

HSQ Powder – Handling & Dilution

Features

Solution Concentrations:

1 – 45%

Excellent line edge

roughness

High Resolution

Customisable solutions

Introduction

Hydrogen silsesquioxane (HSQ) is a high-resolution, negative tone resist. It has been provided to you in kit form, this includes the dry powder along with a measure of MIBK, syringes, filters and bottles.

The table below outlines dilution recipes depending on what concentration you require.

General Handling Requirements

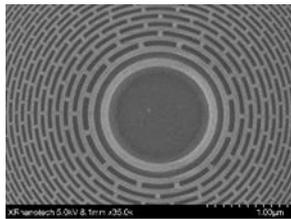
Exposure of HSQ to any water (moisture containing solvent, non-oven dried containers or humid working conditions) will cause irreversible gelation of HSQ solutions. Avoid using glassware for processing or storing HSQ as this speeds up the gelation process.

Only use MIBK provided by EM Resist. Leave the solvent bottle open for as little time as possible and tightly close the lid after use. If possible, purge with a dry gas before closing. EM Resist are not liable for any mishandling of powder HSQ, incorrect use of MIBK provided by us, or use of MIBK from other suppliers. If alternative MIBK is sourced by the end user, ensure it is HPLC grade (>99.5%) or better and <0.02% water content (check the batch's CoA). Limit the number of times the solvent bottle is opened and do not use an unknown bottle of MIBK that has been opened for more than 3 months as MIBK will absorb moisture over time.

- Dry all containers in a 60°C oven for 12 hours prior to use.
- Store HSQ solutions under inert conditions at 5°C. Equilibrate solutions to room temperature prior to opening storage container to avoid a build-up of moisture.
- Store solid HSQ in an inert atmosphere at room temperature. If possible, purge the bottle with an inert gas prior to sealing.
- For best results, use HSQ/solvent solutions within 24 hours of mixing.

Preparation instructions for HSQ/MIBK solutions

- Weigh out the required amount of HSQ powder into an oven dried plastic flask or sealable container. See kit calculator table below for reference.
- Add the required amount of MIBK to the flask or container.



- Carefully swirl the container to dissolve the HSQ powder.

Proceed with desired filtering options.

Filtering Options

- Transfer the solution to a syringe with one of the provided syringe filters attached to it.
- Filter the solution through the 0.2µm PTFE filter into the empty bottle provided in the kit. Label the bottle with the solution concentration and date of mixing.
- Purge the vessel with argon or nitrogen if available.
- Cap the vessel and seal with parafilm immediately.
- Store at 5°C.

The solution can also be filtered as and when needed. Follow the same procedure as above, filtering only the volume required.

Kit Calculator

		Solid Content									
		1%	2%	3%	4%	5%	6%	7%	8%	9%	
Mass of MIBK	20mL (16.04g)	0.17	0.33	0.5	0.67	0.85	1.03	1.12	1.4	1.59	Mass of HSQ (g)
	50mL (40.1g)	0.41	0.82	1.24	1.67	2.11	2.56	3.02	3.49	3.97	
	100mL (80.2g)	0.81	1.64	2.48	3.35	4.22	5.12	6.04	6.98	7.94	

To prepare a solution of a given % solid content (top row, bold), select the required volume/mass of MIBK solvent in the left hand side column (bold) and use the required mass of HSQ solid displayed in the corresponding cell, e.g. 100mL of 3% requires 2.48g of HSQ powder mixed with 80.2g of MIBK.

Once the solution has been made, it must be kept in the fridge at <5°C.

Sample Preparation and Exposure

Please see the HSQ Datasheet for how to use the HSQ solution.

EM Resist are not liable for any incorrect handling of powder HSQ or use of incorrect MIBK.

If you require any technical assistance, please contact our office or email us at info@emresist.com