



江苏苏青水处理工程集团有限公司

Jiangsu Suqing Water Treatment Engineering Group Co.,Ltd.

苏青牌SQ-06Li锂离子选择性吸附剂使用说明及注意事项

Lithium Selective Adsorbent Instructions and Precautions of Suqing SQ-06Li

▲SQ-06Li吸附剂特点

苏青自主研发的SQ-06Li提锂吸附剂，是一种高分子合成的功能性新材料，是盐湖、矿井提锂的最佳、最有性价比的产品，其有运行成本低、资本投入少、操作方便、无三废排放等优势，同时与国际、国内同类产品相比具有吸附量高、解析率好、使用寿命长等特点。这将为新能源高质量快速发展作出里程碑的贡献。

The SQ-06Li lithium extraction adsorbent developed by Suqing is a new polymer synthetic material product. It is the best and most cost-effective product for lithium extraction in salt lakes and mines. It has low operating costs and less capital investment, convenient operation, no three waste discharge and other advantages, and compared with international and domestic similar products, it has the characteristics of high adsorption capacity, good resolution rate and long service life. This will make a milestone contribution to the rapid development of new energy.

▲SQ-06Li物化性能指标(Physical and Chemical Properties):

项目	指标
锂交换容量(Lithium exchange capacity) g/L≥	3.0
锂吸附率 (Lithium adsorption rate) %	≥90
堆积密度(Density) g/ml	0.65-0.85
膨胀率(Swelling) %	5- 15
粒度范围(Particle Size) %	(0.5- 1.5mm)≥95
热稳定性(Thermal Stability) (°C)	80

▲预处理(Pretreatment):

为确保将新的吸附剂中可能存在的微量低聚物和装填过程中带入的杂物清除干净，不影响产品的质量，新吸附剂正式使用前，应进行如下的预处理操作：

In order to ensure that the trace oligomers that may exist in the new adsorbent and the impurities brought in during the filling process are removed without affecting the quality of the product, the following pretreatment operations should be performed before the new adsorbent is officially used:

(1) 反洗：吸附剂装填完毕后，首先用清水进行反洗 (或在吸附剂专用处理罐内)，流速控制在 7- 10BV/h (床体积/小时)，确保 70%的反洗膨胀率，以去除杂质和微小的颗粒，直到反洗出水澄清止，耗时约 0.5 小时；

(1) Backwashing: After the adsorbent is filled, firstly perform backwashing with clean water (or in a special treatment tank for adsorbents), and the flow rate is controlled at 7-10BV/h (bed volume/hour) to ensure 70% backwashing Expansion rate to remove impurities and tiny particles until the backwash water is clarified, which takes about 0.5 hours;

(2) 浸泡：停止反洗，降低液位至吸附剂层最高处上方 20cm处，浸泡约 2 小时，使吸附剂充分落床；

(2) Soaking: Stop backwashing, lower the liquid level to 20cm above the highest point of the adsorbent layer, and soak for about 2 hours to make the adsorbent fully fall into the bed;

(3) 正洗：最后用去离子水以 3-4BV/h冲洗床层，耗时约 3-5 小时。

(3) Washing: finally rinse the bed with deionized water at 3-4BV/h, which takes about 3-5 hours.

▲吸附 (Adsorption) :

控制原卤指标符合要求，以 0.5-3BV/h顺流经过SQ-06Li吸附剂柱处理，监测吸附剂柱出口，定时取样分析出口各项指标，根据工艺要求控制吸附终点。

Be sure the raw brine solution meets the requirements. Then pass the brine solution through the SQ-06Li adsorbent column in a co-current flow of 0.5-3BV/h. The outlet of the adsorbent column is monitored. The outlet is regularly sampled and the lithium concentrations are analyzed. And stop the adsorption when the lithium concentration meets the process requirements.

不同锂浓度卤水吸附推荐指标

Recommended adsorption conditions for brines with different lithium concentrations

编号 No.	卤水锂浓度, mg/l Concentration of Lithium brine	吸附流速,BV/h Adsorption flow rate	取样频率, 次/h Sampling frequency	吸附时长, h Adsorption time
1	100	3.0	1	10
2	300	2.0	2	8
3	500	1.0	3	6
4	1000	0.5	4	5

▲置换 (Replacement) :

降低液位至吸附剂层最高处齐平，用去离子水以 2BV/h 顺流置换残留卤水，耗时1小时，置换出卤水并入原卤回收。

Lower the liquid level to the highest level of the adsorbent layer, and replace the residual brine with deionized water at 2BV/h downstream. It takes 1 hour to replace the brine and return it to the original brine.

▲洗脱 (Desorption) :

(1) 升高液位至吸附剂最高处上方 20cm 处；

(1) Raise the liquid level to 20cm above the highest point of the adsorbent;

(2) 用去离子水以 2BV/h 对吸附剂床进行顺流洗脱，耗时约 5-10 小时（建议每隔一小时取样监测离子浓度）。

(2) Co-current elution of the adsorbent bed with deionized water at 2BV/h. It takes about 5-10 hours (sampling every hour to monitor the lithium concentration is recommended).

▲重复吸附→置换→洗脱步骤进行循环运行。

(Repeat the steps of adsorption, displacement, and elution for cyclic operation)

▲注意事项 (Matters needing attention) :

可能由于以下原因，会导致出水锂泄漏量增高和周期洗脱量减少的情况发生，用户可对照下面的情况寻找原因：

It may be due to the following reasons that the leakage of lithium in the effluent will increase and the amount of lithium in the elution will decrease. Users do the trouble shooting accordingly:

1、出水泄漏量增高：

1. Increased lithium leakage in the effluent:

(1) 进、出水阀门串漏，进水漏入出水中，检查阀门的严密性；

(1) The inlet and outlet valves are leaking, and the inlet water leaks into the outlet water. check the tightness of the valves;

(2) 吸附的流速过快，吸附剂的接触时间不够，交换不彻底，将吸附流速调到正常值；

(2) The adsorption flow rate is too fast, the contact time of the adsorbent with the brine solution is not enough, and the exchange is not complete. adjust the adsorption flow rate to the normal value;

(3) 吸附剂有否漏空现象，控制进出水流量的平衡并保持吸附柱内的水位；

(3) Check whether the adsorbent column is empty, control the balance of incoming and outgoing water flow and keep the water level in the column;

2、周期洗脱量减少：

2. The amount of lithium in elution is reduced:

(1) 水洗脱量不足，没有达到 10-20BV 的标准；

(1) The amount of water used to elute is insufficient and does not reach the standard of 10-20BV;

(2) 洗脱用水水质太差或盐含量太高，应改善洗脱水的质量；

(2) The water quality of the elution water is too poor or the salt content is too high, and the quality of the water used should be improved;

(3) 洗脱时间过短，锂来不及脱附，严控洗脱时间；

(3) The elution time is too short for the lithium to be desorbed, so the elution time needs to be strictly controlled;

(4) 吸附剂结块，吸附效果不好，产生偏流，导致再生效果差。加强反洗效果，控制合适的反洗膨胀率和反洗时间。

(4) The adsorbent is agglomerated, and the adsorption effect is not good, resulting in bypass flow, resulting in poor regeneration effect. Strengthen the backwash effect, and control the appropriate backwash expansion rate and backwash time.



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