

Safety Data Sheet 安全数据表

1. IDENTIFICATION 化学品名称和制造商信息

Product Name 产品名称: Lead Acid Battery 铅酸蓄电池 Synonyms 同义词: SLI Battery SLI 电池	Product Use 产品用途: Vehicle Electrical System 车用电气系统 Manufacturer/Supplier 制造商/供应商: Clarios (Chongqing) Power Solutions Co., Ltd. 柯锐世(重庆)电气有限公司 Address 地址: No. 1, Long Xiang Road, Fuling District, Chongqing, China 重庆市涪陵区龙祥路1号
General Information Number 一般信息联系电话: 023-72186350 Contact Person 联系人: Industrial Hygiene & Safety Department 安全健康部门	Emergency number 应急电话: National Chemical Accident Emergency Consult 国家化学事故应急咨询 0532-83889090




NOTE: The Clarios sealed cell/battery is considered an article as defined by 29 CFR 1910.1200 (OSHA Hazard Communication Standard). The information contained in this SDS is supplied at the customer's request for information only. 注意: 柯锐世电池符合 29 CFR 1910.1200 (OSHA 危害交流标准). 安全数据表内包含的信息是应客户要求提供, 仅作为信息使用.

2. HAZARD(S) IDENTIFICATION 危险性概述

Health 健康	Environmental 环境	Physical 物理性
Acute Toxicity 急性毒性 (Oral/Dermal/Inhalation 口服/皮肤接触/吸入) Category 4 类别 4 Skin Corrosion/Irritation 皮肤腐蚀性/刺激 Category 1A 类别 1A Eye Damage 眼损伤 Category 1 类别 1 Reproductive 生殖性 Category 1A 类别 1A Carcinogenicity (lead) 致癌性 (铅) Category 1B 类别 1B Carcinogenicity (acid mist) 致癌性 (酸雾) Category 1A 类别 1A	Aquatic 水生生物 Chronic 1 慢性 1 Aquatic 水生生物 Acute 1 急性 1	Explosive Chemical 爆炸性化学品 Division 1.3 1.3 项 May form explosive air/gas mixture during charging. 充电期间可能产生可爆炸气体/气体混合物

Specific Target Organ Toxicity (repeated exposure) 特定目标器 官毒性 (重复暴露)	Category 2 类别 2		
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Label Elements 标签:

Health 健康	Environmental 环境	Physical 物理性
		
<p>Hazard Statements DANGER! 危险! Causes severe skin burns and eye damage. Causes serious eye damage. 可导致严重的皮肤灼伤和严重的眼损伤。</p> <p>May damage fertility or the unborn child if ingested or inhaled. 吞咽或吸入可能损害生育能力或胎儿。</p> <p>May cause cancer if ingested or inhaled. 吞咽或吸入可能导致癌症。</p> <p>Causes damage to central nervous system, blood and kidneys through prolonged or repeated exposure. 长期或重复接触可能导致中枢神经系统、血液、肾脏损伤。</p> <p>Extremely toxic and have long term negative impact to Aquatic 对水生生物毒性极大，并具有长期持续影响。</p>	<p>Precautionary Statements 预防性措施 Wash thoroughly after handling. 接触后充分清洗。</p> <p>Do not eat, drink or smoke when using this product. 使用该产品时不得进食、饮水或吸烟。</p> <p>Wear protective gloves/protective clothing, eye protection/face protection. 佩戴防护手套/防护服，防护眼镜/防护面屏。</p> <p>Avoid breathing dust/fume/gas/mist/vapors/spray. 避免吸入粉尘/烟雾/气体/薄雾/蒸汽/喷雾。</p> <p>Use only outdoors or in a well-ventilated area. 仅在户外或通风良好区域使用。</p> <p>Causes skin irritation, serious eye damage. 可导致皮肤刺激性，严重的眼损伤。</p> <p>Contact with internal components may cause irritation or severe burns. Avoid contact with internal acid. 接触内部物质可能导致过敏或严重烧伤。避免接触内部的酸。</p> <p>Irritating to eyes, respiratory system, and skin. 对眼睛、呼吸系统和皮肤有刺激性。</p>	
<p>Extremely flammable gas (hydrogen). 极易燃气体 (氢气)</p> <p>Explosive, fire, blast or projection hazard. 爆炸，火灾或溅出风险。</p>		

3. COMPOSITION / INFORMATION ON INGREDIENTS 化学组成信息

INGREDIENTS (Chemical/Common Names): 材料 (化学品/常用名)	CAS No.:	% by Wt:
Lead 铅	7439-92-1	34
Lead Oxide 二氧化铅	1309-60-0	31
Sulfuric Acid 硫酸	7664-93-9	34
Lead Sulfate 硫酸铅	7446-14-2	<1

Composition Comments 成分注解: All concentrations are in percent by weight. 所有浓度按重量百分比计算。

4. FIRST AID MEASURES 急救措施

Note: Under normal conditions of battery use, internal components will not present a health hazard. The following information is provided for battery electrolyte (acid) and lead for exposures that may occur during battery production or container breakage or under extreme heat conditions such as fire.

注意：正常情况下使用电池，内部的成分不会产生健康危害。以下信息是基于可能发生电池生产或外壳破损或极端温度条件下（如着火）产生电解液和铅暴露下提供的。

Inhalation 吸入：	Sulfuric Acid: Remove to fresh air immediately. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Consult a physician 硫酸：将患者移动到新鲜空气处。如呼吸困难，给输氧。如呼吸停止，进行人工呼吸。并咨询医生。 Lead: Remove from exposure, gargle, wash nose and lips; consult physician. 铅：将患者从铅暴露区移走，漱口，清洗鼻子和嘴唇，并咨询医生。
Skin contact 皮肤接触：	Sulfuric Acid: Flush with large amounts of water for at least 15 minutes; remove contaminated clothing completely, including shoes. If symptoms persist, seek medical attention. Wash contaminated clothing before reuse. Discard contaminated shoes. 硫酸：立即使用大量清水冲洗至少 15 分钟；彻底除去受污染的衣物，包括鞋子。如果症状持续，寻求医疗帮助。衣物在重新使用前清洗干净。丢弃污损的鞋子。 Lead: Wash immediately with soap and water. 铅：立即用肥皂和清水进行清洗。
Eye contact 眼睛接触：	Sulfuric Acid and Lead: Flush immediately with large amounts of water for at least 15 minutes while lifting lids; Seek immediate medical attention if eyes have been exposed directly to acid. 硫酸和铅：提起眼睑，立即使用大量清水冲洗至少 15 分钟；如果眼睛直接接触过酸，立即寻求医疗救助。
Ingestion 吞咽：	Sulfuric Acid: Give large quantities of water; Do NOT induce vomiting or aspiration into the lungs may occur and can cause permanent injury or death; consult physician. 硫酸：给服大量清水；不要催吐，否则可能导致酸进入肺部，并引起永久性伤害或死亡。咨询医生。 Lead: Consult physician immediately. 铅：立即咨询医生。

5. FIRE FIGHTING MEASURES 消防措施

Flash Point 闪点	Not applicable unless individual components exposed.
Auto ignition	No data available. 不适用，除非单组分暴露。
Temperature 自燃点	无可用数据
Flammable Limits 爆炸极限：	LEL（爆炸下限）= 4.1% (Hydrogen Gas in air 空气中氢气浓度)；UEL（爆炸上限）= 74.2%
Extinguishing	CO ₂ ; foam; dry chemical. Do not use carbon dioxide directly on cells. Avoid breathing vapors. Use appropriate media for surrounding fire. 二氧化碳；泡沫；干粉。不要对着电池直接使用二氧化碳，避免吸入。电池周边火灾使用合适介质灭火。
Media 灭火介质	
Special Fire Fighting Procedures 特殊的灭火措施：	Use positive pressure, self-contained breathing apparatus. Beware of acid splatter during water application and wear acid-resistant clothing, gloves, face and eye protection. If batteries are on charge, shut off power to the charging equipment, but note that strings of series connected batteries may still pose risk of electric shock even when charging equipment is shut down. 使用正压自给式呼吸器，使用水灭火时谨防酸水飞溅。穿耐酸服，防酸手套、眼镜和面屏。如果电池在充电，先关闭充电设备电源。但请注意使用连接线连接的电池组仍然可能导致触电。

Unusual Fire and Explosion Hazard 异常的火灾爆炸危害 Highly flammable hydrogen gas is generated during charging and operation of batteries. If ignited by burning cigarette, naked flame or spark, may cause battery explosion with dispersion of casing fragments and corrosive liquid electrolyte. Carefully follow manufacturer's instructions for installation and service. Keep away all sources of gas ignition and do not allow metallic articles to simultaneously contact the negative and positive terminals of a battery. Follow manufacturer's instructions for installation and service. 充电过程中产生高度易燃的氢气，如果被点燃的香烟、明火或火星引燃，可能产生电池爆炸引起的碎片和腐蚀性电解液的飞溅。严格遵循制造商的安装和操作指引。远离所有的气体点火源，不允许金属元件同时接触电池的正负极端柱。遵循制造商的安装和服务建议

6: ACCIDENTAL RELEASE MEASURES 泄漏应急处理

Protective Measures to be Taken if Material is Released or Spilled 泄漏应急处理 Stop flow of material, contain/absorb small spills with dry sand, earth, and vermiculite. Do not use combustible materials. If possible, carefully neutralize spilled electrolyte with soda ash, sodium bicarbonate, lime, etc. Wear acid-resistant clothing, boots, gloves, and face shield. Do not allow discharge of un-neutralized acid to sewer. Acid must be managed in accordance with approved local, state, and federal requirements. Consult state environmental agency and/or federal EPA.

围堵物料，防止扩散，用沙土和蛭石吸收小的泄漏物。不要使用可燃物料。如可能的话，用苏打灰/碳酸氢钠/石灰等小心中和溢出的酸。应急处理人员穿戴好防酸工作服，靴子，手套和面屏。不允许将未中和的酸流入下水道。酸的处理应符合当地法规要求，咨询环保机构的要求。

Waste Disposal Method 废弃物处理方法 Dispose of as a hazardous waste. Dispose of in accordance with applicable local, state and federal regulations.

作为危险废物处理，处理依照当地法律法规。

7. HANDLING AND STORAGE 操作与存储

Handling 操作 Unless involved in recycling operations, do not breach the casing or empty the contents of the battery. Handle carefully and avoid tipping, which may allow electrolyte leakage. There may be increasing risk of electric shock from strings of connected batteries. Keep containers tightly closed when not in use. If battery case is broken, avoid contact with internal components. Keep vent caps on and cover terminals to prevent short circuits. Place cardboard between layers of stacked automotive batteries to avoid damage and short circuits. Keep away from combustible materials, organic chemicals, reducing substances, metals, strong oxidizers and water. Use banding or stretch wrap to secure items for shipping.

除涉及回收操作，其他时候请不要打开电池外壳或将电池内部件取出。轻拿轻放，同时避免电池倾翻导致电池中的电解液漏出。电池连接线之间可能增加触电风险。非使用时保持容器紧闭。如果电池外壳破损，避免接触内部物质。保持排气孔塞有效并盖住端柱，以防止短路。在电池堆垛之间放置硬纸板，以防止损坏和短路。远离可燃物、有机化合物、还原物、金属、强氧化剂和水。使用收缩膜和打包带用于运输固定。

Storage 储存 Store batteries under roof in cool, dry, well-ventilated areas separated from incompatible materials and from activities that may create flames, spark, or heat. Store on smooth, impervious surfaces provided with measures for liquid containment in the event of electrolyte spills. Keep away from metallic objects that could bridge the terminals on a battery and create a dangerous short-circuit. Room ventilation is required for batteries utilized for standby power generation. Never recharge batteries in an unventilated, enclosed space. 电池储存在通风良好、干燥、温度适宜的带顶棚区域，远离不相容物质，存储区域周边杜绝可能产生火焰、火花和高温的活动。储存区域平滑、有不透水层，有液体容器应对电解液泄漏。远离金属物体，避免电池正负极端柱短接带来危险。使用电池作为备用发电的房间需要保持通风。严禁在不通风、密闭的空间内进行电池充电。

Charging: 充电 There is a possible risk of electric shock from charging equipment and from strings of series connected batteries, whether or not being charged. Shut-off power to chargers whenever not in use and before detachment of any circuit connections. Batteries being charged will generate and release flammable hydrogen gas. Charging space should be ventilated. Keep battery vent caps in position. Prohibit smoking and avoid creation of flames and sparks nearby. Wear face and eye protection when near batteries being charged. 不论是否充电，充电设备和使用电线联接的电池组都可能带来触电风险。电池停止使用或拆分电池联接线时，关闭充电设备电源。正在充电的电池会释放易燃的气体，充电区域需要保持通风。保持电池的通气口在原位。禁止吸烟，同时避免其他产生火星、火花或高温的活动。

Other 其他 Follow Manufacturers Recommendations regarding maximum recommended currents and operating temperature range. Do not overcharge beyond the recommended upper charging voltage limit. Applying pressure or deforming the battery may lead to disassembly followed by eye, skin and throat irritation. 遵循制造商推荐的关于电流和操作温度范围的建议。不要超压充电。电池受压或变形可能导致电池损坏，并对眼睛、皮肤和咽喉造成刺激。

8. EXPOSURE CONTROLS / PERSONAL PROTECTION 暴露控制/个人防护

Occupational exposure limits 职业接触限值

US OSHA Specifically Regulated Substances (29 CFR 1910.1001 – 1050) 美国 OSHA 特别规定化学品

Ingredient 成分	CAS Number	Type 类型	Value 限值
Lead 铅	7439-92-1	TWA	0.05 mg/m ³
Lead Oxide 二氧化铅	1309-60-0	TWA	0.05 mg/m ³
Lead Sulfate 硫酸铅	7446-14-2	TWA	0.05 mg/m ³

US OSHA Table Z-1 Limits for Air Contaminants (29CFR 1910.1000) 美国 OSHA 特别规定化学品

Ingredient 成分	CAS Number	Type 类型	Value 限值
Sulfuric Acid 酸	7664-93-9	PEL	1 mg/m ³

US ACGIH Threshold Limit Values 美国 ACGIH 协会阈值

Ingredient 成分	CAS Number	Type 类型	Value 限值	Form 形式
Lead 铅	7439-92-1	TWA	0.05 mg/m ³	
Lead Oxide 氧化铅	1309-60-0	TWA	0.05 mg/m ³	
Lead Sulfate 硫酸铅	7446-14-2	TWA	0.05 mg/m ³	
Sulfuric Acid 酸	7664-93-9	TWA	0.2 mg/m ³	Thoracic Fractions

US NIOSH: Pocket Guide to Chemical Hazards 美国职业安全与卫生研究院：化学危害口袋指南

Ingredient 成分	CAS Number	Type 类型	Value 限值
Lead 铅	7439-92-1	TWA	0.05 mg/m ³
Lead Oxide 氧化铅	1309-60-0	TWA	0.05 mg/m ³
Sulfuric Acid 酸	7664-93-9	TWA	1 mg/m ³

International Exposure Limits 国际暴露限值 (mg/m³)

*Chemical & Common Name 化学品 & 通用名称	Quebec PEV	Ontario OEL	EU OEL	China 中国
铅和铅化合物（无机） Lead and Lead Compounds (inorganic)	0.05	0.05	0.15 (a)	0.05 铅尘 0.03 铅烟
电解液（硫酸/水） Electrolyte (H ₂ SO ₄ /H ₂ O)	1	0.2	0.05 (b)	1 -TWA 2 -STEL

(a) As inhalable aerosol 可吸入物 (b) Thoracic fraction 胸腔部分

Biological limit values 生物限值

ACGIH Biological Exposure Indices 美国工业协会生物暴露限值

Ingredient 原料	Value 限值	Determinant 决定因素	Specimen 样品	Sampling Time 取样时间
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Lead 铅	300 µg/l	Lead 铅	Blood 血	*
Lead Oxide 氧化铅	300 µg/l	Lead 铅	Blood 血	*
Lead Sulfate 硫酸铅	300 µg/l	Lead 铅	Blood 血	*

* - For Sampling details please see the source document. 取样细节请参见原文档。

Engineering Controls (Ventilation): 工程控制 (通风):

Store and handle in well-ventilated area. If mechanical ventilation is used, components must be acid-resistant. Handle batteries cautiously, do not tip to avoid spills. Make certain vent caps are on securely. If battery case is damaged, avoid bodily contact with internal components. Wear protective clothing, eye and face protection, when filling, charging, or handling batteries. Do not allow metallic materials to simultaneously contact both the positive and negative terminals of the batteries. Charge batteries in areas with adequate ventilation. General dilution ventilation is acceptable. 在通风良好的区域内储存和操作。如果使用了机械通风, 部件必须是耐酸的, 通风等级应和条件匹配。小心处理电池, 不要翻倒电池, 否则可能导致泄漏。确保顶盖盖好。如果电池外壳损坏, 当充装、充电或处理电池时, 避免身体接触内部部件。佩戴防护服, 眼睛和面部防护。不允许金属物质同时接触电池正负极, 充电区域应有足够通风。一般的稀释通风是可接受的。

Respiratory Protection: 呼吸防护

NONE REQUIRED FOR NORMAL HANDLING OF THE FINISHED PRODUCT. 成品电池的正常处理无防护要求。

When concentrations of sulfuric acid mist are known to exceed PEL, use NIOSH or MSHA-approved respiratory protection, or meet local regulatory required respirator (like GBT 18664 compliance in China). 当硫酸酸雾浓度超过容许暴露限值时, 使用 NIOSH/MSHA 许可的呼吸防护或符合国家标准(如 GBT18664)要求的防酸面罩。

Skin Protection: 皮肤防护:

NONE REQUIRED FOR NORMAL HANDLING OF THE FINISHED PRODUCT. 成品电池的正常处理无防护要求。

If battery case is damaged, use rubber or plastic acid-resistant gloves with elbow-length gauntlet, acid-resistant apron, clothing and boots. 如果电池外壳损坏, 使用的橡胶或其他耐酸的保护至肘部位置的长手套, 耐酸的围裙, 衣裤和靴子。

Eye Protection: 眼部防护:

NONE REQUIRED FOR NORMAL HANDLING OF THE FINISHED PRODUCT. 成品电池的正常处理无防护要求。

If necessary to handle damage product where exposure to the organic electrolyte is a possibility, chemical splash goggles and a face shield are recommended. 如果需要处理损坏的产品, 可能接触到电池内部电解液时, 请佩戴防化学飞溅的防护眼镜和防护面屏。

Other Protection: 其他防护措施:

In areas where water and sulfuric acid solutions are handled in concentrations greater than 1%, emergency eyewash stations and showers should be provided, with unlimited water supply. Chemically impervious apron and face shield recommended when adding water or electrolyte to batteries. Wash Hands after handling. 在任何硫酸溶液处理浓度大于 1% 的区域, 应提供紧急洗眼器和淋浴装置, 并保证不断水供应。给电池添加水或电解液时, 推荐使用防化围裙和防护面罩。操作后洗手。

9. PHYSICAL AND CHEMICAL PROPERTIES 物理和化学特性

Appearance and Odor 外观和气味	Manufactured article; no apparent odor. Electrolyte is a clear liquid with a sharp, penetrating, pungent odor. 制成品; 无明显气味。电解液为透明液体, 具有辛辣的气味。
Odor Threshold 气味阈值	Not applicable. 不适用。
pH	Not applicable 不适用
Boiling Point 沸点	Not applicable unless individual components exposed. 不适用, 除非个别组件暴露 Battery Electrolyte (Acid) - 230 - 233.6 °F (110 - 112 °C) Lead - 3191 °F (1755 °C)

	电池电解液（酸） - 230 - 233.6 °F (110 - 112 °C)
	铅 - 3191 °F (1755 °C)
Melting Point 熔点	Lead - 621.32 °F (327.4 °C) 铅- 621.32 °F (327.4 °C)
Specific Gravity 比重(H₂O = 1)	1.215 to 至 1.350
Flash Point 闪点	498.2 °F (259.0 °C) Hydrogen 氢
Evaporation Rate 蒸发率 (Butyl Acetate 乙酸乙酯 = 1)	< 1
Vapor Pressure (mm Hg @ 20 ° C) 蒸汽压	Battery Electrolyte (Acid) 11.7 电解液（酸） 11.7
Flammability 可燃性	
Upper/lower flammability or explosive limits 上/下自燃或爆炸极限	Hydrogen 氢 Flammability Limit Lower 爆炸极限下- 4.1 % Flammability Limit Upper 爆炸极限上 - 74.2 %
Vapor Pressure 蒸汽压	Not applicable. 不适用
Vapor Density 蒸汽密度	3.4 (Air 空气 = 1) Battery Electrolyte (Acid) 电池电解液
Relative Density 相对密度	1.21 - 1.3 Battery Electrolyte (Acid) 电池电解液（酸）
Solubility 水溶性	Lead and Lead dioxide are not soluble. 100 % Battery Electrolyte (Acid). 铅和氧化铅不可溶， 电池电解液（酸） 100%溶于水
% Volatile by Weight 挥发性重量比	Not applicable unless individual components exposed. 不适用， 除非内部组件暴露。 .
Partition coefficient (n-octanol/water) 分配系数（辛醇/水）	Not applicable 不适用
Auto-ignition temperature 自燃温度	1076 °F (580 °C) Hydrogen. 1076 °F (580 °C) 氢
Decomposition temperature 分解温度	Not applicable 不适用
Viscosity 粘度	Not applicable 不适用

10. STABILITY AND REACTIVITY 稳定性和反应

Stability 稳定性	The sealed battery is considered stable. 密封蓄电池考虑为稳定性的产品。
Conditions to Avoid 避免接触条件	Sparks and other sources of ignition; high temperature; over charging. 火花和其他来源的明火； 高温； 过充。
Incompatibility (materials to avoid) 不相容物质（需避免材料）	Electrolyte: Contact with combustibles and organic materials may cause fire and explosion. Also reacts violently with strong reducing agents, metals, sulfur trioxide gas, strong oxidizers, and water. Contact with metals may produce toxic sulfur dioxide fumes and may release flammable hydrogen gas. 电解质： 接触易燃物和有机材料可能会导致火灾和爆炸。与强发生强烈反应， 还原性物质， 金属， 三氧化硫气体， 强氧化剂， 和水发生剧烈反应。与金属反应可能产生有毒的二氧化硫气体和易燃的氢气。 Lead compounds: Avoid contact with strong acids, bases, halides, halogenates, potassium nitrate, permanganate, peroxides, nascent hydrogen, and reducing agents. 铅化合物： 避免接触强酸， 碱， 卤化物， 硝酸钾， 高锰酸盐， 过氧化物， 还原物等。 Arsenic compounds: strong oxidizers; bromine azide. NOTE: hydrogen gas can react with inorganic arsenic to form the highly toxic gas – arsine

砷化物：强氧化剂；三氯化溴。提示：氢气可以与无机砷发生反应生成剧毒气体一肿

Hazardous Decomposition Products 有害分解产物

Electrolyte: Sulfur trioxide, carbon monoxide, sulfuric acid mist, sulfur dioxide, hydrogen sulfide.

电解液：三氧化硫、一氧化碳、二氧化硫、硫化氢和硫酸雾。

Lead compounds: Temperatures above the melting point are likely to produce toxic metal fume, vapor, or dust; contact with strong acid or base or presence of nascent hydrogen may generate highly toxic arsine gas.

铅化合物：温度高于铅的熔点温度可能会产生有毒金属烟雾、蒸汽或灰尘，接触强酸或碱或氢可能产生剧毒气体-肿

Hazardous Polymerization
聚合危害

Will not occur. 不会发生。

11. TOXICOLOGICAL INFORMATION 毒理学信息

NOTE: Under normal conditions of use, this product does not present a health hazard. The following information is provided for organic electrolyte and lead exposure that may occur due to container breakage or under extreme conditions such as fire. Organic electrolyte – reacts with moisture/water to produce hydrofluoric acid in trace quantities. Hydrofluoric acid is extremely corrosive and toxic. In severe exposures it acts as a systemic poison and causes severe burns. The reaction may be delayed. Any contact with this material, even minor, requires immediate medical attention.

提示：正常使用情况下，本产品不会对健康产生危害。以下信息适用于当电池盒破裂或在极端条件如着火情况发生的电解液或铅泄漏。

ROUTES AND METHODS OF ENTRY 侵入途径

Inhalation 吸入毒性

EXPOSURE IS NOT EXPECTED FOR PRODUCT UNDER NORMAL CONDITIONS OF USE. 正常条件下使用不会发生。

Sulfuric Acid: Breathing of sulfuric acid vapors or mists may cause severe respiratory irritation.

Lead Compounds: Inhalation of lead dust or fumes may cause irritation of upper respiratory tract and lungs.

酸：吸入硫酸蒸汽或酸雾可能导致严重的呼吸道过敏。

铅化合物：吸入铅尘或铅烟可能对上呼吸道和肺部产生刺激。

Skin Contact 皮肤接触

EXPOSURE IS NOT EXPECTED FOR PRODUCT UNDER NORMAL CONDITIONS OF USE. 正常条件下使用不会发生。

Sulfuric Acid: Severe irritation, burns and ulceration.

Lead Compounds: Not absorbed through the skin.

酸：严重刺激、烧伤和腐蚀。

铅化合物：不通过皮肤吸收。

Skin Absorption 皮肤吸收

EXPOSURE IS NOT EXPECTED FOR PRODUCT UNDER NORMAL CONDITIONS OF USE. 正常条件下使用不会发生。

In the event of overcharging or damage to the unit, exposure to organic electrolyte solution/mist is possible. Extreme exposures to the organic electrolyte can be absorbed through the skin.

在过度充电或损坏电池，导致有机电解液（酸）或酸雾暴露则可能导致皮肤吸收。在有机电解液中过度暴露可通过皮肤吸收。

Eye Contact 眼睛接触**EXPOSURE IS NOT EXPECTED FOR PRODUCT UNDER NORMAL CONDITIONS OF USE.**

正常条件下使用不会发生。

Sulfuric Acid: Severe irritation, burns, cornea damage, and blindness.

Lead Compounds: May cause eye irritation.

酸: 严重的刺激和烧伤, 角膜损伤和失明。

铅化合物: 可能引起眼睛刺激。

Ingestion 摄入**EXPOSURE IS NOT EXPECTED FOR PRODUCT UNDER NORMAL CONDITIONS OF USE.**

正常条件下使用不会发生。

Sulfuric Acid: May cause severe irritation of mouth, throat, esophagus and stomach.

Lead Compounds: Acute ingestion may cause abdominal pain, nausea, vomiting, diarrhea and severe cramping. This may lead rapidly to systemic toxicity and must be treated by a physician.

硫酸: 可能引起口腔、咽喉、食道和胃严重过敏反应。

铅化合物: 急性摄入可能会引起腹痛、恶心、呕吐、腹泻和严重痉挛。并可能导致全身毒性, 需要接受医疗救助。

SIGNS AND SYMPTOMS OF OVEREXPOSURE 急性和慢性接触的迹象**Acute Effects 急性毒性****EXPOSURE IS NOT EXPECTED FOR PRODUCT UNDER NORMAL CONDITIONS OF USE. 正常条件下使用不会发生。**

Sulfuric Acid: Severe skin irritation, damage to cornea, upper respiratory irritation.

Lead Compounds: Symptoms of toxicity include headache, fatigue, abdominal pain, loss of appetite, muscular aches and weakness, sleep disturbances and irritability

硫酸: 严重的皮肤过敏, 眼角膜损伤和上呼吸道刺激。

铅化合物: 中毒的症状包括头痛、疲劳、腹痛、食欲不振、肌肉疼痛和虚弱、睡眠障碍和易怒。

Chronic Effects 慢性毒性**EXPOSURE IS NOT EXPECTED FOR PRODUCT UNDER NORMAL CONDITIONS OF USE. 正常条件下使用不会发生。**

Sulfuric Acid: Possible erosion of tooth enamel, inflammation of nose, throat & bronchial tubes.

Lead Compounds: Anemia; neuropathy, particularly of the motor nerves, with wrist drop; kidney damage; reproductive changes in males and females. Repeated exposure to lead and lead compounds in the workplace may result in nervous system toxicity. Some toxicologists report abnormal conduction velocities in persons with blood lead levels of 50 µg/100 ml or higher. Heavy lead exposure may result in central nervous system damage, encephalopathy and damage to the blood-forming (hematopoietic) tissues.

硫酸: 可能牙齿侵蚀, 鼻子发炎, 喉咙&支气管发炎。铅化合物: 贫血, 神经病, 尤其是运动神经, 带有腕下垂; 肾损伤; 生殖变异。铅和铅化合物工作场所的重复暴露可能产生神经系统中毒。一些毒理性报告显示血铅超过 50µg/100 ml 或更高时有异常的体内传导速率。严重的铅暴露可能产生中枢神经系统损坏, 大脑和造血系统损坏。

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE 健康危害效应

Overexposure to sulfuric acid mist may cause lung damage and aggravate pulmonary conditions. Contact of sulfuric acid with skin may aggravate diseases such as eczema and contact dermatitis. Lead and its compounds can aggravate some forms of kidney, liver and neurologic diseases. 过度暴露于硫酸酸雾中可能会导致肺损伤并加重肺结核。硫酸与皮肤接触可能会加重湿疹、接触性皮炎等疾病。铅及其化合物会加重某些形式的肾脏、肝脏和神经系统疾病。

ADDITIONAL HEALTH DATA 其他健康数据

All heavy metals, including the hazardous ingredients in this product, are taken into the body primarily by inhalation and ingestion. Most inhalation problems can be avoided by adequate precautions such as ventilation and respiratory protection covered in Section 8. Follow good personal hygiene to avoid inhalation and ingestion: wash hands, face, neck and arms thoroughly before eating, smoking or leaving the work site. Keep contaminated clothing out of non-contaminated areas, or wear cover clothing when in such areas. Restrict the use and presence of food, tobacco and cosmetics to non-contaminated areas. Work clothes and work equipment used in contaminated areas must remain in designated areas and never taken home or laundered with personal non-

contaminated clothing. This product is intended for industrial use only and should be isolated from children and their environment.

所有重金属，包括本产品的有害成分，主要由吸入和食入进入人体。通过通风和呼吸防护等足够的预防措施可以避免大多数的吸入问题。保持良好的个人卫生吸入和食入：进食、吸烟或离开工作岗位时彻底清洗；脸部、手部、脖子和手臂。受污染的衣服不穿到干净区域，或者受污染衣服外套干净外套。严禁将受污染的衣服带入存放食物、香烟和化妆品等的干净区域。在污染区域使用的工作服和设备、工具放置在指定区域，严禁带回家或与未受污染的衣服一起清洗。该产品仅适用于工业用途，远离儿童及儿童所处环境范围。

The 19th Amendment to EC Directive 67/548/EEC classified lead compounds, but not lead in metal form, as possibly toxic to reproduction. Risk phrase 61: May cause harm to the unborn child, applies to lead compounds, especially soluble forms.

根据欧盟 67/548/EEC 第 19 条指令分类铅化合物，即使不是在金属形式，对生殖性有毒害。风险 61：可能对未出生的婴儿造成伤害。-适用于铅化合物、尤其是可溶性化合物。

Toxicological Data 毒理学数据

Constituents 成分

Species 生物

Test Results

Sulfuric Acid (CAS 7664-93-9) 酸

Acute

Oral 口服

LD50

Rat 白
鼠

2140 mg/kg

CARCINOGENICITY 致癌性

Sulfuric Acid: The International Agency for Research on Cancer (IARC) has classified "strong inorganic acid mist containing sulfuric acid" as a Category I carcinogen, a substance that is carcinogenic to humans. This classification does not apply to liquid forms of sulfuric acid or sulfuric acid solutions contained within a battery. Inorganic acid mist (sulfuric acid mist) is not generated under normal use of this product. Misuse of the product, such as overcharging, may result in the generation of sulfuric acid mist.

Lead Compounds: Lead is listed as a Group 2A- carcinogen, likely in animals at extreme doses. Per the guidance found in OSHA 29 CFR 1910.1200 Appendix F, this is approximately equivalent to GHS Category 1A. Proof of carcinogenicity in humans is lacking at present.

硫酸：国际癌症研究机构（IARC）将“含有硫酸雾的强无机酸”作为致癌类 I 级致癌物质。这种分类并不适用于液体形式的硫酸，或作为电池电解液的硫酸。正常使用本产品不会产生硫酸酸雾。不正当地使用本产品，如过度充电等可能导致硫酸酸雾的产生。

铅化合物：铅被列为 2A 类的致癌物质，可能在动物体内有极端的剂量。根据 OSHA29 CFR1910.1200 附录 F，约相当于 GHS1A 类物质。目前缺乏致人类致癌性的证据。

IARC Monographs. Overall Evaluation of Carcinogenicity IARC 专题论文。综合评价的致癌性。

Lead 铅(CAS 7439-92-1)

2A Probably carcinogenic to humans. 2A 类致癌物质

Lead oxide 氧化铅 (CAS 1309-60-0)

2A Probably carcinogenic to humans. 2A 类致癌物质

Lead sulfate 硫酸铅 (CAS 7446-14-2)

2A Probably carcinogenic to humans. 2A 类致癌物质

NTP Report on Carcinogens 致癌物标准报告

Lead oxide 氧化铅 (CAS 1309-60-0)

Reasonably Anticipated to be a Human Carcinogen. 预期合理性人类致癌物

Lead sulfate 硫酸铅 (CAS 7446-14-2)

Reasonably Anticipated to be a Human Carcinogen. 预期合理性人类致癌物

OSHA Specifically Regulated Substances. (29 CFR 1910.1001-1050) OSHA 特别规定化学品

Not listed. 未列出。

Reproductive toxicity 生殖毒性

May damage fertility or the unborn child. 可能会损害生殖能力或未出生的婴儿

Specific target organ toxicity - single exposure 特异性靶器官系统毒性—单一来源	No data available. 无数据支持
Specific target organ toxicity repeated exposure 特异性靶器官系统毒性重复暴露	Lead: May cause damage to organs (blood, central nervous system) through prolonged or repeated exposure. 铅: 长时间或反复接触可能引起器官损害(血液, 中枢神经系统)
Aspiration hazard 吸入性危害物质	Not classified. 未分类

12. ECOLOGICAL INFORMATION 生态学资料

Environmental Fate 环境趋势	Lead is very persistent in soil and sediments. No data on environmental degradation. Mobility of metallic lead between ecological compartments is slow. Bioaccumulation of lead occurs in aquatic and terrestrial animals and plants but little bioaccumulation occurs through the food chain. Most studies include lead compounds and not elemental lead 铅在土壤和沉积物维持很久。环境恶化方面没有数据。铅在生态学分室中的移动时很缓慢的。水生生物、陆生生物和植物体内积累铅, 但通过食物链积累的量很小。大多数的研究不包含铅化合物和元素铅。
Environmental toxicity 环境毒害	Aquatic Toxicity: 水生动物毒害
Sulfuric Acid 硫酸	24-hr LC50, freshwater fish (Brachydanio rerio 斑马鱼): 82 mg/L 淡水鱼 24-小时半数致死的浓度 96 hr- LOEC, freshwater fish (Cyprinus carpio 鲤鱼): 22 mg/L 淡水鱼 96-小时最低有影响的浓度
Lead 铅	48 hr LC50 (modeled for aquatic invertebrates 水生无脊椎动物模型): <1 mg/L, based on lead bullion 基于铅锭
Additional Information 附加说明	No known effects on stratospheric ozone depletion 没有任何已知的对平流层臭氧损耗的影响 Volatile organic compounds: 0% (by Volume) 挥发性有机化合物:0%(按体积) Water Endangering Class (WGK): NA 水危害类(WGK):NA

13. DISPOSAL CONSIDERATIONS 废弃物处置

Waste disposal method 废物处置方法	Material should be recycled if possible. Lead-acid batteries are completely recyclable. Dispose waste and residues in accordance with applicable federal, state, and local regulations. 材料尽可能地回收。铅酸蓄电池是可以完全回收的。处理废物和残留物依照当地法规。
Hazardous waste code 危废代码	D008: Lead D008:铅 (China) HW49: 900-044-49 waste lead battery (中国)废弃的铅蓄电池 HW49:900-044-49
Waste from residues / unused products 废料残留 / 未使用的产品	Dispose of in accordance with local regulations. Empty containers or packaging may retain some product residues. This material and its container must be disposed of in a safe manner (see: Disposal instructions). 根据当地法规处理, 空的容器或包装可能保留一些残留物。这种物质及其容器必须堆放在一个安全的地方。(参见处置方法)
Contaminated packaging 受污染的包装	Empty containers should be taken to an approved waste handling site for recycling or disposal. 空的容器应移到批准的或资质废物处理场所回收或处置。

14. TRANSPORT INFORMATION 运输信息

Note: Transportation requirements do not apply once the battery pack has been installed in a vehicle as part of the vehicle's functional components. 提示: 当电池被组装到汽车中, 作为汽车功能组件的一部分时, 该运输要求不适用。

United States DOT: 美国 DOT:

DOT rules specified in 49 CFR 173.59 regulate the transport of wet spillable batteries.

49 CFR 173.59 (e) specifies that when transported by highway or rail, electric storage batteries containing electrolyte or corrosive battery fluid are not subject to any other requirements of this subchapter, if all of the following are met:

- (1) No other hazardous materials may be transported in the same vehicle;
- (2) The batteries must be loaded or braced so as to prevent damage and short circuits in transit;
- (3) Any other material loaded in the same vehicle must be blocked, braced, or otherwise secured to prevent contact with or damage to the batteries; and
- (4) The transport vehicle may not carry material shipped by any person other than the shipper of the batteries.

If any of these requirements are not met, the batteries must be shipped as hazardous materials

GB12268: If no any leakage after vibration and pressure test, it can be regarded as sealed battery. Meanwhile, if there is terminal protection for package and no leakage with temperature of 55 degree centigrade, it can be shipped as non-dangerous goods.

DOT 在 49 CFR 173.59 章节中规定湿的电池运输：当在高速公路或铁路运输时，含有电解液或腐蚀性电池液体的电池不属于要求，如果以下所有条件满足：

- (1) 在同一辆车上没有其他危险物质在运输
- (2) 电池必须被捆扎或固定牢固，以防止损坏或短路
- (3) 任何同一辆车上的其他材料应被隔离，支撑牢固，或者可靠防止接触或损坏电池
- (4) 运输车辆除了装运电池，不装运任何个人的物品

如果上述任何一条要求未满足，电池应作为危险货物运输。

Proper Shipping name	完整运输名称	Batteries, Wet, Filled with Acid 蓄电池，湿的，装有酸液的
UN number	UN 号	UN2794
Hazard classification	危险分类	8
Packing group	包装类别	III
Labels	标签	Corrosive 腐蚀性物品

根据 GB12268 规定，如果能通过振动试验和压差试验而没有电池液泄漏，则认为是密封的。另外在 55 摄氏度时电解液不会泄漏，而且包装供运输时对电极作了防短路保护，则可不作为危险货物运输。

IATA 国际航空运输协会

Proper Shipping name	完整运输名称	Batteries, Wet, Filled with Acid 蓄电池，湿的，装有酸液的
Packing group	包装类别	None 无
Hazardous class	危险等级	8
Label/Placard Required	标签/海报要求	Corrosive 腐蚀性物品
UN Identification	UN 识别	UN2794
Environmental Hazards	环境危害	No
ERG Code	EGR 代码	8L
Reference	参考	IATA packing instructions 870 (IATA DRG Edition 54) 国际航空运输协会包装要求 870 条

IMDG 国际海上危险货物运输规则

Proper Shipping name	完整运输名称	Batteries, Wet, Filled with Acid 蓄电池，湿的，装有酸液的
Packing group	包装类别	N/A
Hazardous class	危险等级	8
Label/Placard Required	标签/海报要求	Corrosive
UN Identification	UN 识别	UN2794
Environmental Hazards	环境危害	No
EmS	快递	F-A, S-B
Reference	参考	IMDG packing instructions P801 国际海上危险货物运输规则包装要求 P801 条

15. REGULATORY INFORMATION 法规信息

This product is an article pursuant to 29 CFR 1910.1200 and as such is not subjected to the OSHA Hazard Communication Standard. 该产品说明书依据 29 CFR 1910.1200 规则, 所以不遵从 OSHA 危害通信标准

TSCA 美国有毒物质控制法

TSCA Section 8b – Inventory Status: 美国有毒物质控制法 8 (b) 章- 库存状况

Inventory Status: All chemicals comprising this product are either exempt or listed on the TSCA Inventory. 库存状况: 所有组成本产品的化学品都被豁免或者在美国有毒物质控制法目录中。

TSCA Section 12b (40 CFR Part 707.60(b)) 美国有毒物质控制法 12 (b) 章

No notice of export will be required for articles, except PCB articles, unless the Agency so requires in the context of individual section 5, 6, or 7 actions.

TSCA Section 13 (40 CFR Part 707.20) 出口不要求通告

No import certification required (EPA 305-B-99-001, June 1999, Introduction to the Chemical Import Requirements of the Toxic Substances Control Act, Section IV.A) 不需要进口许可证

OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)

Lead (CAS 7439-92-1) 铅	Reproductive toxicity 生殖毒性 Central nervous system 中枢神经系统 Kidney 肾脏 Blood 血液 Acute toxicity 急性中毒
Lead Oxide (CAS 1309-60-0) 氧化铅	Reproductive toxicity 生殖毒性 Central nervous system 中枢神经系统 Kidney 肾脏 Blood 血液 Acute toxicity 急性中毒
Lead Sulfate (CAS 7446-14-2) 硫酸铅	Reproductive toxicity 生殖毒性 Central nervous system 中枢神经系统 Kidney 肾脏 Blood 血液 Acute toxicity 急性中毒

EPA SARA Title III 环境保护 SARA III 类

Section 302 EPCRA Extremely Hazardous Substances (EHS) 特别危害物质:

Sulfuric acid is a listed "Extremely Hazardous Substance" under EPCRA, with a Threshold Planning Quantity (TPQ) of 1,000 lbs. EPCRA Section 302 notification is required if 500 lbs. or more of sulfuric acid is present at one site (40 CFR 370.10). For more information consult 40 CFR Part 355.

Section 304 CERCLA Hazardous Substances 危害物质:

Reportable Quantity (RQ) for spilled 100% sulfuric acid under CERCLA (Superfund) and EPCRA (Emergency Planning and Community Right to Know Act) is 1,000 lbs. State and local reportable quantities for spilled sulfuric acid may vary. 在应急响应和 CERCLA 规定下纯硫酸达到 1000 磅泄漏应报告

Section 311/312 Hazard Categorization 危害分类:

EPCRA Section 312 Tier Two reporting is required for non-automotive batteries if sulfuric acid is present in quantities of 500 lbs. or more and/or if lead is present in quantities of 10,000 lbs. or more. For more information consult 40 CFR 370.10 and 40 CFR 370.40 非汽车电池如达到硫酸量为 500lbs 和/或铅达到 10,000lbs 应报告。

Section 313 EPCRA Toxic Substances: 毒性物质

40 cfr section 372.38 (b) states: If a toxic chemical is present in an article at a covered facility, a person is not required to consider the quantity of the toxic chemical present in such article when determining whether an applicable threshold has been met under § 372.25, § 372.27, or § 372.28 or determining the amount of release to be reported under § 372.30. This exemption applies whether the person received the article from another person or the person produced the article. However, this exemption applies only to the quantity of the toxic chemical present in the article.

Supplier Notification 供应商通知:

This product contains toxic chemicals that may be reportable under EPCRA Section 313 Toxic Chemical Release Inventory (Form R) requirements. For a manufacturing facility under SIC codes 20 through 39, the following information is provided to enable you to complete the required reports: 含有毒性化学品应按规定报告

RCRA

Spent Lead Acid Batteries are subject to streamlined handling requirements when managed in compliance with 40 CFR section 266.80 or 40 CFR part 273. Waste sulfuric acid is a characteristic hazardous waste; EPA hazardous waste number D002 (corrosively) and D008 (lead). 废硫酸应作为危害废弃物, EPA 的危害分类号 D0002 (腐蚀性) 和 D008 (铅)

Other federal regulations 其他联邦法规

Clean Air Act (CAA) Section 112 Hazardous Air Pollutants (HAPs) List 清洁空气法案第 112 节有害空气污染物(也许不久)列表

Lead 铅 (CAS 7439-92-1)

Lead Oxide 氧化铅 (CAS 1309-60-0)

Lead Sulfate 硫酸铅 (CAS 7446-14-2)

Clean Air Act (CAA) Section 112(r) Accidental Release Prevention (40 CFR 68.130) 清洁空气法案(CAA)Section 112(r)预防意外释放

Lead Sulfate 硫酸铅 (CAS 7446-14-2)

Safe Drinking Water Act (SDWA) 饮用水安全法案

Not regulated 无规定

Drug Enforcement Administration (DEA). List 2, Essential Chemicals (21 CFR 1310.02(b) and 1310.04(f)(2) and Chemical Code Number 禁药取缔机构, 表 2, 基本的化学物质 (21CFR 1310.92 (b) 和 1310.04(f)(2)和化学品编码。

Sulfuric acid 酸(CAS 7664-93-9) 6552

Drug Enforcement Administration (DEA). List 1 & 2 Exempt Chemical Mixtures (21 CFR 1310.12(c)) 禁药取缔机构, 列表 1 和列表 2, 豁免的化学混合物列表(21 CFR 1310.12(c))。

Sulfuric acid 酸 (CAS 7664-93-9) 20 % WV

DEA Exempt Chemical Mixtures Code Number DEA 化学品混合物编码

Sulfuric acid 酸 (CAS 7664-93-9) 6552

US State Regulations 美国州规范

US. Massachusetts RTK – Substance List 马萨诸塞州 RTK -物质列表

Lead 铅 (CAS 7439-92-1)

Lead Oxide 氧化铅 (CAS 1309-60-0)

Lead Sulfate 硫酸铅(CAS 7446-14-2)

US New Jersey Worker and Community Right-to-know Act 新泽西的工人和社区知情权法案

Lead 铅 (CAS 7439-92-1)

Lead Oxide 氧化铅 (CAS 1309-60-0)

Lead Sulfate 硫酸铅 (CAS 7446-14-2)

Sulfuric acid 酸 (CAS 7664-93-9)

US Pennsylvania Worker and Community Right-to-know Law 宾夕法尼亚州的工人和社区知情权法律

Lead 铅 (CAS 7439-92-1)

Sulfuric acid 酸 (CAS 7664-93-9)

US Rhode Island RTK 罗德岛 RTK

Lead 铅 (CAS 7439-92-1)

Lead Oxide 氧化铅 (CAS 1309-60-0)

Lead Sulfate 硫酸铅(CAS 7446-14-2)

Sulfuric acid 酸(CAS 7664-93-9)

US. California Proposition 65 加州 65 号提案

WARNING: This product contains chemicals known to the State of California to cause cancer.

Battery posts, terminals and related accessories contain lead and lead compounds, chemicals known to the state of California to cause cancer and reproductive harm. Wash hands after handling.

警告: 产品含有化学物质导致癌症。电池的端柱和相关配件含有铅和铅化合物,是已知的具有致癌化学成份和生殖危害。处理后洗手。

*Battery companies not party to the 1999 consent judgment with Mateel Environmental Justice Foundation should include a Proposition 65 Warning that complies with the current version of Proposition 65.

US - California Proposition 65 - Carcinogens & Reproductive Toxicity (CRT): Listed substance 未参与 1999 年经环境正义基金会判决同意的电池公司应该有一个 65 号提案警告书,符合当前版本的 65 号提案。美国加州 65 号提案——致癌物质和生殖毒性(CRT):列出的物质

- Lead 铅 (CAS 7439-92-1)
- Lead Oxide 氧化铅 (CAS 1309-60-0)
- Lead Sulfate 硫酸铅(CAS 7446-14-2)
- Sulfuric acid 酸 (CAS 7664-93-9)

International Inventories 国际目录

Country(s) or Region 国家或地区	Inventory Name 目录名称	On inventory (yes/no)* 是否在目录中
United States & Puerto Rico 美国和波多黎哥	Toxic Substances Control Act (TSCA) Inventory 有毒物质控制法目录	Yes 是

* A “Yes” indicates this product complies with the inventory requirements administered by the governing country(s). “是” 表示该产品符合该政府管理要求。

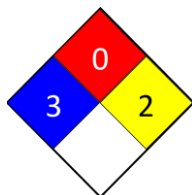
A “No” indicates that one or more components of the product are not listed or exempt from listing on the inventory administered by the governing country(s). “否” 表示产品的一个或多个原料未列出或未在符合管理要求的清单中。

16. OTHER INFORMATION 其他信息

Issue Date 发行日期: 04/01/2015

Further information 更多信息: NFPA Hazard Scale: 0 = Minimal 1 = Slight 2 = Moderate 3=Serious 4 = Severe
NFPA 风险等级: 0=最低, 1=轻微 2=中度, 3=严重, 4= 极度严重

NFPA ratings 评级



Disclaimer 声明

Clarios cannot anticipate all conditions under which this information and its product, or the products of other manufacturers in combination with its product, may be used. It is the user’s responsibility to ensure safe conditions for handling, storage and disposal of the product, and to assume liability for loss, injury, damage or expense due to improper use. The information in the sheet was written based on the best knowledge and experience currently available.

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