



## Your Link To: Solvent Effects Pathway™ TPU Excipients Overview

Solvent effects are an important area of interest in the development and use of polymers in drug eluting device and implantable drug delivery system development. Solvents are used to:

- Dissolve polymer to combine it with active pharmaceutical ingredients (APIs)
- Coat delivery systems and components to give them desired properties
- Clean and disinfect delivery systems and components during manufacturing

Solvent interactions can be indicative of water and small molecule transport through a polymer. An understanding of the effects of solvents on polymers allows for the optimization of design and processing conditions as well as the selection of a suitable solvent.

In this study, the effect of solvent absorption was analyzed by placing small cut pieces of injection molded bar samples into 20 ml scintillation vials and filling the vials with solvent. The vials were stored at room temperature (approximately 23°C) for 24 hours. The samples were then removed, wiped gently and weighed immediately. The results note the weight percentage of solvent that the resin absorbed during the 24 hour period.



# Solvent Absorption Pathway™ Hydrophobic Excipients

24 hours @23°C, ASTM-D 570

Solvent, TPU	PY-PT72AE	PY-PT77AE	PY-PT87AE	PY-PT60DE
% wt Increase				
Acetonitrile	25	19	12	8
Acetone	95	65	45	40
Caster Oil	3	2	0	0
Chloroform	D	D	D	D
Cyclohexane	35	20	5	1
Cyclohexanone	230	150	80	60
Cyclopentanone	425	250	175	135
Diethylether	80	55	30	25
Dimethylacetamide	PD	PD	PD	PD
Dimethylformamide	D	PD	PD	PD
Dimethylsulfoxide	14	16	20	35
Dioxane	350	250	175	175
Ethanol	50	35	25	25
Ethylacetate	175	100	55	55
Hexane	17	13	3	1
Isopropyl alcohol	35	25	13	14
Methanol	55	40	30	35
Methylene Chloride	D	1050	950	850
Methyl Ethyl Ketone	275	125	80	65
Tetrahydrofuran	D	PD	PD	PD
Toluene	350	175	90	80
Trichloroethane	PD	PD	PD	PD
Normal Saline (0.9% Sodium Chloride)	1	1	1	1
1N HCl (Hydrochloric Acid)	1	1	1	1
1N NaOH (Sodium Hydroxide)	1	1	1	1
PEG 300	1	0	0	0
PolyPropylene Glycol	0	0	0	0
Polysorbate - 80	1	0	0	0

PD = Partially Dissolved D = Completely Dissolved

# Solvent Absorption Pathway™ Hydrophilic Excipients

24 hours @23°C, ASTM-D 570

Solvent, TPU	PY-PT83AE100	PY-PT43DE20	PY-PT41DE60
% wt Increase			
Acetonitrile	100	35	60
Acetone	100	55	60
Caster Oil	0	0	0
Chloroform	D	D	D
Cyclohexane	1	1	0
Cyclohexanone	PD	60	45
Cyclopentanone	PD	175	125
Diethylether	14	20	7
Dimethylacetamide	D	PD	PD
Dimethylformamide	PD	PD	PD
Dimethylsulfoxide	350	85	PD
Dioxane	PD	250	225
Ethanol	60	35	30
Ethylacetate	100	70	55
Hexane	1	1	0
Isopropyl alcohol	25	17	13
Methanol	150	60	75
Methylene Chloride	D	1500	1350
Methyl Ethyl Ketone	125	80	70
Tetrahydrofuran	PD	575	400
Toluene	80	80	45
Trichloroethane	PD	PD	PD
Normal Saline (0.9% Sodium Chloride)	80	9	40
1N HCl (Hydrochloric Acid)	95	11	45
1N NaOH (Sodium Hydroxide)	60	6	30
PEG 300	8	1	2
PolyPropylene Glycol	2	0	0
Polysorbate - 80	1	0	0

PD = Partially Dissolved D = Completely Dissolved



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