



化学品安全技术说明书

MATERIAL SAFETY DATA SHEET

参考编号
Reference No..... : WTX23D12262354B

申请商
Applicant..... : 海能达通信股份有限公司
Hytera Communications Corporation Limited

申请商地址
Address..... : 深圳市南山区北环大道 9108 号海能达大厦, 518057
Hytera Tower, Hi-Tech Industrial Park North, 9108# Beihuan Road,
Nanshan District, Shenzhen, P.R.C., P 518057

制造商
Manufacturer..... : 海能达通信股份有限公司
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样品名称
Sample's name..... : 锂离子电池组
Li-ion Battery Pack

签发日期
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制作 Prepared By:

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第一部分 — 化学品及企业标识

Section 1-Chemical Product and Company Identification

| | |
|---------------------------------------|---|
| 产品名称 Product Name: | 锂离子电池组 Li-ion Battery Pack |
| 型号 Model No.: | BL2801-Ex |
| 额定值 Ratings: | 7.4V, 2850mAh, 21.09Wh |
| 重量 Weight: | Approx. 184.3g |
| 制造商 Manufacturer: | 海能达通信股份有限公司 Hytera Communications Corporation Limited |
| 地址 Address: | 深圳市南山区北环大道9108号海能达大厦, 518057 Hytera Tower, Hi-Tech Industrial Park North, 9108# Beihuan Road, Nanshan District, Shenzhen, P.R.C., P 518057 |
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第二部分 — 危险性概述

Section 2-Hazards Identification

| | |
|--------------------------------|---|
| 分类 Classification: | 正常使用不危险。请勿拆卸, 打开或切碎电池。主要的危险性是电池破裂的危险, 暴露出的成分或其成分产品中可能有害。 Not dangerous with normal use. Do not dismantle, open or shred battery. The hazards indicated are for a ruptured battery. Exposure to the ingredients contained within or their ingredients products could be harmful. |
| 侵入途径 Invasion route: | <p>急性: 请参见第8部分以了解泄漏控制, 如果电池破裂, 电池中包含的电解质溶液将具有腐蚀性并有可能引起灼伤。 ACUTE: see Section 8 for exposure controls In the event that this battery has been ruptured, the electrolyte solution contained within the battery would be corrosive and can cause burns.</p> <p>皮肤接触: 接触电解质泄漏可能导致皮肤疼痛和刺激 Skin contact: The leakage of the electrolyte may cause sore and stimulation on the skin</p> <p>眼睛接触: 电解液的蒸汽可能刺激眼睛, 特别是含有可能引起眼睛发炎的物质。 Eye contact: The steam of the electrolyte may stimulate eyes. Especially, substance that may cause inflammation of the eyes is contained</p> <p>吸入: 吸入密封电池中的材料不是预期的暴露途径。 电池破裂产生的蒸汽或烟雾可能引起呼吸道刺激。 Inhalation: Inhalation of materials from a sealed battery is not an expected route of exposure. Vapors or mists from a ruptured battery may cause respiratory irritation.</p> <p>摄入: 由于电池大小, 预计无法吞咽。摄入电解质会导致喉咙组织受损。 Ingestion: Swallowing is not anticipated due to the battery size. The ingestion of the electrolyte causes tissue damage to throat</p> |
| 健康危害 Health hazards: | 对于电池或电芯, 化学材料储存在密封的金属或金属层压塑料容器中, 其设计可承受正常使用过程中遇到的温度和压力。因此, 在正常使用期间, 不存在着火、爆炸或危险材料泄漏的物理危险。但是如果暴露在火焰中, 增加机械冲击或分解, 这些不当处理会导致电解质泄漏。此外, 如果被周围的火强烈加热, 可能会释放出刺鼻的气体。 For the battery or cell, chemical materials are stored in a sealed metal or metal laminated plastic case, which designed to withstand temperatures and pressures encountered during normal use. As a result, during normal use, there is no physical danger of ignition, explosion or leakage of hazardous materials. However, if exposed to a fire, added mechanical shocks or decomposed, these improper handlings would cause the leakage of electrolyte. Moreover, if heated strongly by |



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| | the surrounding fire, acrid gas may be emitted |
| 环境危害 Environment hazards: | 电解液泄漏或电池容器破裂可能导致内部部件泄漏到环境中。 Electrolyte leakage or battery container rupture may lead to the leakage of inner component into the environment |
| 烧伤和爆裂危险: Burn & burst danger: | 不要将电池放在火焰中, 否则会爆炸。不要使电池短路, 否则会引起火灾。 Do not dispose of battery in fire--may explode. Do not short-circuit the battery—may cause fire |

第三部分 — 成分/组成信息

Section 3 – Composition/information on Ingredient

纯净物 Pure 混合物 Admixture

| 化学成分 Chemical Composition | 分子式 Molecular Formula | CAS号 CAS No. | 含量 (百分比) Weight (%) |
|------------------------------|--|-----------------|------------------------|
| Lithium hexafluorophosphate | F ₆ LiP | 21324-40-3 | 1-5 |
| Ethylene carbonate | C ₃ H ₄ O ₃ | 96-49-1 | 5-20 |
| Propylene carbonate | C ₄ H ₆ O ₃ | 108-32-7 | |
| Diethyl carbonate | C ₅ H ₁₀ O ₃ | 105-58-8 | |
| Dimethyl carbonate | C ₃ H ₆ O ₃ | 616-38-6 | |
| Ethyl methyl carbonate | C ₄ H ₈ O ₃ | 623-53-0 | |
| Polyvinylidene fluoride | (C ₂ H ₂ F ₂) _n | 24937-79-9 | <1 |
| Copper | Cu | 7440-50-8 | 9-18 |
| Aluminium | Al | 7429-90-5 | 17-27 |
| Lithium cobaltate | LiCoO ₂ | 12190-79-3 | 20-50 |
| manganese powder | Mn | 7439-96-5 | |
| Nickel | Ni | 7440-02-0 | |
| Aluminium | Al | 7429-90-5 | 13-18 |
| Graphite | C ₂₄ X ₁₂ | 7782-42-5 | |
| Carbon Black | C | 1333-86-4 | |

注: CAS号为化学品服务注册号。

Note: CAS number is Chemical Abstract Service Registry Number.

N/A 为不适用

N/A=Not apply.

第四部分 — 急救措施

Section 4 – First Aid Measure

| | |
|-----------------------------------|---|
| 皮肤接触 Skin touch: | 脱掉所有被污染的衣物, 立即用肥皂和大量水冲洗异物至少15分钟, 获取医疗救助。 Remove all contaminated clothing and flush extraneous matter with soap and plenty of water immediately for at least 15 minutes. Get medical aid. |
| 眼睛接触 Eyes touch: | 如果电解液接触眼睛, 立即用大量水冲洗。如果受害者在冲洗前戴着隐形眼镜, 让他摘下隐形眼镜。不要让受害者揉眼睛。得到医疗救助。 In case of contact electrolyte with eyes, rinse immediately with plenty of water. Have the victims remove contact lenses if he is wearing them before rinsing. Do not let the victims rub his eyes. Get medical aid. |
| 吸入 Inhalation: | 转移到空气新鲜的地方。必要时给予氧气或人工呼吸。得到医疗救助。 Remove to fresh air. Give oxygen or artificial respiration if needed. Get medical aid. |
| 摄入 Ingestion: | 正常情况下, 预计不会吞咽。如果不小心吃了这个产品, 用大量的水稀释并就医。确保粘液不会阻塞气道。不要给昏迷的人吃任何东西 Swallowing is not anticipated in normal condition. If accidentally eat the product, dilute by giving plenty of water and get medical aid. Assure that mucus does not obstruct the airway. Do not give anything by mouth to an unconscious person |



第五部分 — 消防措施

Section 5 – Fire Fighting measures

| | |
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| 危险特性 Danger characteristic: | 不易燃。如果使用不当导致过热，电池可能会泄漏可燃电解液烟雾。 Non-flammable. The batteries can leak combustible electrolyte fumes in case of over heat resulting from inappropriate use. |
| 有害燃烧产物 Hazardous combustion products: | 如果燃烧或暴露在火中，可能会释放刺激性气体。 Irritant gas may be emitted if burned or exposed to fire |
| 灭火方法和介质 Fire-Fighting method & media: | 人员必须配备过滤面罩（全面罩）或隔离式呼吸器。工作人员必须穿防火、防毒气的衣服和手套。当蓄电池与其它可燃物同时燃烧时，应采取与可燃物相对应的灭火方法。尽可能从迎风处灭火。 The staff must equipped with filter mask (full mask) or isolated breathing apparatus. The staff must wear the clothes and gloves which can defend the fire and the toxic gas. When the battery burns with other combustibles simultaneously, take fire-extinguishing method which correspond to the combustibles. Extinguish a fire from the windward as much as possible |
| 灭火剂 Extinguishant: | 二氧化碳、干粉、泡沫等。 Carbon dioxide, dry chemical, foam, etc |

第六部分 — 泄漏应急处理

Section 6 – Accidental Release Measures

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| 个人注意事项 Personal precautions | 注意！腐蚀性材料。避免接触皮肤、眼睛或衣服。确保通风良好。按要求使用个人防护装备。将人员疏散到安全区域。保持人员远离泄漏/泄漏的上游。 Attention! Corrosive material. Avoid contact with skin, eyes or clothing. Ensure adequate ventilation. Use personal protective equipment as required. Evacuate personnel to safe areas. Keep people away from and upwind of spill/leak. |
| 其他信息 Other Information | 参见第7部分和第8部分中列出的保护措施。 Refer to protective measures listed in section 7 and 8. |
| 环境预防措施 Environmental precautions | 参见第7部分和第8部分中列出的保护措施。在安全的情况下防止进一步泄漏或溢出。不应释放到环境中。不允许进入土壤/底土。防止产品进入下水道。 Refer to protective measures listed in Section 7 and 8. Prevent further leakage or spillage if safe to do so. Should not be released into the environment. Do not allow to enter into soil/subsoil. Prevent product from entering drains. |
| 控制方法 Methods for containment | 在安全的情况下防止进一步泄漏或溢出。 Prevent further leakage or spillage if safe to do so. |
| 清理方法 Methods for cleaning up | 捡起并转移到贴有回收标签的容器中。 Pick up and transfer to properly labeled containers. |

第七部分 — 操作处置与储存

Section 7 – Handling and storage

| | |
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| 处置 Handling: | 在处理电池前，用户应仔细阅读产品说明书。不要用导电物品挤压、刺穿电池端子。不直接加热或焊接。不要往火里扔。不要混用不同类型的电池。不要混用新电池和旧电池。将电池放在不导电的托盘中。 Before handling the batteries, the users should read the product specification carefully. Do not crush, pierce the battery terminals with conductive goods. Not directly heat or solder. Do not throw in fire. Do not mix batteries of different types. Do not mix new and used batteries. Keep batteries in non-conductive trays |
| 储存 Storage: | 将电池储存在阴凉通风的地方，远离热源、明火、腐蚀性化学品、食物和饮料。由于短路会导致燃烧、泄漏和破裂，因此在使用前请将电池保持在原包装中，不要将其混淆。 |



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| | <p>远离儿童。</p> <p>Store batteries in cool and ventilated area away from sources of heat, open flames, corrosive chemicals, food and drink. Since short circuit can cause burn, leakage and rupture, keep batteries in original packaging until use and do not jumble them. Keep away from children</p> |
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第八部分 — 接触控制和个体防护
Section 8 – Exposure controls, Personal Protection

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| 最大允许浓度: Maximum admissible concentration: | 无可用信息 No information is available |
| 监测方法: Monitoring Method: | 使用通风或其他监控设备来控制温度、湿度和烟雾。 Use ventilation or other monitoring devices to control temperature, humidity and fumes |
| 工程控制: Engineering Control: | 使用通风或其他监控设备来控制温度、湿度和烟雾。 Use ventilation or other monitoring devices to control temperature, humidity and fumes |
| 呼吸防护 Respiratory Protection: | 正常使用时不需要。如果电池破裂, 使用自给式呼吸设备。 Not necessary under normal use. In case of battery rupture, use self-contained respiratory equipment |
| 眼睛/面部防护 Eyes/face Protection: | 正常使用时不需要。如果处理泄漏或破裂的电池, 请佩戴护目镜。 Not necessary under normal use. Wear safety goggles if handling a leaking or ruptured batteries |
| 皮肤和身体防护 Skin and Body protection: | 正常使用时不需要。处理泄漏或破裂的电池时, 请使用橡胶围裙和防护服。 Not necessary under normal use. Use rubber apron and protective clothes in case of handling a leaking or ruptured batteries |
| 手部防护 Hands Protection: | 正常使用时不需要。如果处理泄漏或破裂的电池, 请使用橡胶手套。 Not necessary under normal use. Use rubber gloves if handling a leaking or ruptured batteries |
| 卫生措施 Hygiene Measures: | 按照良好的工业卫生和安全惯例处理。避免接触皮肤、眼睛或衣服。戴上合适的手套和眼睛/面部防护装置。使用本产品时请勿进食、饮水或吸烟。脱掉被污染的衣服, 洗干净再使用。污染的工作服不得离开工作场所。建议定期清洁设备、工作区域和衣物。休息前和处理产品后立即洗手。为保护环境, 在重新使用之前, 请移除并清洗所有受污染的防护设备。 Handle in accordance with good industrial hygiene and safety practice. Avoid contact with skin, eyes or clothing. Wear suitable gloves and eye/face protection. Do not eat, drink or smoke when using this product. Take off contaminated clothing and wash before reuse. Contaminate work clothing should not be allowed out of the workplace. Regular cleaning of equipment, work area and clothing is recommended. Wash hands before breaks and immediately after handling the product. For environmental protection, remove and wash all contaminated protective equipment before re-use. |
| 其他防护措施 Other Protections: | 无 None |

第九部分 — 理化特性
Section 9 – Physical and Chemical Properties

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|---------------------------------------|-------------------|
| 物理形态 Physical state: | 固体 Solid |
| 颜色 Color: | 黑色 Black |
| 气味 Odor: | 无气味 Odorless |
| PH 值 pH Value: | 不适用 Not available |
| 沸点 Boiling | 不适用 Not available |



| | |
|---|--------------------------|
| point /range | |
| 熔点/冰点 Melting /freezing Point: | 不适用 Not available |
| 闪点 Flash point: | 不适用 Not available |
| 蒸发率 Evaporation rate: | 不适用 Not available |
| 可燃性上下限 Upper flammable(explosive) limits in air-Lower (vol%)-UEL: | 不适用 Not available |
| 蒸汽压 Vapor pressure: | 不适用 Not available |
| 蒸汽密度 Vapor density: | 不适用 Not available |
| 比重 Specific Gravity: | 不适用 Not available |
| 水溶性 Water Solubility: | 不溶于水 Immiscible in water |
| 其他溶剂中的溶解度 Solubility in other solvents: | 不适用 Not available |
| 分配系数（正辛醇/水） Partition coefficient (n-octanol / water): | 不适用 Not available |
| 自燃温度 Autoignition temperature | 不适用 Not available |
| 分解温度 Decomposition temperature: | 不适用 Not available |
| 动力粘度 Kinematic viscosity: | 不适用 Not available |
| 动态粘度 Dynamic viscosity: | 不适用 Not available |
| 爆炸性 Explosive properties: | 不适用 Not available |
| 氧化性 Oxidizing properties: | 不适用 Not available |
| 蒸发率 Evaporation rate: | 不适用 Not available |
| 燃点 Ignition | 无可用信息 |



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|--|-----------------------------|
| temperature: | No information is available |
| 任何附加信息 Any addition information: | 无 None |

第十部分 — 稳定性和反应性
Section 10 – Stability and Reactivity

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| 反应性 Reactivity: | 无可用数据 No data is available |
| 化学稳定性 Chemical stability: | 在推荐的储存条件下状态稳定 Stable under recommended storage condition |
| 危险反应的可能性 Possibility of Hazardous Reactions: | 正常操作下, 无 None under normal processing. |
| 聚合危险性 Hazardous Polymerization: | 无可用信息 No information is available |
| 应避免的条件 Conditions to avoid: | 长时间暴露在空气或湿气中 Exposure to air or moisture over prolonged periods |
| 不相容材料 Incompatible materials | 酸、碱、氧化剂 Acids, Bases, Oxidizing agent |
| 有害分解产物 Hazardous Decomposition Products: | 如果燃烧或暴露在火中, 可能会释放刺激性气体 Irritant gas may be emitted if burned or exposed to fire |

第十一部分 — 毒理学信息
Section 11 – Toxicological Information

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|--|---|
| 急性毒性 Acute Toxicity: | 锂离子电池不含有毒物质 Lithium ion batteries do not contain toxic materials |
| 亚急性和慢性毒性 Sub-acute and Chronic Toxicity: | 锂离子电池不含有毒物质 Lithium ion batteries do not contain toxic materials |
| 刺激性 Irritation: | 只有在滥用电池的情况下才会发生刺激, 并可能对皮肤、眼睛、呼吸道造成刺激。 Irritation only occurs if the batteries are abused and it may cause irritation to skin, eyes, respiratory tract. |
| 致敏性 Sensitization: | 无可用信息 No information is available |
| 致突变性 Mutagenicity: | 无可用信息 No information is available |
| 致癌性 Carcinogenicity: | 无可用信息 No information is available |
| 其他 Others: | 无 None |



第十二部分 — 生态学信息

Section 12 – Ecological Information

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|--|---|
| 生态毒性 Eco-toxicity: | 正确使用和处置锂电池不会对环境造成危害 When properly used and disposed, lithium ion batteries do not present environment hazard |
| 生物降解性 Biodegradable: | 无可用信息 No information is available |
| 生物浓缩或生物积累 Bioconcentration or biological accumulation: | 无可用信息 No information is available |
| 其他有害影响 Other harmful effects: | 无 None |

第十三部分 — 废弃处置

Section 13 – Disposal Considerations

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|--|--|
| 废弃物性质 Nature of waste: | 无可用信息 No information is available |
| 废物处理方法 Waste disposal methods: | 根据不同国家的适用法规进行处理。在更多的国家，废旧电池被禁止丢弃，并邀请最终用户妥善处理。锂离子电池的端子应绝缘，最好在处理前用塑料袋包装。 Dispose in accordance with applicable regulations which vary from country to country. In more countries the discard of used batteries is forbidden and the end-users are invited to dispose them properly. Lithium ion battery should have their terminals insulated and be preferably wrapped in plastic bags prior to disposal |
| 污染包装 Contaminated Packaging: | 根据当地法规处理内容物/容器。 Dispose of contents/containers in accordance with local regulations. |
| 注意事项 Attention abandoned: | 用户不得焚烧电池 Incineration should never be performed by battery user |

第十四部分-运输信息

Section 14 - Transport information

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| 注 Note: | <p>本报告适用于空运、海运或公路运输。 BL2801-Ex 锂离子电池组通过了《危险货物运输建议书-试验和标准手册》第 38.3 节的试验。 锂电芯和电池的运输受国际民用航空组织、国际航空运输协会、国际海运危险品规则的管制。 空运时，包装应按 IATA DGR 第 65 版包装说明 965~967 运输。 海运时，包装应按《国际海运危险货物规则》第 41-22 版第 188 条特别规定运输。 公路运输时，包装应符合《欧洲危险货物国际公路运输协定》(ADR) 第 188 条的特别规定。 This report applies to transportation of by air or by sea or by road. The Li-ion Battery Pack BL2801-Ex has passed the test Section 38.3 of Recommendations on the Transport of Dangerous Goods, Manual of Test and Criteria. The transportation of lithium cells and batteries is regulated by the International Civil Aviation Organization, International Air Transport Association, International Maritime Dangerous Goods Code. When shipped by air, package should according to packing instruction 965~967 of IATA DGR 65th Edition for transportation. When shipped by sea, package should according to special provision 188 of IMDG CODE 41-22 Edition for transportation.</p> |
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| | When shipped by road, package should according to special provision 188 of European Agreement concerning the International Carriage of Dangerous Goods by Road (ADR). |
| UN 号 UN Number: | 3480/3481 |
| 类别 Class: | / |
| 包装登记 Packing group: | / |
| EmS 编号 EmS No.: | F-A, S-I |
| 运输名称 Proper shipping name: | 锂离子电池/设备内含锂离子电池/设备与锂离子电池包装在一起 Lithium ion Batteries/ Lithium ion Batteries Contained In Equipment/Lithium ion Batteries Packed With Equipment |
| 包装标志 Packaging Mark: | 每个包装须贴上锂电池标签。 Each package must be labeled with a lithium battery label. |
| 包装方法 Packaging Method: | 无可用信息 No information is available |
| 运输方式 Transport Fashion: | 空运/海运/陆运 By air /By sea/By road |
| 运输注意事项 Transport Attentions: | 运输前检查集装箱包装是否完整、严密。运输过程中无泄漏、无坍塌、无沉淀、无损坏。不要把货物与腐蚀性化学品放在一起。中途停留应远离火源和热源。 Examine whether the package of the containers are integrate and tight-closed or not before transport. No divulgence, no collapse, no precipitation or no damage during the course of transportation. Don't put the goods together with corrosive chemicals. Stopovers should be away from fire and heat sources |

第十五部分-法规信息

Section 15 – Regulatory Information

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| 法规信息 Regulatory Information: | <p>ISO 11014-2009 化学产品安全数据表-章节内容和顺序。 GB/T 16483-2008 化工产品安全数据表章节内容及顺序 国际海上《危险品运输规则》(IMDG) 国际航空运输协会(IATA)《危险品运输规则》,第65版,2024年。 欧洲危险货物国际公路运输协定 国际铁路危险货物运输条例 美国交通部(DOT) 全球化学品统一分类和标签制度</p> <p>ISO 11014-2009 Safety data sheet for chemical products – Content and order of sections. GB/T 16483-2008 Safety data sheet for chemical products – Content and order of sections The international Maritime Dangerous Goods (IMDG) Code International Air Transport Association (IATA) Dangerous Goods Regulations, 65th, 2024. The European Agreement concerning the International Carriage of Dangerous Goods by Road (ADR) The Regulations Concerning the International Transport of Dangerous Goods by Rail (RID) U.S. Department of Transportation (DOT) Globally Harmonized System of Classification and Labeling of Chemicals (GHS)</p> |
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第十六部分一 附加信息

Section 16 – Additional Information

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| 附加信息 Additional Information: | <p>以上信息是基于我们所知的数据，并被认为是正确的数据。由于本信息可能在我们无法控制的情况下应用，并且可能不熟悉这些情况，并且由于本信息数据之后提供的数据可能表明对信息进行了修改，因此我们对其使用结果不承担任何责任。提供此信息的条件是，接收信息的人员应自行确定材料是否适合此特定用途。</p> <p>The above information is based on the data of which we are aware and is believed to be correct as of the data hereof. Since this information may be applied under conditions beyond our control and with which may be unfamiliar and since data made available subsequent to the data hereof may suggest modifications of the information, we do not assume any responsibility for the result of its use. This information is furnished upon condition that the person receiving it shall make his own determination of the suitability of the material for this particular purpose.</p> |
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WALTEK