

Spin Coating and Solubility of MY-133 MC Polymer

Spin Coating

The product that is normally used for spin coating is MY-133MC. The moisture cured is preferred since it does not require inert curing and it also the one with the best adhesion to glass and silicon wafers. Below is the spin curve for undiluted MY-133MC.

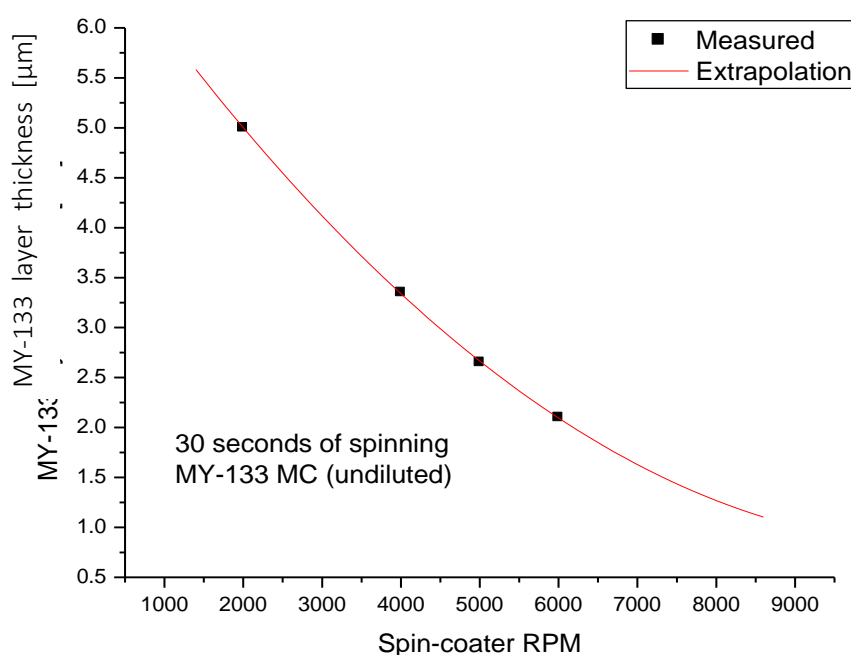


Fig. 1 Spin curve of undiluted MY-133 MC polymer. Measured with 30 seconds spinning time and glass (BK7) substrate.

Solubility and Dilution

Smaller thicknesses of the spin-coated layer are attainable with dilution of the MY-133 MC polymer with a proper solvent. It is soluble in many common medium polarity solvents but only above a certain concentration. Dilute solution are turbid and will eventually separate into two layers. In the table on page 2 you will find the suggested list of solvents for that purpose. You need to use a mixture of a fluoro solvent with any one of the other mentioned solvents.

The table (below) shows limits of solubility of some solvents arranged by their relative volatility. The data shows the minimum level of the product in a solvent below which the solution becomes turbid. Complete solubility is only reached with fluorinated solvents such as Freon 113 and the various Freon substitutes such as HFE-7100 (3M) or Vertrel (DuPont). The solubility is also obtained with mixed solvents containing 20-50% of the fluorinated solvents. For instance, 50% each of methanol and HFE-7100.

Solvent	Relative Volatility (BA=1)	Boiling point °C	Solubility
HFE-7100	>6	60	full
Acetone	6	56	>15%
Butyl acetate (BA)	1	124	>25%
Oxsol 100		139	>30%
n-Amyl acetate	0.40	142	*
Methyl amyl ketone	0.34	150	*
PMA(propylene glycol methyl ether acetate)	0.34	145	>25%
Cyclohexanone	0.30	155	>20
Ethylene glycol ethyl ether acetate	0.20	156	*
Disobutylketone DIBK	0.17	163-176	*
isophorone	0.02	215	>40%

*MY Polymers did not test these but they expect them to behave similar to the others, namely with solubility above 25-30%.