-4 magnesium oxide

PEL (USA)	Long-term value: 15* mg/m ³ fume; *total particulate
TLV (USA)	Long-term value: 10* mg/m ³ *as inhalable fraction
EL (Canada)	Short-term value: 10** mg/m ³ Long-term value: 10* 3** mg/m ³ *inhalable fume;**respirable dust and fume
EV (Canada)	Long-term value: 10 mg/m ³ inhalable
LMPE (Mexico)	Long-term value: 10* mg/m ³ A4, *fracción respirable

(Contd. on page 6)

Safety Data Sheet

acc. to OSHA HCS (29 CFR 1910.1200)

Printing date 08/19/2015

Reviewed on 08/19/2015

Trade name: MODEL 4556 CTG 40mm OC

(Contd. of page 5)

68611-44-9 silica dimethyl silyate

PEL (USA)	Short-term value: 10 mg/m ³ Long-term value: 6 mg/m ³
TLV (USA)	Short-term value: 10 mg/m ³ Long-term value: 6 mg/m ³

55-63-0 glycerol trinitrate / nitroglycerin

PEL (USA)	Ceiling limit value: 2 mg/m ³ , 0.2 ppm Skin
REL (USA)	Short-term value: 0.1 mg/m ³ Skin
TLV (USA)	Long-term value: 0.46 mg/m ³ , 0.05 ppm Skin
EL (Canada)	Long-term value: 0.05 ppm Skin
EV (Canada)	Long-term value: 0.5 mg/m ³ , 0.05 ppm Skin
LMPE (Mexico)	Long-term value: 0.05 ppm PIEL

• **Additional information:** The lists that were valid during the creation were used as basis.

• **Exposure controls**

• **Personal protective equipment:**

• **General protective and hygienic measures:**

Keep away from foodstuffs, beverages and feed.

Wash hands before breaks and at the end of work.

Immediately remove all soiled and contaminated clothing.

Do not inhale gases / fumes / aerosols.

Avoid contact with the eyes and skin.

• **Engineering controls:** No further relevant information available.

• **Breathing equipment:**



Combined Organic Vapor and Particulate Respirator is recommended for use during all processing activities.

Wear positive pressure NIOSH or European EN149 vapor respirators when deploying product in large quantities.

• **Protection of hands:**

None required for handling unused product; where possible, use protective gloves for handling spent rounds.

• **Eye protection:**

Contact lenses should not be worn.



Safety glasses

• **Body protection:** Protective work clothing

• **Limitation and supervision of exposure into the environment**

No further relevant information available.

(Contd. on page 7)

Safety Data Sheet

acc. to OSHA HCS (29 CFR 1910.1200)

Printing date 08/19/2015

Reviewed on 08/19/2015

Trade name: MODEL 4556 CTG 40mm OC

(Contd. of page 6)

- **Risk management measures**
See Section 7 for additional information.
No further relevant information available.

9 Physical and chemical properties

- **Information on basic physical and chemical properties**

- **General Information**

- **Appearance:**

Form: Solid material

Color: Dark grey

- **Odor:** Characteristic

- **Odor threshold:** Not determined.

- **pH-value:** Not applicable.

- **Change in condition**

Melting point/Melting range: Undetermined.

Boiling point/Boiling range: Undetermined.

- **Flash point:** Not applicable.

- **Flammability (solid, gaseous):** Not determined.

- **Auto-ignition temperature:** Not determined.

- **Decomposition temperature:** Not determined.

- **Auto igniting:** Product is not self-igniting.

- **Danger of explosion:** Extreme risk of explosion by shock, friction, fire or other sources of ignition.

- **Explosion limits:**

Lower: Not determined.

Upper: Not determined.

- **Oxidizing properties** Not determined.

- **Vapor pressure:** Not applicable.

- **Density:** Not determined.

- **Relative density** Not determined.

- **Vapour density** Not applicable.

- **Evaporation rate** Not applicable.

- **Solubility in / Miscibility with**

Water: Insoluble.

- **Partition coefficient (n-octanol/water):** Not determined.

- **Viscosity:**

Dynamic: Not applicable.

Kinematic: Not applicable.

(Contd. on page 8)

Safety Data Sheet
acc. to OSHA HCS (29 CFR 1910.1200)

Printing date 08/19/2015

Reviewed on 08/19/2015

Trade name: MODEL 4556 CTG 40mm OC

· **Other information** No further relevant information available. (Contd. of page 7)

10 Stability and reactivity

- **Reactivity** No further relevant information available.
- **Chemical stability**
- **Thermal decomposition / conditions to be avoided:** Risk of explosion if heated under confinement.
- **Possibility of hazardous reactions**
Danger of explosion.
Reacts with strong acids and oxidizing agents.
- **Conditions to avoid**
Keep ignition sources away - Do not smoke.
Store away from oxidizing agents.
Keep away from heat and direct sunlight.
- **Incompatible materials:** No further relevant information available.
- **Hazardous decomposition products:**
Possible in traces.
Carbon monoxide and carbon dioxide
Hydrocarbons
Nitrogen oxides
Poisonous gases/vapors
Toxic metal oxide smoke
Leadoxide vapor

11 Toxicological information

- **Information on toxicological effects**
- **Acute toxicity:**
- **LD/LC50 values that are relevant for classification:** None.
- **Primary irritant effect:**
- **on the skin:** Based on available data, the classification criteria are not met.
- **on the eye:** Based on available data, the classification criteria are not met.
- **Sensitization:** Based on available data, the classification criteria are not met.
- **Additional toxicological information:** May be harmful if inhaled.

· **Carcinogenic categories**

· **NTP (National Toxicology Program)**
None of the ingredients is listed.

· **OSHA-Ca (Occupational Safety & Health Administration)**
None of the ingredients is listed.

- **Probable Routes of Exposure** Inhalation.
- **CMR effects (carcinogenity, mutagenicity and toxicity for reproduction):**
- **Carcinogenicity** Based on available data, the classification criteria are not met.
- **Reproductive toxicity** Based on available data, the classification criteria are not met.
- **STOT-single exposure** Based on available data, the classification criteria are not met.
- **STOT-repeated exposure** Based on available data, the classification criteria are not met.

(Contd. on page 9)

Safety Data Sheet

acc. to OSHA HCS (29 CFR 1910.1200)

Printing date 08/19/2015

Reviewed on 08/19/2015

Trade name: MODEL 4556 CTG 40mm OC

- **Aspiration hazard** Based on available data, the classification criteria are not met.

(Contd. of page 8)

12 Ecological information

- **Toxicity**
- **Aquatic toxicity:** The product contains materials that are harmful to the environment.
- **Persistence and degradability** The product is partially biodegradable. Significant residuals remain.
- **Behavior in environmental systems:**
- **Bioaccumulative potential** May be accumulated in organism
- **Mobility in soil** No further relevant information available.
- **Additional ecological information:**
- **General notes:**
This statement was deduced from the properties of the single components.
The product contains heavy metals. Avoid transfer into the environment. Specific preliminary treatments are necessary.
Due to available data on eliminability/decomposition and bioaccumulation potential prolonged term damage of the environment can not be excluded.
Do not allow product to reach ground water, water course or sewage system.
Danger to drinking water if even small quantities leak into the ground.
- **Other adverse effects** No further relevant information available.

13 Disposal considerations

- **Waste treatment methods**
- **Recommendation:**
Must not be disposed of together with household garbage. Do not allow product to reach sewage system. The user of this material has the responsibility to dispose of unused material, residues and containers in compliance with all relevant local, state and federal laws and regulations regarding treatment, storage and disposal for hazardous and nonhazardous wastes. Residual materials should be treated as hazardous.
- **Uncleaned packagings:**
- **Recommendation:** Disposal must be made according to official regulations.

14 Transport information

- **UN-Number**
- **DOT, ADR, IMDG, IATA** UN0301
- **UN proper shipping name**
- **DOT, IMDG, IATA** AMMUNITION TEAR-PRODUCING with burster, expelling charge or propelling charge
- **ADR** 0301 AMMUNITION TEAR-PRODUCING with burster, expelling charge or propelling charge

(Contd. on page 10)

Safety Data Sheet

acc. to OSHA HCS (29 CFR 1910.1200)

Printing date 08/19/2015

Reviewed on 08/19/2015

Trade name: MODEL 4556 CTG 40mm OC

(Contd. of page 9)

- Transport hazard class(es)
- DOT, ADR, IMDG, IATA



- | | |
|---|---|
| · Class | 1.4 |
| · Label | 1.4G |
| · Packing group | |
| · DOT, ADR, IMDG, IATA | II |
| · Environmental hazards: | |
| · Marine pollutant: | No |
| · Special precautions for user | Not applicable. |
| · EMS Number: | F-B,S-Z |
| · Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code | Not applicable. |
| · UN "Model Regulation": | UN0301, AMMUNITION TEAR-PRODUCING with burster, expelling charge or propelling charge, 1.4G, II |

15 Regulatory information

- Safety, health and environmental regulations/legislation specific for the substance or mixture
- United States (USA)
- SARA

· Section 302 (extremely hazardous substances)

None of the ingredients is listed.

· Section 304 (emergency release notification)

None of the ingredients is listed.

· Sections 311/312 (hazardous chemical threshold planning quantity in pounds)

None of the ingredients is listed.

· Section 355 (extremely hazardous substances):

None of the ingredients is listed.

· Section 313 (Specific toxic chemical listings):

None of the ingredients are listed.

· TSCA (Toxic Substances Control Act):

All ingredients are listed.

· Proposition 65 (California)

· Chemicals known to cause cancer:

Present in trace quantities.

15245-44-0 | lead 2,4,6-trinitro-m-phenylene dioxide/ lead styphnate

· Chemicals known to cause reproductive toxicity for females:

None of the ingredients are listed.

(Contd. on page 11)

Safety Data Sheet

acc. to OSHA HCS (29 CFR 1910.1200)

Printing date 08/19/2015

Reviewed on 08/19/2015

Trade name: MODEL 4556 CTG 40mm OC

(Contd. of page 10)

· **Chemicals known to cause reproductive toxicity for males:**

None of the ingredients is listed.

· **Chemicals known to cause developmental toxicity:**

Present in trace quantities.

15245-44-0 | lead 2,4,6-trinitro-m-phenylene dioxide/ lead styphnate

· **Carcinogenic categories**

· **EPA (Environmental Protection Agency)**

None of the ingredients is listed.

· **IARC (International Agency for Research on Cancer)**

None of the ingredients is listed.

· **TLV (Threshold Limit Value established by ACGIH)**

1309-48-4 | magnesium oxide

A4

· **NIOSH-Ca (National Institute for Occupational Safety and Health)**

None of the ingredients is listed.

· **State Right to Know Listings**

None of the ingredients is listed.

· **Canadian Controlled Products Regulations: F - Dangerously reactive material**

· **Canadian substance listings:**

· **Canadian Domestic Substances List (DSL)**

All ingredients are listed.

· **Canadian Ingredient Disclosure list (limit 0.1%)**

None of the ingredients is listed.

· **Canadian Ingredient Disclosure list (limit 1%)**

1309-48-4 | magnesium oxide

· **Other regulations, limitations and prohibitive regulations**

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

· **Chemical safety assessment:** A Chemical Safety Assessment has not been carried out.

16 Other information

This information is based on our present knowledge. However, this shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.

· **Date of preparation / last revision** 08/19/2015 / -

· **Abbreviations and acronyms:**

ADR: Accord européen sur le transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road)

IMDG: International Maritime Code for Dangerous Goods

DOT: US Department of Transportation

IATA: International Air Transport Association

ACGIH: American Conference of Governmental Industrial Hygienists

EINECS: European Inventory of Existing Commercial Chemical Substances

ELINCS: European List of Notified Chemical Substances

(Contd. on page 12)

Safety Data Sheet

acc. to OSHA HCS (29 CFR 1910.1200)

Printing date 08/19/2015

Reviewed on 08/19/2015

Trade name: MODEL 4556 CTG 40mm OC

(Contd. of page 11)

CAS: Chemical Abstracts Service (division of the American Chemical Society)
NFPA: National Fire Protection Association (USA)
HMIS: Hazardous Materials Identification System (USA)
LC50: Lethal concentration, 50 percent
LD50: Lethal dose, 50 percent
PBT: Persistent, Bioaccumulative and Toxic
vPvB: very Persistent and very Bioaccumulative
Expl. 1.1: Explosives, Division 1.1
Expl. 1.4: Explosives, Division 1.4
Unst. Expl.: Explosives, Unstable explosives
Flam. Liq. 2: Flammable liquids, Hazard Category 2
Acute Tox. 2: Acute toxicity, Hazard Category 2
Acute Tox. 1: Acute toxicity, Hazard Category 1
STOT RE 2: Specific target organ toxicity - Repeated exposure, Hazard Category 2

Sources

SDS Prepared by:
ChemTel Inc.
1305 North Florida Avenue
Tampa, Florida USA 33602-2902
Toll Free North America 1-888-255-3924 Intl. +01 813-248-0573
Website: www.chemtelinc.com