Foster PureEase™
High Yield, Easy Process Thermoplastic Polyurethane Polymers

Unmodified medical grade Thermoplastic Polyurethane (TPU) polymers often exhibit processing obstacles in twin screw compounding and tube extrusion operations. Due to the nature of these materials, processors may experience strand curling, resin agglomeration, inherent tackiness and dimensional instability when unmodified resins are used.

Foster PureEase™ is a range of modified TPU polymers, specifically designed to address these common concerns and improve processing consistency and production yields. PureEase™ formulations incorporate very low loadings of processing enhancements into TPU polymers for operational improvements, while maintaining desired mechanical properties. PureEase™ is available in unfilled resins and can also be used as an additive package in TPU compounds containing pigments and fillers. Foster PureEase™ is ideally suited for tube extrusion applications where processing stability and control of ID/OD tolerances are critical. PureEase™ formulations have passed USP Class VI testing for biocompatibility.

Test Methods & Results

In a comparison study conducted by Foster Corporation, PureEase™ formulations were evaluated against unmodified TPU resins in 80 Shore A and 55 Shore D. PureEase™ was also evaluated in TPU compounds with Barium Sulfate (BaSO4). Results of the study concluded that PureEase™ TPU yielded a 22% improvement in the OD over unmodified samples, while radiopaque PureEase™ experienced a 42% improvement respectively.

Property	Units	PureEase™ TPU – Unfilled Grades					
		TPU 80A (Control)	**PureEase™ 80A TPU**	TPU 55D (Control)	**PureEase™ 55D TPU**	TPU 75D (Control)	**PureEase™ 75D TPU**
Stress Yield	PSI	-	**-**	-	**-**	8738	**8036**
Stress Break	PSI	6,092	**9,230**	7,466	**8,410**	9,415	**9,676**
Strain Yield	%	-	**-**	-	**-**	5.22	**5.2**
Strain Break	%	639	**779**	298	**367**	151	**143**
Tensile Modulus	PSI	2,822	**2,639**	16,581	**16,103**	204,323	**186,149**
Flexural Modulus	PSI	4,867	**5,333**	19,482	**20,008**	**311,962**	**284,217**
MFI (224°C / 1.2kg)	g/10 min	-	**23.02**	-	**13.39**	-	**48.39**
Avg. OD Standard Dev.	Inches	0.00324	**0.00285**	0.00252	**0.00124**	0.00132	**0.00128**
Avg. OD Improvement	%	-	**12.04**	-	**50.79**	-	**3.03**

Property	Units	PureEase™ TPU – Radiopaque Filled Grades					
		TPU 80A + BaSO4 (Control)	**PureEase™ 80A TPU + BaSO4**	TPU 55D + BaSO4 (Control)	**PureEase™ 55D TPU + BaSO4**	TPU 75D + BaSO4 (Control)	**PureEase™ 75D TPU + BaSO4**
Stress Yield	PSI	-	**-**	-	**-**	8030	**7510**
Stress Break	PSI	5,801	**6,562**	6,571	**7,039**	8,098	**9,432**
Strain Yield	%	-	**-**	-	**-**	4.70	**4.75**
Strain Break	%	719	**692**	378	**337**	162	**173**
Tensile Modulus	PSI	4,572	**4,688**	20,731	**21,768**	228,633	**194,696**
Flexural Modulus	PSI	6,274	**6,975**	30,883	**29,878**	352,459	**351,949**
MFI (250oC, 5kg)	g/10 min	81.8	**20.42**	58.01	**23.80**	101.54	**88.03**
Avg. OD Standard Dev.	Inches	0.00138	**0.00113**	0.00352	**0.00164**	0.01172	**0.00535**
Avg. OD Improvement	%	-	**18.12**	-	**53.41**	-	**54.35**

Market Applications:

Thermoplastic Polyurethane (TPU) polymers are often used in the manufacturing of central venous catheters, urinary catheters and implants due to their inherent ability to soften when in contact with the body. Design and manufacturing of complex devices (specifically those that are multi-lumen) is critical, although often a challenge for processors. Foster PureEase™ formulations are precisely engineered to overcome common operational obstacles and improve production yields in twin screw compounding and tube extrusion processes.

Foster Corporation
45 Ridge Road
Putnam, CT 06260
(860) 928-4102
www.fostercomp.com