GP Batteries

Safety Data Sheet for Nickel Metal Hydride Battery

Document Number: RRS0541 Revision: 28 Date of prepared: 01/Jan/2021

Section I – Product and Company Identification

Information of Product 產品信息

Product Identity (used on the label) 產品標識（用於標籤）	Nickel Metal Hydride Battery 金屬氫化物鎳電池

Information of Manufacturer 製造商信息

Manufacturer's Name 製造商名字 GPI International Ltd. GPI 國際有限公司	**Emergency Telephone Number 緊急聯繫電話** Within USA & Canada call 美國與加拿大境內: +1-800-424-9300 Outside USA and Canada call 美國與加拿大境外: +1-703-527-3887
Address (Number, Street, City State, and ZIP Code) **聯繫地址：** 7/F, Building 16W, 16 Science Park West Avenue Hong Kong Science Park, New Territories, Hong Kong 香港新界香港科學園16號樓7層	**Telephone Number for Information：諮詢電話** +852-24843333
	Date of prepared and revised：修訂日期 01/Jan/2021

Recommended use of chemicals: 化學物品的建議使用

N.A.

Section II – Hazards Identification 危害識別

GHS Classification: N.A. GHS 分類（全球化學品統一分類和標籤制度）

Under normal conditions of use, the battery is hermetically sealed. If the electrolyte is leaked, hazardous material may be released. 在正常情況下使用，電池是密封的。但是如果電解液有洩露時，就會出現危害物質

Human Health Effects 人身健康影響

Inhalation 吸入	The electrolyte inhalation can cause respiratory irritation. It could be possibly carcinogen. 吸入電解液會導致呼吸過敏並且有可能致癌

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Skin contact 皮膚接觸	The electrolyte can cause skin irritation, chemical burns. Nickel compounds, cobalt and cobalt compounds can cause skin sensitization and an allergic contact dermatitis. 與電解液發生皮膚接觸會導致皮膚刺激與化學燒傷。電池中的含鎳物質以及含鈷物質會刺激皮膚從而導致皮膚過敏，並且可能導致皮膚炎症
Eye contact 眼睛接觸	The electrolyte leaked from the battery cell is strong alkali, can cause severe irritation and chemical burns. 從電池洩露出的電解液具有強鹼性，可以導致嚴重刺激以及化學燒傷
Ingestion 吞入	If the battery is swallowed and opened, or the electrolyte is ingested, the electrolyte irritates the mouth and the throat seriously, may lead to vomiting, nausea, hematemesis, stomach pains and diarrhea. 如果電池被誤吞下並且電池呈暴露狀態，或者電解液被誤服下，電解液會刺激其嘴與喉嚨，可能會造成嘔吐、暈眩、吐血、胃疼以及腹瀉。

Environmental Effects 環境影響

The battery cell remains in the environment. Do not throw it out into the environment.

電池可存在自然界中對環境無污染，但是不能直接丟棄

Specific Hazards 特定危害

As previously described.

綜上所述

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Section III – Composition/Information on Ingredients

Chemical Name/Common Name 物質名稱	**CAS No. CAS 號碼**	**%/wt 含量 (品質分數 wt%）**
Aluminum 鋁	7429-90-5	< 2
Cobalt metal 金屬鈷	7440-48-4	2.5-6.0
Cobalt oxide 氧化鈷	1307-96-6	
Cobalt hydroxide 氫氧化鈷	21041-93-0	
Lithium Hydroxide 氫氧化鋰	1310-65-2	0-4
Manganese 錳	7439-96-5	0-4
Lanthanum 鑭	7439-91-0	<13
Cerium 鈰	7440-45-1	
Neodymium 釹	7440-00-8	
Praseodymium 鐠	7440-10-0	
Nickel hydroxide 氫氧化鎳	12054-48-7	35-55
Nickel oxide 氧化鎳	1313-99-1	
Nickel powder 金屬鎳粉	7440-02-0	
Potassium Hydroxide 氫氧化鉀	1310-58-3	<7
Sodium Hydroxide 氫氧化鈉	1310-73-2	0-4
Zinc metal 金屬鋅	7440-66-6	<3
Zinc oxide 氧化鋅	1314-13-2	
Zinc hydroxide 氫氧化鋅	20427-58-1	
Iron 鐵	7439-89-6	10-25
Other Non-hazardous 其他無害物質	Water, Paper, Plastic and Other	Balance

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Section IV – First-aid Measures 急救措施

Inhalation **吸入**	If electrolyte leakage occurs, cover the victim in a blanket, move to the place of fresh air and keep quiet. Seek medical attention immediately. When dyspnea (breathing difficulty) or asphyxia (breath-hold), give artificial respiration immediately. 如果發生電解液洩露並且傷患吸入一定量的電解液，給受傷者鋪上毛毯，並將傷患移到新鮮空氣處。立即尋找醫療救護，當傷患出現呼吸困難或者呼吸停止時，立即給予人工呼吸幫助。
Skin Contact **皮膚接觸**	If electrolyte leakage occurs, remove contaminated clothes and shoes immediately. Wash the adherence or contact region with soap and plenty of water. Seek medical attention immediately. 如果發生電解液洩露並與傷患皮膚接觸，立即移除粘有電解液的衣物，用大量的水沖洗且附著物和接觸部分，並立即尋求醫療救護。
Eye Contact **眼睛接觸**	If electrolyte leakage occurs, immediately flush eyes with water continuously for at least 15 minutes. Seek medical attention immediately. 如果發生電解液洩露並且接觸到傷患的眼睛，立即用大量的水不停地沖洗眼睛 15 分鐘，並尋求醫療救護
Ingestion **吞入**	If battery cell and electrolyte is ingested, do not induce vomiting or give food or drink. Seek medical attention immediately. 如果電池或電解液被誤服，不要催吐或者給予食物或飲料，要立即尋求醫療救護。

Section V – Fire-fighting Measures 消防措施

Extinguishing Media **滅火介質**	Dry sand, chemical powder fire extinguishing medium. 幹砂，化學品滅火劑
Unusual Fire and Explosion Hazards **非尋常火源和爆炸危害**	Acrid or harmful fume is emitted during fire. 會有刺激性或者有害氣體在火災過程產生

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Special Protective equipment and Precautions for fire-fighters **對於消防員的特別的保護措施和提醒**	Fire fighters should wear self-contained breathing apparatus. Burning nickel metal hydride batteries can produce toxic fumes including oxides of nickel, cobalt, aluminum, manganese, lanthanum, cerium, neodymium, and praseodymium. 消防員應穿戴獨立的呼吸設備，而發生燃燒的鎳氫電池會產生含有鎳、鈷、鋁、錳、鑭、鈰、釹、鐠等氧化物的有毒煙霧， Protective equipment written in Section VIII. 防護設備詳見第八部分

Section VI – Accidental Release Measures 意外釋放的措施

Personal Precautions **個人防護**	Forbid unauthorized person to enter. Remove leaked materials with protective equipment written in Section VIII. 禁止非授權人員進入洩露現場，處理洩露材料的防護措施詳見第八部分
Environmental precautions **環境防護**	Do not throw out into the environment. 不能直接丟棄在環境中
Containment and Clean Up **污染物的清理**	Dilute the leaked electrolyte with water and neutralize with diluted sulfuric acid. The leaked solid is moved to a container. The leaked place is fully flushed with water. 用水稀釋洩露的電解液，再用稀硫酸中和。洩露的固體要移至專用的容器中，洩露污染的低於要用水沖洗。

Section VII – Handling and Storage

Handling **處理**	Prevention of user exposure: Not necessary under normal use. 使用者的防護措施：在正常使用下不需要 Prevention of fire and explosion: Not necessary under normal use. 火災以及爆炸的防護措施：在正常使用下部需要

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	Precaution for safe handling: Do not damage or remove the external tube. 處理時的安全提醒：不要破壞和移動外部的管道設備 Specific safe handling advice: Never throw out cells in a fire or expose to high temperatures. Do not soak cells in water and seawater. Do not expose to strong oxidizers. Do not give a strong mechanical shock or throw down. Never disassemble, modify or deform. Do not connect the positive terminal to the negative terminal with electrically conductive material. In the case of charging, use only dedicated charger or charge according to the conditions specified by GP Batteries. 特別的安全處理建議：不要將電池投入在明火以及高溫中。不要將電池浸泡在水或者海水中。不要將電池暴露在強氧化性的環境中。不要對電池進行高強度的機械碰撞或者投擲，不要對電池經行解剖彎曲變形。不要短接正負極，充電時，只是用由 GP 所提供的充電器或者充電方法
Storage **儲存**	Storage conditions (suitable to be avoided): Avoid direct sunlight, high temperature, high humidity. The cells and batteries shall not be stored in high temperature ,the maximum temperature allowed is 60℃ for a short period during the shipment. Otherwise the cells maybe leakage and can result in shortened cycle life. 存儲條件：避免直接的日曬、高溫、高濕度。電池不能存儲在高溫環境中，在短期運輸過程中，最高溫度為60攝氏度，如果違反儲存建議，電池有可能出現漏泄情況並導致循環壽命減少 Incompatible products: Conductive materials, water, seawater, strong oxidizers and strong acids Packing material (recommended, not suitable): insulated and tear-proof materials are recommended. 不能一起儲存的產品：導電材料、水、海水、強氧化劑、強酸 包裝所用材料（建議）：絕緣並且防撕裂的材料

Section VIII – Exposure Controls/Personal Protection 暴露控制和人身保護

Engineering Control 工程控制

No engineering measure is necessary during normal use. If internal cell materials are leaked, the information below will be useful.

在正常使用情況下不需要工程控制手段。如果電池內部材料洩露，以下資訊可提供參考。

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Exposure Control Limit 暴露控制界限

Common Chemical Name / General Name 化學物質名稱	**OSHA PEL**	**ACGIH TLV**
Aluminum metal (as Al) 金屬鋁	TWA 15 mg/m^3 (total) TWA 5 mg/m^3 (resp)	-
Cobalt metal (As Co) 金屬鈷	TWA 0.1 mg/m^3	TWA 0.02 mg/m^3
Lithium Hydroxide 氫氧化鋰	-	-
Manganese compounds (as Mn) 錳化物	(Celling) 5 mg/m^3	TWA 0.02 mg/m^3 (resp.)
Nickel, metal and insoluble compounds 鎳（金屬以及不容物）	(as Ni) TWA 1 mg/m^3	Elemental 元素含量: 1.5mg/m^3 (IHL); Insoluble inorganic compounds 不溶有機物: 0.2mg/m^3 (IHL)
Potassium Hydroxide 氫氧化鉀	-	-
Sodium Hydroxide 氫氧化鈉	2 mg/m^3 TWA	(Celling) 2 mg/m^3
Zinc oxide 鋅化物	Respirable fraction:呼吸閥值 5 mg/m^3	Respirable fraction: 呼吸閥值 2 mg/m^3

TWA – Time Weighted Average 時間加權平均值

ACGIH TLV: American Conference of Governmental Industrial Hygienists Threshold Limit Value 美國政府工業衛生學家會議所提供暴露閥值

OSHA PEL: Occupational Safety & Health Administration Permissible Exposure Limit 職業安全和健康署所允許暴露閥值

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Personal protective equipment 個人防護設備

Respiratory protection: Protective mask 呼吸設備：防護面罩

Hand protection: Protective gloves 手防護：防護手套

Eye protection: Protective glasses designed to protect against liquid splashes

眼睛防護：防止液體飛濺的防護眼鏡

Skin and body protection: Working clothes with long sleeve and long trousers

皮膚及身體防護：長袖長褲的工作服

Section IX – Physical and Chemical Properties 物理與化學性質

Appearance 外觀 Solid, Cylindrical Shape, Metallic color 固體、圓柱形、金屬顏色	**Odor 氣味** Odorless 無 **Odor Threshold 氣味閥值** N.A.
pH N.A.	**Melting point/freezing point 熔點/凝固點** N.A.
Initial boiling point and boiling range **開始沸騰溫度點與沸騰溫度範圍** N.A.	**Flash point 閃點** N.A.
Evaporation rate 蒸發率 N.A.	**Flammability (solid, gas) 可燃性（固體、氣體）** N.A. **Upper/lower flammability or explosive limit** **可燃上限與下限以及爆炸極限** N.A.
Vapor pressure 蒸汽壓 N.A.	**Vapor density 氣體密度** N.A.
Relative density 相對密度	**Solubility 溶解度**

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N.A.	Insoluble in water 不溶于水中
Partition coefficient: n-octanol/water 分配係數（正辛醇/水） N.A.	**Auto-ignition temperature 自燃溫度** N.A.
Decomposition temperature 分解溫度 N.A.	**Viscosity 粘度** N.A.

Section X – Stability and Reactivity

Stability 穩定性	Stable under normal use 在正常使用中穩定
Possibility of hazardous reactions 可能存在的危險反應	By misuse of a battery cell or the like, oxygen or hydrogen accumulates in the cell and the internal pressure rises. These gases may be emitted through the gas release vent. When fire is near, these gases may take fire. When a battery cell is heated strongly by the surrounding fire, acrid or harmful fume may be emitted. 如果不正當使用電池時，會導致氧氣和氫氣在電池內部聚集從而導致內壓上升，氣體會通過氣壓閥釋放出來，當此次有明火靠近時，會引起氣體燃燒。當電池被加熱劇烈時，會導致刺激性和有害的氣體釋放
Conditions to avoid 需避免的情況	Direct sunlight, high temperature and high humidity 直接日曬、高溫、高濕度
Materials to avoid 需避免的材料	Conductive materials, water, seawater, strong oxidizers and strong acids 導電材料、水、海水、強氧化劑、強酸
Hazardous decomposition products 分解時的有害產物	Acrid or harmful fume is emitted during fire. 在燃燒中會產生有刺激性的有害氣體

Section XI – Toxicological Information 毒理學信息

There is no toxicity data for Nickel Metal Hydride Battery. Under normal conditions of use, the battery is non-toxic.

沒有關於鎳氫電池的毒理學資訊，在正常使用條件下，電池是無毒的。

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Section XII – Ecological Information 生態學信息

Persistence/degradability : 可持續性和可降解性：

Since a battery cell and the internal materials remain in the environment, do not bury or throw out into the environment. 由於電池以及內部材料仍然保留在環境中，不要丟棄以及埋藏電池與大自然中

Section XIII – Disposal Considerations 處理方法

Recommended methods for safe and environmentally preferred disposal : 建議使用的對環境友好的處理方法

Product (waste from residues) 產品（殘留廢棄物）

Do not throw out a used battery cell. Recycle it through the recycling company.

不要丟棄已使用過的電池，應將其給相應的回收公司

Contaminated packaging 有污染的包裝

Neither a container nor packing is contaminated during normal use. When internal materials leaked from a battery cell contaminates them, dispose them as industrial wastes subject to special control.

在正常使用下不會出現包裝以及放置容器出現被污染的情況。當電池內部的材料洩漏時並污染其包裝容器，可將被污染的包裝容器按特定的工業廢物處理

Section XIV – Transport Information 運輸資訊

Regulatory Body 條例主題	**Special Provisions 特定條例**
ADR	295 – 304, 598
IMO	UN 3496 SP117 and SP963
UN	UN 3496
US DOT	49 CFR 172, 102 Provision 130
IATA	A199

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Form of Transportation 運輸方式	**UN No.**	**UN Proper Shipping Name UN 運輸名稱**	**Transport Hazard Class 運輸危害等級**	**Packing Group Number 包裝組別號碼**	**Environmental Hazards 環境危害**	**Guidance Transport in bulk 運輸指引**	**Special Precaution 特別提示**
Sea 海運	3496	BATTERIES, NICKEL-METAL HYDRIDE	9	-	No	According to ANNEX II of MARPOL 73/78 and the IBC Code	SP117 & SP963

a) In general, all batteries in all forms of transportation (ground, air, or ocean) must be packaged in a safe and responsible manner. Regulatory concerns from all agencies for safe packaging require that batteries be packaged in a manner that prevents short circuits and be contained in “strong outer packaging” that prevents spillage of contents. All original packaging for GP nickel metal hydride batteries has been designed to be compliant with these regulatory concerns.

一般來講，所有電池在所有運輸過程中（海陸空運輸）都必須安全地包裝。出於安全管理的考慮，安全包裝必須避免電池的短路問題以嚴重外露的問題，這是保證避免電池以及電池內部的材料洩露。所有的 GP 鎳氫電池均會遵守其管理規定來進行包裝。

GP nickel metal hydride batteries (sometimes referred to as “Dry cell” batteries) are not defined as dangerous goods under the IATA Dangerous Goods Regulations 62th edition 2021, ICAO Technical Instructions and the U.S. hazardous materials regulations (49 CFR). These batteries are not subject to the dangerous goods regulations as they are compliant with the requirements contained in the following special provisions.

在國際空運協會(IATA)危險貨物條例第 62 版（2021）、國際民航管理局(ICAO)的技術條例以及美國危險化學品管理條例（49CFR）的規定當中 GP 鎳氫電池（也被稱作“乾電池”）是不作為危險貨物。電池也只有在遵守相關的特定規定情況下才能不列入危險貨品中。

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In addition, the IATA Dangerous Goods Regulations and ICAO Technical Instructions require the words “not restricted” and the Special Provision number A199 be provided on the air waybill, when an air waybill is issued.
除此之外，國際空運協會(IATA)危險貨物條例和國際民航管理局(ICAO)的技術條例均要求“不作限制”，同時要注意針對特別條例 A199（美國運輸局），需要在運貨單中進行說明

b) International Maritime Organization (IMO) IMDG Code regulated these products as UN 3496 BATTERIES, NICKEL METAL HYDRIDE, class 9 dangerous goods with Special Provision 117 and 963 assigned
國際海事組織:國際海運危險品法規其產品號碼為：UN 3496 BATTERIES, NICKEL METAL HYDRIDE，在特殊條例 117 和 963 中為第九級危險物品

SP117

Only regulated when transported by sea.

SP963

Nickel-metal hydride button cells or nickel-metal hydride cells or batteries packed with or contained in equipment are not subject to the provisions of this Code.
在設備中的鎳氫紐扣電池、鎳氫電池或者電池組不受此特殊條例管理

All other nickel-metal hydride cells or batteries shall be securely packed and protected from short circuit. They are not subject to other provisions of this Code provided that they are loaded in a cargo transport unit in a total quantity of less than 100 Kg gross mass. When loaded in a cargo transport unit in a total quantity of 100 Kg gross mass or more, they are not subject to other provisions of this Code except those of 5.4.1, 5.4.3 and column (16) of the dangerous good list in Chapter 3.2.
其他的鎳氫電池應該安全地包裝以免發生短路。當電池在運輸單位上少於 100kg 時候並不受其他關於這條例所管理。當電池運輸單位大於 100kg 總重時候，此條例中的 5.4.1 和 5.4.3 的第 16 條關於危險貨物 適用
The requirements of these sections are: 具體要求

(1) Dangerous goods transport documentation to accompany the shipment,
危險貨物運輸檔要在運輸貨品中

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(2) The shipment must be described as "UN3496, BATTERIES, NICKEL-METAL HYDRIDE, CLASS 9" on the shipper's declaration for dangerous goods.
運輸貨品需要標識為“UN3496, BATTERIES, NICKEL-METAL HYDRIDE, CLASS 9”

(3) The dangerous goods description must also be entered on the Dangerous Cargo Manifest and/or the detailed stowage plan in compliance with the IMDG Code requirements for shipboard documentation.
危險貨品的標識需要進入其運輸單中或者有詳細地關於國際海運危險品法規所規定的裝載運輸計畫

Section XV – Regulatory Information 調整資訊

Special requirement be according to the local regulations.

特殊需求根據當地規則調整

Section XVI – Other Information 其他資訊

The data in this Material Safety Data Sheet relates only to the specific material designated herein.

本化學品安全技術說明書中的資料只針對本產品的特定材料。

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