

Safety Data Sheet

安全数据表

1. IDENTIFICATION 化学品和企业标识

Product Name: Valve Regulated Battery 产品名称: 阀控式蓄电池 Synonyms: AGM Battery. 同义词: AGM 电池 本安全数据表适用于柯锐世公司生产的各款型号和尺寸的 阀控式电池	Product Use: Vehicle Electrical System 产品用途: 车用电气系统 Manufacturer/Supplier 制造商/供应商: Clarios (Changxing) Power Solutions Co., Ltd. 柯锐世(长兴)电气有限公司 Address 地址: No 1 Chengnan Industry Zone, Changxing, Huzhou, Zhe Jiang, China 浙江省湖州市长兴县城南工业区 1 号
General Information Number 一般信息联系电话: 0572-6850492 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 0532-83889090 国家化学事故应急咨询 0532-83889090

NOTE: The Clarios 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 物理的	
Acute Toxicity (Oral, dermal, inhalation) 急性中毒(口入, 皮肤吸收, 吸入)	Category 4 种类 4	Aquatic 水生物	Chronic 1 慢性 1	Explosive Chemical 爆炸性化学品	Division 1.3 分区 1.3
Skin corrosion/irritation 皮肤腐蚀/刺激	Category 1A 种类 1A	Aquatic 水生物	Acute 1 急性 1		
Eye Damage 眼睛损伤	Category 1 种类 1				
Reproductive 生殖系统	Category 1A 种类 1A				
Carcinogenicity (lead) 致癌性(铅)	Category 2B 种类 2B				
Carcinogenicity (acid mist) 致癌性(酸雾)	Category 1 种类 1				
Specific target organ toxicity (repeated exposure) 特定的目标器官毒性(重复暴露)	Category 2 种类 2				

Label Elements 标签:

Health 健康	Environmental 环境	Physical 物理的
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Hazard Statements 危害描述 DANGER! 危险! Causes severe skin burns 可导致严重皮肤灼伤 Causes serious eye damage 导致严重的眼睛损伤 May damage fertility or the unborn child if ingested or inhaled 吞咽或吸入有害，可能损害生育能力或胎儿 May cause cancer if ingested or inhaled 吞咽或吸入有害，可能产生癌症 Causes damage to central nervous system, blood and kidneys through prolonged or repeated exposure 长期或重复性接触，可能损伤中枢神经系统，血液和肾 May form explosive air/gas mixture during charging 在充电时可能产生爆炸性气体或气体混合物 Extremely flammable gas (hydrogen) 非常易燃气体（氢气） Explosive, fire, blast or projection hazard 易燃易爆的，有火灾、爆炸或抛射危险	Precautionary Statements 预防性措施 Wash thoroughly after handling 在操作之后充分清洗 Do not eat, drink or smoke when using this product 使用该产品时，严禁吃食物，喝水或饮料，吸烟 Wear protective gloves/protective clothing, eye protection/face protection 佩戴防护手套/防护服，眼睛防护/面部防护 Avoid breathing dust/fume/gas/mist/vapors/spray 避免吸入尘/烟/气/雾/蒸汽/喷雾 Use only outdoors or in a well-ventilated area 仅在室外或通风良好区域使用 Causes skin irritation, serious eye damage 产生皮肤刺激，严重眼睛伤害 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刺激或严重灼烧，避免接触里面的酸 Irritating to eyes, respiratory system, and skin 眼睛，呼吸系统和皮肤刺激	

3. COMPOSITION / INFORMATION ON INGREDIENTS 成分/组成信息

INGREDIENTS (Chemical/Common Names) 成分（化学品/常用名）：	CAS No. CAS 号：	% by Wt 重量百分比：
Lead and Lead Compounds 铅及铅化合物	7439-92-1	50 - 80 %
Sulfuric Acid 硫酸	7664-93-9	10 - 30 %
Polypropylene 聚丙烯	9010-79-1	4 - 10%
Fiberglass 玻纤	65997-17-3	1 - 4 %

Composition Comments 成分说明 All concentrations are in percentage by weight. 所有比例是按照重量计算的。

4. FIRST AID MEASURES 急救措施

Note: Under normal conditions of battery use, internal components will not present 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：正常情况下使用电池，内部的成分不会产生健康危害。以下信息是基于电池生产过程、外壳破损或极端温度条件下（如着火）可能产生电池电解液（酸）和铅暴露下提供的。

Inhalation 吸入	Sulfuric Acid: Remove fresh air immediately. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Consult a physician. 硫酸：立即移到新鲜空气处。如果停止呼吸，提供人工呼吸，如呼吸困难，应补充氧气。求助医生。 Lead: Remove from exposure, gargle, wash nose and lips; consult physician. 铅：离开暴露区，漱口，冲洗鼻子和嘴唇，求助医生
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：用大量水冲洗至少 15 分钟；彻底脱掉被污染的衣服，包括鞋子。如果症状持续，请就医。被污染的衣服在重复使用前要清洗。丢弃被污染的鞋子。 Lead: Wash immediately with soap and water. 铅：立即用肥皂和水清洗。
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：打开盖子时，立即用大量水冲洗至少 15 分钟；如果眼睛直接接触酸，请立即就医。
Ingestion 摄入	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：使用大量水；不要诱吐或向肺内呼气，否则可能引起永久性伤害或死亡；求助医生。 Lead: Consult physician immediately. 铅：立即求助医生。

5. FIRE FIGHTING MEASURES 消防措施

Flash Point 闪点	Not applicable unless individual components exposed. 不适用，除非单个成分暴露。
Auto ignition Temperature 自燃点	No data available. 无数据。
Flammable Limit 燃烧极限	LEL = 4.1% (Hydrogen Gas in air) ; UEL = 74.2% 爆炸下限 LEL = 4.1% (氢气在空气中) ; 爆炸上限 UEL = 74.2%
Extinguishing Media 灭火介质	CO2; 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。
Unsuitable Extinguishing Media 不适用的灭火介质	Water 水
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，用水时小心酸飞溅，并穿好耐酸服，手套，面部和眼睛防护用品。如果电池在充电，应先切断电源，并注意切断充电电源后电池之间连接线可能仍然产生触电风险。
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，并引起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。遵循制造商的建议进行安装和维护。

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 acid 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，咨询环保机构或相关政府部门的要求。
Waste Disposal Method 废弃物处置方法	Dispose of as a hazardous waste. Dispose of in accordance with applicable local, state and federal regulations. 作为危险废弃物处置，处置应遵循当地法规要求。

7. HANDLING AND STORAGE 操作处置和储存

Handling & Storage 操作和储存	Store frost-free under roof; prevent short circuits. Do not store in sealed, unventilated areas. Seek agreement with local water authorities in case of larger quantities. Avoid overheating and charging. Do not use organic solvents or anything other than manufacturers recommended cleaners on the batteries. If batteries have to be stored in storage rooms, it is imperative that the instructions for use are observed. 储存在防冻的有屋顶的建筑物内；防止短路。不要储存在密封的，未通风的区域。如果发生大量泄漏应寻求水务部门的要求。避免过热和过充。不要使用有机溶剂或其他任何非制造商建议的清洁剂清洁电池。如果电池必须存放在储存室内，应按照指引要求存储。
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 may generate and release flammable hydrogen gas. Charging space should be ventilated. Prohibit smoking and avoid creation of flames and sparks nearby. Wear face and eye protection when near batteries being charged. 充电设备和电池之间的连接线可能存在触电风险，不管是否在充电过程中。在不使用时，以及断开回路连接之前应断开电源。电池充电时会产生释放易燃的氢气。充电区域应通风。保持电池顶盖归位。禁止吸烟，避免附近产生火焰、火星。当靠近充电电池时，应佩戴面部和眼睛防护用品。
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. 遵循制造商关于最大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、皮肤或喉咙造成刺激。

8. EXPOSURE CONTROLS / PERSONAL PROTECTION 基础控制和个体防护

Occupational exposure limits 职业暴露极限
 US OSHA Specifically Regulated Substances 美国法规定义限值 (29 CFR 1910.1001 – 1050)

Ingredient 成分	CAS Number CAS 号码	Type 类型	Value 限值
Lead 铅	7439-92-1	TWA 加权平均浓度	0.05 mg/m ³

US OSHA Table Z-1 Limits for Air Contaminants 美国 ACGIH 阈值限定值 (29CFR 1910.1000)

Ingredient 成分	CAS Number CAS 号	Type 类别	Value 限值
Sulfuric Acid Absorbed in Glass Fiber 玻璃纤维内吸收的硫酸	7664-93-9	PEL 接触限值	1 mg/m ³

US ACGIH Threshold Limit Values 美国 ACGIH 暴露限值

Ingredient	CAS Number	Type	Value	Form
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成分	CAS 号	类别	限值	形式
Lead 铅	7439-92-1	TWA 加权平均浓度	0.05 mg/m ³	
Sulfuric Acid 硫酸	7664-93-9	TWA 加权平均浓度	0.2 mg/m ³	Thoracic Fractions 胸腔部分

US NIOSH: Pocket Guide to Chemical Hazards 美国 NIOSH: 口袋指南的化学危害

Ingredient 成分	CAS Number CAS 号	Type 类别	Value 限值
Lead 铅	7439-92-1	TWA 加权平均浓度	0.05 mg/m ³
Sulfuric Acid 硫酸	7664-93-9	TWA 加权平均浓度	1 mg/m ³

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

*Chemical & Common Name 化学品 & 通用名称	Quebec PEV 魁北克	Ontario OEL 安大略省	EU OEL 欧盟	China 中国
Lead and Lead Compounds (inorganic) 铅和铅化合物（无机）	0.05	0.05	0.15 (a)	0.05 (Lead Dust 铅尘) 0.03 (Lead Fume 铅烟)
Electrolyte (H ₂ SO ₄ /H ₂ O) 电解液（硫酸/水）	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 成分	Value 限值	Determinant 因子	Specimen 样本	Sampling Time 取样时间
Lead 铅	300 µg/l	Lead 铅	Blood 血液	*

*For Sampling details please see the source document. 采样细节请参照源文件。

Exposure Guidelines 暴露指引:

The OELs listed above are only applicable if the internal components of the battery cell are released. Follow standard monitoring procedures.

以上列出的接触限值（OELs）物质仅在电池单元的内部组件释放出的物质才有效。应遵循标准的采样程序。

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

Store sealed lead acid batteries at ambient temperature. Never recharge batteries in an unventilated, enclosed space. Do not subject product to open flame or fire. Avoid conditions that could cause arcing between terminals.

在合适的环境温度下储存密封铅酸电池。严禁在不通风环境和密闭空间内补充电。不要将产品暴露于明火或火灾中。避免可能短接两个端柱可能产生电弧的状况。

Respiratory Protection (NIOSH/MSHA approved) 呼吸防护 (NIOSH/MSHA 许可的):

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 GB/T18664 compliance in China).

当硫酸的浓度超过接触限值，使用 NIOSH/MSHA 认证的呼吸防护产品或符合国家标准(如 GB/T18664)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 眼睛防护:

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:

Safety footwear meeting the requirements of ANSI Z 41.1 is recommended when it is necessary to handle the finished product.

在处理成品电池时，如必要时，推荐符合 ANSI Z41.1 或符合当地国家标准的安全鞋防护。

General Hygiene Considerations 通用的卫生措施:

When using, do not eat, drink, or smoke. Wash hands after handling. Contaminated work clothing should not be allowed out of the workplace. Handle in accordance with good industrial hygiene and safety practice.
操作使用时，不能进食，饮水，或吸烟。操作后应洗手。污染的工作服不能带出工作场所。操作时应符合良好的工业卫生和安全实践。

9. PHYSICAL AND CHEMICAL PROPERTIES 理化特性

Appearance and Odor 外观和气味	Manufactured article; no apparent odor. 制成品；无明显异味。	
Odor Threshold 气味阈值	Not applicable 不适用。	
pH pH 值	Not applicable 不适用。	
Melting Point 熔点	Lead - 621.32 °F (327.4 °C) 铅 - 621.32 °F (327.4 °C) Not applicable unless individual components exposed. 不适用，除非单个化合物暴露。	
Boiling Point 沸点	Battery Electrolyte (Acid) - 230 - 233.6 °F (110 - 112 °C) 电池电解液 (酸) - 230 - 233.6 °F (110 - 112 °C)。 Lead - 3191 °F (1755 °C) 铅- 3191 °F (1755 °C)。	
Flash Point 闪点	Not applicable 不适用。	
Evaporation Rate (Butyl Acetate = 1) 蒸发率 (乙酸丁酯 = 1)	Not applicable 不适用。	
Vapor Pressure (mm Hg @ 20 °C) 蒸气压 (毫米汞柱 @ 20 °C)	Battery Electrolyte (Acid) 11.7 电池电解液 (酸) 11.7。	
Flammability 易燃性		
Upper/lower flammability or explosive limits 燃烧上/下极限或爆炸极限	Hydrogen 氢气	Flammability Limit Lower- 4.1 % 爆炸下限- 4.1 % Flammability Limit Upper – 74.2 % 爆炸上限 – 74.2 %
Vapor Pressure 蒸气压	10.95 mm Hg (Sulfuric Acid) 10.95 毫米汞柱 (硫酸)	
Vapor Density 蒸气浓度	Not applicable 不适用。	

Relative Density 相对密度	1.21 - 1.3 Battery Electrolyte (Acid) 1.21 - 1.3 电池电解液 (酸)。
Solubility 水溶性	Lead and Lead dioxide are not soluble. 铅 和氧化铅是不溶的。 100 % Battery Electrolyte (Acid) 100 % 电解液(酸)。
% Volatile by Weight 挥发重量比	Not applicable unless individual components exposed. 不适用，除非单个化合物暴露。
Partition coefficient (n-octanol/water) 溶解性（水）	Not applicable 不适用。
Auto-ignition temperature 自燃温度	Not applicable 不适用。
Decomposition temperature 分解温度	Not applicable 不适用。
Viscosity 粘度	Not applicable 不适用。
Density 密度	11.35 g/cm ³ Lead 11.35 g/cm ³ 铅

10. STABILITY AND REACTIVITY 稳定性和反应性

Reactivity 反应稳定性	This product is non-reactive under normal conditions or use, storage, and transport. 产品在正常条件下使用，储存和运输无反应性，密封的电池性质是稳定的。
Stability 稳定性	The sealed battery is considered stable. 密封电池是稳定的。
Conditions to Avoid 避免接触的条件	Sparks and other sources of ignition; high temperature; over charging. 火花和点火源，高温，过度充电。
Incompatibility (materials to avoid) 不相容物质（避免物料）	Acid: 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. 酸：接触可燃和有机物可能导致火灾爆炸。也和强还原剂，金属，三氧化硫气体，强氧化剂和水等强烈反应。和金属接触可能产生毒的二氧化硫烟气，并可能释放易燃的氢气。 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，卤化物，硝酸钾，高锰酸盐，过氧化物，初生态氢和还原剂。
Hazardous Decomposition Products 有害分解产物	Acid: Sulfur trioxide, carbon monoxide, sulfuric acid mist, sulfur dioxide, hydrogen sulfide. 酸：三氧化硫，一氧化碳，硫酸雾，二氧化硫，硫化氢。 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：熔点以上温度下可能产生毒性金属烟，蒸气或尘。接触强酸或初生态氢可能产生高毒性气体。
Hazardous Polymerization 聚合危害	Will not occur 不会产生。

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.

注意：在正常使用条件下，本产品不会对健康造成危害。以下信息是针对由于容器破裂或在诸如火灾等极端条件下可能发生的有机电解质和铅暴露提供的。有机电解质与湿气/水反应产生微量氢氟酸。氢氟酸具有极强的腐蚀性和毒性。在严重的暴露中，它作为一种全身毒药，导致严重的烧伤。这种反应可能会延迟。任何与此材料的接触，即使是轻微的接触，都需要立即就医。

ROUTES AND METHODS OF ENTRY 侵入途径和方法	
Inhalation 吸入	EXPOSURE IS NOT EXPECTED FOR PRODUCT UNDER NORMAL CONDITIONS OF USE. 正常使用产品不会产生暴露。 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. 硫酸: 吸入硫酸酸雾或蒸气可能产生严重的呼吸刺激. 铅化合物: 吸入铅尘或铅烟可能导致上呼吸道和肺部的刺激。
Skin Contact 皮肤接触	EXPOSURE IS NOT EXPECTED FOR PRODUCT UNDER NORMAL CONDITIONS OF USE. 正常使用产品不会产生暴露。 Sulfuric Acid: Severe irritation, burns and ulceration. 硫酸: 严重刺激, 灼烧和溃疡。 Lead Compounds: Not absorbed through the skin. 铅化合物: 不会通过皮肤吸收。
Skin Absorption 皮肤吸收	EXPOSURE IS NOT EXPECTED FOR PRODUCT UNDER NORMAL CONDITIONS OF USE. 正常使用产品不会产生暴露。 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. 过充电或破损时，暴露在有机电解液或雾气下产生的。极端的有机电解液暴露可能通过皮肤吸收。
Eye Contact 眼睛接触	EXPOSURE IS NOT EXPECTED FOR PRODUCT UNDER NORMAL CONDITIONS OF USE. 正常使用产品不会产生暴露。 Sulfuric Acid: Severe irritation, burns, cornea damage, and blindness. 硫酸: 严重刺激，灼烧，角膜破损和失眠。 Lead Compounds: May cause eye irritation. 铅化合物: 可能产生眼睛刺激。
Ingestion 摄入	EXPOSURE IS NOT EXPECTED FOR PRODUCT UNDER NORMAL CONDITIONS OF USE. 正常使用产品不会产生暴露。 Sulfuric Acid: May cause severe irritation of mouth, throat, esophagus and stomach. 硫酸: 可能产生严重的口部，喉咙，食道和胃部刺激。 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. 铅化合物: 急性摄入可能导致异常疼痛，恶心，呕吐，腹泻。可能导致全身中毒，并立即求医。
SIGNS AND SYMPTOMS OF OVEREXPOSURE 过度暴露的症状	
Acute Effects 急性反应	EXPOSURE IS NOT EXPECTED FOR PRODUCT UNDER NORMAL CONDITIONS OF USE. 正常使用产品不会产生暴露。 Sulfuric Acid: Severe skin irritation, damage to cornea, upper respiratory irritation. 硫酸: 严重的皮肤刺激,角膜损伤,上呼吸道刺激。 Lead Compounds: Symptoms of toxicity include headache, fatigue, abdominal pain, loss of appetite, muscular aches and weakness, sleep disturbances and irritability 铅化合物: 中毒症状，包括头痛，疲劳，异常疼痛，腹痛，无食欲，肌肉疼痛，虚弱，失眠和刺激。
Chronic Effects 慢性反应	EXPOSURE IS NOT EXPECTED FOR PRODUCT UNDER NORMAL CONDITIONS OF USE. 正常使用产品不会产生暴露。 Sulfuric Acid: Possible erosion of tooth enamel, inflammation of nose, throat & bronchial tubes. 硫酸: 可能牙齿侵蚀，鼻子发炎，喉咙&支气管发炎。 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.

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。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 50 µg/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.

硫酸酸雾的过度暴露可能产生肺损伤和肺部状况恶化。皮肤接触硫酸可能加重一些疾病，如湿疹和接触性皮炎。铅和它的化合物能加剧一些肾病，肝病和神经性疾病的形成。

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.

所有的重金属，包括产品内的危害成分，主要通过吸入和摄入途径进入体内。大部分的呼吸疾病可通过充分的预防措施来避免，如通风和第八节描述的呼吸防护。遵循良好的个人卫生要求开预防吸入和摄入：在就餐/吸烟或离开工作场所前充分洗手/面部/颈部和手臂。污染的衣物不要进入非污染区或在这些区域穿戴防护的服装。仅限于非污染区使用和储存食物、香烟、化妆品。污染区的工作服和工作设备应在指定区域，决不能带回家或与个人未污染的物品一起洗涤。该产品仅用于工业用途，而应远离儿童和他们的环境。

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 种类	Test Results 测试结果
Sulfuric Acid absorbed in glass-fiber material (CAS 7664-93-9) 吸收在玻璃纤维内的硫酸 (CAS 7664-93-9)。		
Acute 急性 Oral 口服 LD50	Rat 鼠	2140 mg/kg
Skin corrosion/irritation 皮肤腐蚀/刺激	Electrolyte: Causes severe skin burns 电解液：导致严重的皮肤灼烧。	
Serious eye damage/eye irritation 严重的眼睛损伤/眼睛刺激	Electrolyte: Causes severe skin burns 电解液：导致严重皮肤灼烧。	
Respiratory Sensitization 呼吸致敏	Not Classified 未分类。	
Skin Sensitization 皮肤敏化	Not a skin sensitizer 非皮肤敏化物。	
Germ Cell Mutagenicity 生殖细胞突变性	No data available 无有效数据。	

CARCINOGENICITY 致癌性

Under normal handling and storage conditions, the exposure to carcinogenic components is not expected. Risk of adverse effects occurs only if the cell is mechanically, thermally, or electrically abused to the point of compromising the enclosure.

正常情况下操作和储存，暴露是会产生致癌物。只有在物理、热或电等滥用条件下对外壳密封破坏下才产生不良反应。

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.

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。

Lead Compounds: Lead is listed as a 2B carcinogen, likely in animals at extreme doses. Proof of carcinogenicity in humans is lacking at present.

铅化合物：铅是列为2B类致癌物，异常剂量可能在动物体内产生，目前尚无证据显示对人体有致癌性。

IARC Monographs. IARC专题论文
Overall Evaluation of Carcinogenicity

综合评价的致癌性。

Lead (CAS 7439-92-1)

2B Possibly carcinogenic to humans

铅(CAS 7439-92-1)

2B 可能对人体产生致癌。

NTP Report on Carcinogens致癌物标准报告

Lead sulfate (CAS 7446-14-2)

Reasonably Anticipated to be a Human Carcinogen.

硫酸铅(CAS 7446-14-2)

合理预期会成为人类致癌物

OSHA Specifically Regulated Substances 法规定义物质 (29 CFR 1910.1001-1050)

Not listed.

未列入

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 -

No data available.

无数据。

single exposure

特异性靶器官系统毒性 -

单次暴露

Specific target organ

toxicity -

Lead: May cause damage to organs (blood, central nervous system) through prolonged or

repeated exposure.

铅: 长期或重复暴露可能损伤器官（血液，中枢神经系统）。

repeated exposure

特异性靶器官系统毒性 -

重复暴露

Aspiration hazard

吸入性危害

Not classified.

未分类。

12. ECOLOGICAL INFORMATION 生态学信息

Environmental Fate

环境影响

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

铅在土壤内长期沉积。无数据显示环境退化。金属铅的移动对生态影响很低，通过食物链在水陆生物和植物内有少量生物累积。大部分的研究包括铅化合物，而不是铅。

Ecotoxicity

生态毒性

Very toxic to aquatic life with long lasting effects. However, no ecological impacts expected under normal use conditions.

对水生物长期的毒性。但是，在正常使用条件下无生态危害。

Constituents 成分

Species 种类

Test Results 测试结果

Inorganic Lead/Lead Compounds (CAS 7439-92-1)

无机铅/铅化合物 (CAS 7439-92-1)

Aquatic 水生物

Fish 鱼

LC50

Rainbow trout, Donaldson trout
(Oncorhynchus mykiss) 虹鳟鱼

1.17 mg/l, 96 hours

1.17 mg/l, 96 小时

**Persistence and
Degradability**

持续和降解性

No data available

无数据

Bioaccumulative potential

潜在的生物累积

No data available

无数据

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)

挥发有机化合物: 0% (按体积)。

Water Endangering Class (WGK): NA

水危害类(WGK): 不适用。

13. DISPOSAL CONSIDERATIONS 废弃处置

Waste disposal method

废物处置方法

Material should be recycled if possible. Lead-acid batteries are completely recyclable. Product can be recycled along with automotive (SLI) lead-acid batteries. Dispose waste and residues in accordance with applicable federal, state, and local regulations.

材料尽可能地回收。铅酸电池是可以完全回收的，产品可以和传统汽车铅酸电池一起回收。处置应遵循适用的法规规范。

Hazardous waste code

危废代码

D008: Lead

铅

(China) HW31 Lead waste , 900-052-31 waste lead battery and generated waste lead plates, waste lead mixer and waste acid liquid during the tear down process of waste lead battery.

(中国) HW31 含铅废物，900-052-31 废铅蓄电池及废铅蓄电池拆解过程中产生的废铅板、废铅膏和酸液。

**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.

空容器应送往经批准的废物处理地点循环再造或处置。

**Hazardous Waste
Exemption Management
(China)**

危险废物豁免管理(中国)

Waste lead battery in general trash in family daily life, and from waste sorting point to designated central collection points.

生活垃圾中的废铅蓄电池-家庭日常生活中产生环节，以及从分类投放点收集转移到所设定的集中贮存点的收集过程不按危险废物管理。

Unbroken waste lead battery (900-052-31): Do not require its transportation as hazardous waste if transportation tool can meet the requirements of preventing rain, leakage and scattering.

未破损的废铅蓄电池(900-052-31): 运输工具满足防雨、防渗漏、防遗撒要求，可不按危险废物进行运输。

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.

注意：当安装在车内作为车辆元件时，运输不作要求。

Transportation: Absorptive Glass-Fiber Material Lead Acid Battery is not a DOT Hazardous Material

运输：纤维材料吸收式铅酸电池不作为 DOT 定义的危险材料。

Other: Per DOT, IATA, ICAO, and IMDG rules and regulations, these batteries are exempt from “UN2800” classification as a result of successful completion of the following tests

其他：根据 DOT, IATA, ICAO, IMDG 和 GB12268 的法规要求，该类电池通过了以下测试，不作为“UN2800”（腐蚀类）类或危险货物：

- 1.) Vibration tests
振动测试
- 2.) Pressure Differential Tests
压差测试
- 3.) Case Rupturing Tests (no free liquids)
外壳破坏测试（无漏液）

GROUND 陆运 – US-DOT/CAN-TDG/EU-ADR/APEC-ADR 美国 DOT:

Not regulated as dangerous goods per 49 CFR 173.159a
不按照 49 CFR 173.159a 规定作为危险货物。

AIRCRAFT 航空运输 – ICAO-IATA 国际航空运输协会:

Not regulated as dangerous goods per Special Provision A67
不按特别条款A67作为危险品管制。

VESSEL 海运 – IMO-IMDG 国际海上危险货物运输规则:

Not regulated as dangerous goods per exception 238
根据第238条不作为危险品管制。

Note: According to China GB12268, if the battery fluid can pass the vibration test and differential pressure test without leakage, it is considered to be sealed. In addition, the electrolyte will not leak at 55 degrees Celsius, and the electrode is protected against short circuit when it is packaged for transportation, so it cannot be transported as dangerous goods.

注：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。

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. The information on this SDS is supplied at customer’s request for information only
该产品遵循 29 CFR 1910.1200 ，并不属于 OSHA 危害交流标准范围。该信息附在 SDS 上仅作为客户要求信息参考。

TSCA 美国有毒物质控制法

Ingredients listed in the TSCA registry are lead, lead compounds, and sulfuric acid.
TSCA 注册成分列出为铅，铅元件和硫酸。

OSHA Specifically Regulated Substances OSHA 特别管制物质 (29 CFR 1910.1001-1050)

Lead (CAS 7439-92-1)	Reproductive toxicity
铅 (CAS 7439-92-1)	生殖毒性
	Central nervous system
	中枢神经系统
	Kidney
	肾
	Blood
	血液
	Acute toxicity
	急性毒性

CERCLA Hazardous Substance List 危害物质清单 (40 CFR 302.4)

Lead (CAS 7439-92-1)	LISTED
铅 (CAS 7439-92-1)	已列出
Sulfuric Acid absorbed in Glass-fiber Material (CAS 7664-93-9)	LISTED
玻璃纤维吸附的硫酸物质(CAS 7664-93-9)	已列出

Superfund Amendment and Reauthorization Act of 1986 超级基金修正案和再授权法案 1986 (SARA)

Hazard Categories	Immediate Hazard – Yes
危害分类	立即危害 – 是
	Delayed Hazard – Yes
	延迟危害 – 是
	Fire Hazard – Yes

火灾危害 – 是
Pressure Hazard – Yes
压力危害 – 是
Reactivity Hazard – Yes
反应危害 – 是

SARA 302 Extremely hazardous substance 极端危害物质

Chemical Name 化学品名称	CAS Number CAS 号	Reportable Quantity 报告量	Threshold Planning Quantity 临界计划量	Threshold Planning Quantity – Lower value 临界计划量 – 下限 值	Threshold Planning Quantity – upper value 临界计划量 – 上 限值
Sulfuric Acid absorbed in Glass- fiber Material 玻璃纤维吸附的 硫酸物质	7664-93-9	1000	1000 lbs		

Section 311/312 Hazard Categorization

章节 311/312 危害种类:

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.

EPCRA 章节 312 Tier Two 要求报告: 如硫酸量达到 500lbs 的非汽车电池, 或者铅的量达到 10000lbs。更多信息可查询 40 CFR 370.10 and 40 CFR 370.40。

Section 313 EPCRA Toxic Substances

章节 313 EPCRA 有毒物质:

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.

40cfr 第 372.38 (b) 条规定, 如果物质中存在有毒化学品, 在确定是否满足 § 372.25, § 372.27, or § 372.28 规定的适用阈值时, 或在 § 372.30 规定的需报告的释放量时。该豁免仅适用于个人之间传递或来自于生产者。该豁免也仅适用于该物质中存在的有毒化学品的量。

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 (CAA) 第 112 章节 危害空气污染物清单 (HAPs)

Lead (CAS 7439-92-1)

铅 (CAS 7439-92-1)

Clean Air Act (CAA) Section 112(r) Accidental Release Prevention (40 CFR 68.130)

清洁空气法 (CAA) 第 112(r) 条意外释放预防 (40 CFR 68.130)

Sulfuric Acid absorbed in Glass-fiber Material (CAS 7664-93-9)

玻璃纤维吸附的硫酸物质 (CAS 7664-93-9)

Safe Drinking Water Act (SDWA) 安全饮用水规定 (SDWA)

Not regulated

未规定

Drug Enforcement Administration (DEA). List 2, Essential Chemicals (21 CFR 1310.02(b) and 1310.04(f)(2) and

Chemical Code Number

药品管理局 (DEA). List 2, 主要化学品 (21 CFR 1310.02(b) and 1310.04(f)(2) 和 化学品代码

Sulfuric Acid absorbed in Glass-fiber Material (CAS 7664-93-9) 6552

玻璃纤维吸附的硫酸物质 (CAS 7664-93-9)

Drug Enforcement Administration (DEA). List 1 & 2 Exempt Chemical Mixtures (21 CFR 1310.12(c))

药品管理局 (DEA). 清单 1 和 2 豁免化学混合物 (21 CFR 1310.12(c))

Sulfuric Acid absorbed in Glass-fiber Material (CAS 7664-93-9) 20 % WV

玻璃纤维吸附的硫酸物质 (CAS 7664-93-9)

DEA Exempt Chemical Mixtures Code Number DEA

豁免化学混合物代码

Sulfuric Acid absorbed in Glass-fiber Material (CAS 7664-93-9) 6552
玻璃纤维吸附的硫酸物质(CAS 7664-93-9)

US State Regulations 美国各州法规

US. Massachusetts RTK – Substance List

Lead (CAS 7439-92-1)
铅 (CAS 7439-92-1)
Sulfuric Acid absorbed in Glass-fiber Material (CAS 7664-93-9)
玻璃纤维吸附的硫酸物质(CAS 7664-93-9)

US New Jersey Worker and Community Right-to-know Act

Lead (CAS 7439-92-1)
铅 (CAS 7439-92-1)
Sulfuric Acid absorbed in Glass-fiber Material (CAS 7664-93-9)
玻璃纤维吸附的硫酸物质(CAS 7664-93-9)

US Pennsylvania Worker and Community Right-to-know Law

Lead (CAS 7439-92-1)
铅 (CAS 7439-92-1)
Sulfuric Acid absorbed in Glass-fiber Material (CAS 7664-93-9)
玻璃纤维吸附的硫酸物质(CAS 7664-93-9)

US Rhode Island RTK

Lead (CAS 7439-92-1)
铅 (CAS 7439-92-1)
Sulfuric Acid absorbed in Glass-fiber Material (CAS 7664-93-9)
玻璃纤维吸附的硫酸物质(CAS 7664-93-9)

US. California Proposition 65

WARNING: This product contains chemicals known to the State of California to cause cancer.
警告： 产品含有加利福尼亚州已知的致癌化学品。
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.
电池端柱和相关含有铅和铅化合物的元件，含有加利福尼亚州已知的产生致癌和生殖系统危害物质。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.
电池公司不属于 1999 年与 Mateel 环境正义基金会（Mateel Environmental Justice Foundation）的同意判决的一方，应该包括一个符合 65 号提案当前版本的 65 号提案警告。

US - California Proposition 65 - Carcinogens & Reproductive Toxicity (CRT): Listed substance

Lead (CAS 7439-92-1)
铅 (CAS 7439-92-1)
Sulfuric Acid absorbed in Glass-fiber Material (CAS 7664-93-9)
玻璃纤维吸附的硫酸物质(CAS 7664-93-9)

International Inventories 国际产品目录

Country(s) or Region 国家或区域	Inventory Name 名称	On inventory (yes/no)* 目录内 (是/否)*
United States & Puerto Rico 美国 &波多黎各	Toxic Substances Control Act (TSCA) Inventory 有毒物品控制条例目录 (TSCA)	Yes 是

* A “Yes” indicates this product complies with the inventory requirements administered by the governing country(s).
* 如 “是” 表明产品符合国家规定的目录要求。
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).
如 “否”，表明产品的一个或多个化合物不在清单内或作为清单内物质的豁免。

China-Catalogue of Hazardous Chemicals-2015 Version 中国-危险化学品目录-2015 版

Not listed 未列入。

China-List of Dangerous Goods (GB12268-2025) 中国-危险货物品名表 （GB12268-2025）

Listed as 2800, Batteries, Wet, Non-spillable, electric storage.

联合国编号为 2800, 蓄电池, 湿的, 密封的, 蓄电。

Classification: 8

类别: 8

Special Note—238, a) if vibration and differential pressure test can be passed, the battery can be regarded as sealed type; b) Sealed battery can be regarded as Non-dangerous goods if meeting following requirements: electrolyte will not spill out of broken or cracked case and there isn't any spillable liquid at 55 °C, in addition, the electrodes have been protected for the package with purpose of preventing short circuit.

特别规定 —238, a) 如果能够经受列出条件的振动试验和压差试验而没有电池液泄漏, 则可认为是密封的; b) 密封的电池如满足以下条件, 则不作为危险货物运输: 在温度 55℃时, 电解液不会从破裂的或有裂缝的外壳流出并且不存在可能发生泄漏的游离液体; 而且在包装供运输时已经对电极作了防短路保护。

China-Catalogue of hazardous waste-2025 version 中国-国家危险废物名录(2025 年版)

HW31 Lead waste, 900-052-31 waste lead battery and generated waste lead plates, waste lead mixer and waste acid liquid during the tear down process of waste lead battery.

HW31 含铅废物, 900-052-31 废铅蓄电池及废铅蓄电池拆解过程中产生的废铅板、废铅膏和酸液。

16. OTHER INFORMATION 其他信息

Issue Date 制定日期:

04/01/2015

Further information

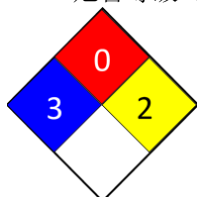
NFPA Hazard Scale: 0 = Minimal 1 = Slight 2 = Moderate 3=Serious 4 = Severe

附加信息:

NFPA 危害等级: 0 = 最小 1 = 轻微 2 = 适度 3=严重 4 = 特别严重

NFPA ratings

级别



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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