元翎精密工業股份有限公司
Mosa Industrial Corp.

物質安全資料表 (Safety Data Sheet)

Creation data : 2013.04.18
Revision data : 2022.01.13

1:物品與廠商資料 (IDENTIFICATION OF THE SUBSTANCE AND OF THE COMPANY/UNDERTAKING)

1.1 物品鑑別(Product identifier):

物品名稱(Product name): 16克壓縮二氧化碳充填鋼瓶(16 g CO2 chargers)
化學符號 Chemical formula : CO2
CAS: 124-38-9 EC:204-696-9
Index Number: N/A

1.2 製造商或供應商名稱、地址及電話(Details of the supplier of the safety data sheet):

元翎精密工業股份有限公司(Mosa Industrial Corp.)
63247台灣雲林縣虎尾鎮科虎三路18號 (18, Kehu 3Rd. Huwei, Yunlin 63247, Taiwan)
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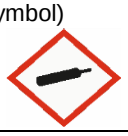
1.3 緊急聯絡電話(Emergency telephone Number): +886 5 6361867

2: 危害辨識資料(HAZARDS IDENTIFICATION)

氧含量低於19.5%時，可能會導致窒息。與二氧化碳接觸可引起噁心和呼吸困難，濃度過高時可能會導致血管擴張，及循環衰竭。警告！壓力容器應避免陽光直射，不可暴露在溫度超過50°C（122°F）的環境；防止兒童碰觸玩耍；不可使用強大外力打開氣體鋼瓶。
Oxygen levels below 19.5% may cause asphyxia. Carbon dioxide exposure can cause nausea and respiratory problems. High concentrations may cause vasodilation leading to circulatory collapse.
Warning! Pressurized container; protect from sunlight; do not expose to temperatures exceeding 50°C (122° F); keep out the reach of children; never dispose of full container, never force open.

3: 成分辨識資料(COMPOSITION/INFORMATION ON INGREDIENTS)

純物質(Pure Material)

化學名稱(Chemical name)	化學文摘社登記號碼 (CAS number):	EC Number (from EINECS)	Hazardous material composition (Percentage): 危害物質成分（成分百分比）:>99%	標誌(Symbol)
二氧化碳(Carbon Dioxide)	124-38-9	204-696-9		

4:急救措施(FIRST AID MEASURES)

4.1 急救措施的說明(Description of first aid measures)

4.1.1 吸 入(Inhalation) :
搬運患者到有新鮮空氣的地方，如果患者呼吸困難，需提供氧氣；如果患者沒有呼吸，需立即進行心肺復甦術，並尋求緊急醫療照顧。
Remove affected person to fresh air; provide oxygen if breathing is difficult; if affected person is not breathing, administer CPR and seek emergency medical attention.

4.1.2 食 入(Ingestion) :
由於氣態，正常情況下預計不會發生
Not expected under normal conditions due to gaseous state.

4.1.3 皮膚接觸 : (Skin Contact)
先用肥皂和水清洗患處，如果有持續刺激感需立即就醫。
Wash affected area with soap and water; if irritation persists, seek medical attention.

4.1.4 眼睛接觸 (Eye Contact) :	檢查並去除隱形眼鏡，以乾淨的水沖洗眼睛15分鐘，同時保持眼瞼張開。如果有持續刺激感需立即就醫。 Check for and remove contact lenses. Flush eyes with clear running water for 15 minutes while holding eyelids open; if irritation persists, seek medical attention.

5: 滅火措施(FIRE-FIGHTING MEASURES)

5.1 具體危害(Specific Hazards):
曝露於高温燒灼可能造成容器破裂或爆炸。
Exposure to fire may cause containers to rupture/explode.

5.2 一般危害(General Hazards) :
此產品為不易燃及不可燃物。燃燒時產物包括碳、氫、氧化合物及一氧化碳。
Product is not flammable or combustible. Products of combustion include compounds of carbon, hydrogen and oxygen, including carbon monoxide.

5.3 滅火介質(Extinguishing Media):
二氧化碳，水，水霧，乾粉，化學泡沫等。
Carbon dioxide, water, water fog, dry chemical, chemical foam.

5.4 異常火災和爆炸危險(Unusual Fire and Explosion Hazards):
當氣瓶暴露在極端熱密閉空間內易導致爆炸。此高壓力的氣體鋼瓶，不要在靠近熱源的地方使用或存放。
Closed containers can explode due to buildup of pressure when exposed to extreme heat. Contents under pressure. Do not use or store near heat sources.

5.5 有害燃燒產物(Hazardous Combustion Products):
煙霧，煙霧或蒸汽，碳的氧化物。
Smoke, fumes or vapors, oxides of carbon.

6: 洩漏處理方法(ACCIDENTAL RELEASE MEASURES)

6.1 個人的預防措施 (Personal precautions):
迅速撤離災區，必要時戴上自給式呼吸器。除非災區被證明是安全的否則不可進入。並確保充足的空氣流通。
Evacuate area. Wear self-contained breathing apparatus whenentering area unless atmosphere is proved to be safe. Ensureadequate air ventilation.

6.2 環境保護措施 (Environmental precautions):
嘗試停止洩漏。防止洩漏流入下水道，地下室或任何地方，過度的積累可能會造成危險。
Try to stop release. Prevent from entering sewers, basements andworkpits, or any place where its accumulation can be angerous.

6.3 清理方法 (Clean up methods) :
通風良好的地方 Ventilated area.

7: 安全處置與儲存方法(HANDLING AND STORAGE)

安全處置 (Handling) :	不使用時請保持容器密閉，保護氣瓶避免招受碰撞；防止儲存於高溫處，遠離熱源。不可刺穿氣瓶。並不要試圖填充容器；遠離陽光直射和熱源；無釋放裝置、不可再重新充填。 Keep container closed when not in use; protect containers from abuse; protect from extreme temperatures, keep away from sources of heat. Do not puncture container. Do not attempt to refill container. Keep away from direct sunlight and heat.Without a release device, non-refillable.

儲存 (Storage) :	不可加熱，使用時最高環境溫度請勿超過50°C (122°F)。並儲存在陰涼、乾燥的場所。(Do not heat. Maximum environmental temperature in use not to exceed 50°C (122°F). Store in a cool and dry location.)
鋼瓶材料: (Packaging materials)	可回收鋼材 (Recyclable steel)
推薦使用 (Recommended use) :	使用原來的盛裝容器 (Use original container.)

8: 暴露預防措施(EXPOSURE CONTROL/PERSONAL PROTECTION)	
工程控制 (Engineering controls) :	需要使用局部排氣通風，於控制排放源附近。提供通風於密閉空間的機械。The use of local exhaust ventilation is required to control emissions near the source. Provide mechanical ventilation of confined spaces.
個人防護 (Personal protection)	確保足夠的通風。同時進行處理氣瓶工作需配戴手套和防護鞋。Ensure adequate ventilation. Carry working gloves and protection

9: 物理及化學性質(PHYSICAL AND CHEMICAL PROPERTIES)

二氧化碳的物理和化學性質 Physical and chemical properties of CO2 (E290--99% CO2)

1 atm下的氣體壓力 (Gas density at 1 atm):	1.836 kg/m³ at 20°C
比重(Relative density (air=1)):	1.53 at 20°C
熔點(Melting point (CO2 Sublimes)) :	- 78° C (- 109° F)
沸點(Boiling point) :	- 57° C (- 70° F)
溶解度(水中) (Solubility (H20)) :	1.45 g/L at 25 °C, 100 kPa
氣味和外觀(Odor and appearance) :	無色，無味的氣體 (A colorless, odorless gas)

Parameter of 16g CO2 charger	公制單位(METRIC UNITS)	英制單位(US / IMPERIAL UNITS)
總長(Overall Length (approx)):	88.4 mm	3.48 in
瓶身外徑(Body Diameter):	22 mm	0.866 in
頸部外徑(Neck Diameter):	8.6 mm	0.339 in
內容積(Internal Volume (approx)):	20.4 ml	1.24 in³
CO2淨重(Net weight of CO2 (approx)):	16 g	0.64 oz
空瓶重量(Tare wt. of charger (approx)):	42 g	1.68 oz
總重 (Gross wt. of charger (approx)):	58 g	2.32 oz
爆破壓(Bursting pressure):	>500 bar	>7250 lbf/in²
壓力/溫度 在充填密度為0.78kg/liter的狀況下(Pressure / Temperature Characteristics at filling density of 0.78 kg/liter):	52 bar at 20 °C	750 lbf/in² at 68 °F
	185 bar at 50 °C	2680 lbf/in² at 122 °F
	290 bar at 70 °C	4200 lbf/in² at 158 °F
	425 bar at 100 °C	6160 lbf/in² at 212 °F
	470 bar at 110 °C	6815 lbf/in² at 230 °F

10: 安定性及反應性(STABILITY AND RELIABILITY)

安定性 (Stability):	正常狀況下安定 (The product is stable.)
材質避免接觸物質: (Materials to avoid)	強氧化劑，強酸 (Strong oxidizers, strong acids.)
危險的分解物: (Hazardous Decomposition Products)	如果正確處理和儲存不會發生分解。在發生火災時，可能會產生碳，烴類，煙霧或蒸氣和煙霧氧化物。 Decomposition will not occur if handled and stored properly. In case of a fire, oxides of carbon, hydrocarbons, fumes or vapors, and smoke may be produced.

11: 毒性資料(TOXICOLOGICAL INFORMATION)

一般 (General)
從這個產品並無任何已知的毒性效應。
No known toxicological effects from this product.

急性毒性 (Acute toxicity)
吸入濃度8%以上二氧化碳，可造成血液循環系統氧氣不足之處。症狀是頭痛，噁心和嘔吐，並可能會導致昏迷。Concentrations above 8% CO2 can cause rapid circulatory insufficiency. Symptoms are headache, nausea and vomiting, which may lead to unconsciousness.

12: 生態資料(ECOLOGICAL INFORMATION)

沒有任何數據顯示這種材料對環境有不利影響。無論是化學需氧量或生化耗氧量數據都適用。基於該產品的化學成分，它是假設的混合物，可以在數量有限的一個水土不服生物廢物處理廠系統治療。然而，這樣的待遇應進行評估，並批准為每個特定的生物系統。在這種混合物的成分沒有被列為海洋污染物。
No data are available on the adverse effects of this material on the environment. Neither COD nor BOD data are available. Based on the chemical composition of this product it is assumed that the mixture can be treated in an acclimatized biological waste treatment plant system in limited quantities. However, such treatment should be evaluated and approved for each specific biological system. None of the ingredients in this mixture are classified as a Marine Pollutant.

13: 廢棄處置方法(DISPOSAL CONSIDERATIONS)

廢棄處置方法(Waste Disposal Method)：
參考相關法規處理 (Never dump at sea. Inform waste disposal contractor of material to be disposed of zinc-plated and chrome stabilised steel. Never dispose of a filled cylinder.)

14: 運送資料(TRANSPORT INFORMATION)

無危險性(Non hazardous)

運輸危害分類(Class)	2.2
聯合國編號(UN No.)	UN2037
標示(Title):	Special Provision 191 and 303 and 344 特別條款191、303、344 小型氣體容器(Receptacles, small, containing gas (gas cartridges)) 小型容器，僅裝有無毒性成份且容量不超過50 毫升的容器，不受IMDGC規章限制(Receptacles with capacity not exceeding 50 ml containing only non-toxic constituents, are not subject to provisions of IMDGC) 符合IATA DGR A98 特別條款（Special provision），可視為非限制物品（Not restricted）

物質安全資料表 (Safety Data Sheet)

15: 法規資料(REGULATORY INFORMATION)

歐盟法規 (EU Regulations) :	CAS編號確定該產品的成分均存在歐洲現有商業化學物質清單。 Components of this product identified by CAS numbers are on the European Inventory of Existing Commercial Chemical Substances.
危險符號 (Hazard symbol(s)) :	
分類 (Classification) :	有害 (Harmful)
風險短述 (Risk Phrases) :	R20- 過量吸入有害 (Harmful by inhalation.)
安全短述 (Safety Phrases) :	S38 - 在通風不足的情況下，應佩戴合適的呼吸供給設備 (In case of insufficient ventilation, wear suitable respiratory equipment.)
內容物 (Contains) :	二氧化碳 (CO2)

16: 其他資料(OTHER INFORMATION)

特殊毒性試驗尚未進行在此產品上。我們的危險性評估的基礎來自於類似的產品、技術文獻，和專業經驗。
Specific toxicity tests have not been conducted on this product. Our hazard evaluation is based on Information from similar products, the ingredients, technical literature, and/or professional experience.

製表單位 (Tabulation)	公司(Company)：	元翎精密工業股份有限公司(Mosa Industrial Corp.)		
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製表人(Tabulator)		R&D 黃育修(Ben)	版次(Revision)：	7