Sample Preparation Guide

In GPC the quality of the analysis is depending on many factors:

- Sample Solubility
- Eluent choice
- Detection
- Column choice
- Pore volume
- Efficiency(packing particle size)
- Molecular Weight Range
- Resolution
- Reproducibility
- Stability

Hence Needs below information before starting the analysis.

- Weigh the polymer
- Add Suitable solvent
- Dissolve the polymer into solvent (Time/ Temp/Agitation), How much temperature/ How much time to dissolve/ how long to agitate.
- Filter the solution using suitable syringe filter. (Only if dirty solution)

Standard preparation

- Choose suitable solvent.
- How much weigh to take for Standard.

Mol. Wt.	Conc (mg/ml)
Low (162-20,000)	4
Med (20,000-100,000)	2
High (100,000-1M)	0.5

- Keep it for 2 hours- overnight.

Sample Preparation

- If unknown take approx. 2 mg/ml
- Choose suitable solvent.

- Heat if needed.
- Keep for 1 hour- overnight.
- Filter only if dirty. (0.45 um Filter)

How much loading needed to the column

MW	Conc (mg/ml)	Inj vol (ul)
<50,000	2-5 mg/ml	20-50
50,000 - 500,000	1-2 mg/ml	50-200
>500,000	0.1- 1 mg/ml	50-200

Polymer Solubility Table

Polymer	Solubility
acenaphthylene/MMA	THF; DMF
acenaphthylene/Styrene/acrylic	THF; DMF
acrylic/butadine/styrene	THF; DMF
ABS (acrylonitrile/butadiene/styrene)	DMF; DMSO; THF
amides	DMF
acrylimide/acrylic acid	H_2O+Na AC+KH_2PO_4; DMSO
acetylene (LMW)	TCB; Toluene
acrylics	Toluene; THF; DMF; DMSO
acrylonitrile/butadiene Rubber	Toluene; DMF; TCB
Alkyd Resins	Toluene; THF; chloroform; DMAc
alkyl Resins	THF; chloroform
Apsphalt	Toluene; THF; chloroform; DMF; TCB; m-cresol
Aromatic polyamide (KEVLAR)	Insoluble In: TCB; DMF; m-cresol; HFIP; THF; Toluene; DMSO; NMP
alkyene glycols	ODCB; Toluene; THF; chloroform
amide/imide	DMF; DMAc; DMSO; DMF+LiBR
acrylonitrile	DMF
acetels, Delrin	DMAc at 140°C

acrylic acids	H_2O+0.05M NH_4Ac+2% MEOH pH @ 7.2w/NH_4OH
Amylose proprionate	THF
Amylose Acetate	THF
Amylose Butyrate	THF
Acrylonitrile/Styrene	THF
butene-1	ODCB; Toluene; TCB
Butyl Rubber	ODCB; Toluene; TCB
butyl Methacrylate	DMF
BUNA-N (cured)	Insoluble In: THF; Toluene; TCB
butylene terephalate	m-cresol
butadiene (CIS)	ODCS; Toluene; TCB
butadiene/acrylic	Toluene; DMF
butadiene/acrylic acid/acrylonitrile	Toluene; DMF
butyl isocyacate	THF
Carbowaxes	ODCB, chloroform, DMF, TCB
Cellulose acetate	THF, DMF
Cellulose nitrate	THF
Coal Tar Pitches	Soluble in all but H2O
Carboxylated SBR	DMF
Chlorinated polyethylene (Chloroprene)	TCB
Cellulose(Quarternary Amine Modified)	DMSO; H2O
caprolatam	m-cresol; HFIP
Carbonates	ODCB; THF; TCB
Carboylated polybutadiene	THF
Carboxy Methyl Cellulose	H2O; DMF
Cis isoprene	THF
Cellulose trinitrate	THF
Dextran	H2O, DMSO
dialkyl phthalate	ODCB; Toluene; chloroform; TCB

dimethylsiloxanes	ODCB; Toluene; chloroform; TCB
Drying oils	ODCB; Toluene; chloroform; TCB; DMF
dodecylacylate	THF
dioxalane	THF
ethylene oxide	THF; DMF; H2O; TCB
ethers	Toluene; THF; DMF
epichlorohydran	TCB
Epoxy Resins	Toluene; THF; chloroform
etylene acrylates	ODCB; Toluene; DMF; m-cresol
ethylene/vinyl acetate (EVA)	TCB
ethylene/propylene	ODCB; TCB
ethylene terephthalate (PET)	m-cresol; HFIP
ethylene/acrylic acid (NA+form)	TCB
ethylene/methylacrylate	TCB
ethylene/hexane-1	TCB
esters	m-cresol; HFIP; TCB; Toluene
ethylene/acrylic acid (ZN+form)	acidify with glacial acetic acid, then TCB
Fatty Acids	ODCB; THF; chloroform; TCB
Furfurylalcohol	ODCB; THF; chloroform; TCB
Gelatins	H_2O; DMSO
glycerides	ODCB; THF; TCB
glycol/glycerine polyesters	DMF; DMF+0.005% LiBR
glycols	ODCB; Toluene; THF; DMF; TCB
isoprene	Toluene; TCB
isobutylene	Toluene; THF
isocyanates	Toluene; THF; DMF; chloroform
imides	DMAc; DMF

imic acid	NMP
Isopropylidene-1,4-Phenylene	THF
KEVLAR (aromatic polyamide)	Insoluble In: TCB; DMF; m-cresol; HFIP; THF; Toluene; DMSO; NMP
KYNAR (Vinylidene floride)	DMF; DMAc; DMSO; cyclohexanone
Lignin sulfonates	H_2O
Lipids	methylene chloride; THF
Melamines	HFIP; m-cresol; TFA; TCB
methyl methacrylate	Toluene; THF; DMF; m-cresol; DMAc
methacrylates	TCB; DMF; THF
methyl methacrylate/styrene	ODCB; Toluene; THF; chloroform
methyl Pentene	TCB
NORYL (styrene/phenylene oxide)	TCB
Neoprene	Toluene; TCB
Nylon 4; 6; 6/6; 6/10; 12	m-cresol; HFIP
oxycarbonyloxy-1,4-Phenylene	THF
oxypropylene	THF
oxymethylene	DMAc
octadecyl methacrylate	DMF; DMSO at 140°C
octadecylvinylether	THF
oxymaleoyloxhexamethylene	THF
oxysuccinyloxhexamethylene	THF
Polyols	THF; DMF
Phenolic novalacs	THF; chloroform
Pheonl formaldehyde Resins	THF; TCB
phenylene oxide	TCB
propylene	ODCB; TCB

propylene oxide	THF; TCB
propylene/butene-1	ODCB; TCB
Phenylene sulfide	Reported to only be soluble in1-chloro-naphthalene at 235°C
Rubbers (uncured)	Toluene; TCB; ODCB
Rubber, chlorinated	Toluene; TCB
vinyl acetate	ODCB; THF; DMF
vinyl alcohol	H_2O; DMF; DMSO
vinyl butyral	THF; DMF
vinyl chloride	Toluene; THF
vinyl floride	DMF
vinyl methyl ethers	THF; DMF
vinyl chloride/vinyl acetate/maleic acid	DMF
vinyl alcohol/vinyl acetate	DMF; DMSO
vinyl esters	DMF; THF
vinylidene floride (KYNAR)	DMAc; DMF; DMSO
VITON (vinylidene floride/hexafluropropylene)	DMAc; isobutyl acetate
vinyl pyrrolidone/vinyl acetate	DMF
vinyl acetate/ethylene	DMF
vinyl acetate/ethylene/acrylate	DMF
vinyl bromide	THF
vinyl ferrocene	THF
vinyl formal	THF
Waxes (parrafins)	ODCB; Toluene; THF; chloroform; DMF; TCB; m-cresol
Waxes (microcrystalline)	ODCB; TCB