

How to Clean Mineral Oil off Lithium Metal using Anhydrous Toluene

1. Set up an Argon filled glove box environment with < 1 ppm H_2O level and < 1 ppm O_2 level.
2. Transfer the lithium metal stored in mineral oil into the glove box through the antechamber. Make sure the container is very well sealed under Argon gas. Place the mineral oil container on an oil collecting plate to avoid antechamber contamination in case of container leak. Wipe clean the oil collecting plate with ethanol wetted cloth, and bake it dry in an oven before use. When transferring through the antechamber, slowly evacuate the chamber only to -0.5 bar. DO NOT evacuate to lower pressure than this! Slowly refill the antechamber with Argon gas until atmospheric pressure is achieved. Repeat the process for 10 times, and then bring the mineral oil container and the oil collecting plate into the glove box main chamber.
3. Prepare a re-sealable container, such as a schlenk flask, for anhydrous toluene. Bake the container dry in an oven to remove water. Exchange the atmosphere of the re-sealable container with Argon gas by flushing out method or vacuum-refill method. Open the anhydrous toluene in a fume hood, and transfer a small amount of toluene into the re-sealable container.
4. Transfer the toluene container and some lint-free cloth into the glove box through the antechamber. Make sure the container is very well sealed. Place the toluene container on a plate to avoid antechamber contamination in case of container leak. When transferring through the antechamber, slowly evacuate the chamber to -0.5 bar. DO NOT evacuate to lower pressure than this! Slowly refill the antechamber with Argon gas until atmospheric pressure is achieved. Repeat the process for 10 times, and then bring the container and the cloth into the glove box main chamber.



Attention:

Read and follow the instructions on the safety data sheet (SDS). Store and handle the materials away from heat, sparks, and flame. Store and handle Toluene in a fume hood or glove box.

5. Set the glove box to Purge mode and maintain the Purge mode during the cleaning process. Open the mineral oil container and take out the lithium metal. Place the mineral oil covered lithium metal in the oil collecting plate. Re-seal the mineral oil container.
6. Wet the lint-free wipe with anhydrous toluene. Re-seal the toluene container after use. Use the toluene wetted cloth to wipe the mineral oil off the lithium metal. Then use dry cloth to wipe off the toluene.
7. Transfer the mineral oil container, oil collecting plate, toluene container, and used cloth out of the glove box through the antechamber. Keep purging the glove box for 30 min to evaporate the leftover toluene on the lithium metal and in the glove box atmosphere.



Attention:

NEVER use the vacuum antechamber to evaporate the volatile solvent, which may damage the vacuum pump!

8. Set the glove box back to Circulation mode. The lithium metal is now clean from mineral oil and toluene, and is ready to use in glove box.