The polytetrafluoroethylene (PTFE)

The high-molecular-weight polytetrafluoroethylene (PTFE) used is very fine-grained Zonyl® MP 1300 polytetrafluoroethylene. This PTFE has particular suitability as additive in polymer mixtures based on HT thermoplastics.

Examples

Compounding examples

A mixture made of from 95% by weight to 60% by weight of PPSU and from 40% by weight to 5% by weight of PTFE was compounded in the following manner:

The PPSU is melted and devolatilized at 345°C to 380°C screw temperature and 250 rpm in a twin-screw extruder (producer and type: Werner & Pfleiderer ZSK25 WLE (K4)); the PTFE is introduced by way of a lateral feed aperture.

	Example 1	**Example 2**	**Example 3**	**Example 4**	**Example 5**
PPSU (% by wt.)	95	95	80	60	60
PTFE (% by wt.)	5	5	20	40	40
Barrel temperature (degrees Celsius)	345	380	380	380	380
Rotation rate (rpm)	200	200	200	200	200
Vacuum (mbar abs.)	600	600	600	600	600

The compounded material obtained was pelletized.

The sheet according to the invention can be produced in a manner known per se via extrusion of the pellets obtained in the first step.

To this end, thermally plastified melt is produced by way of one extruder in the case of the simple extrusion process or by way of a plurality of extruders in the case of the coextrusion process, and is fed into an extrusion die. There can be additional apparatuses, e.g. a melt pump and/or a melt filter, arranged in a manner known per se between the extruder and extrusion die. The extruded webs can then be introduced into a polishing stack or into a calibrator.

The pellets were remelted and extruded to give tapes with the following dimensions: length 1 000 mm, width 150 mm and thickness 1.5 mm. Melt temperature was about 385 degrees Celsius.

Extrusion Examples

Example 6 relates to a tape with the constitution according to Example 1; the pellets were extruded at a melt temperature of 347 degrees Celsius to give a tape.

Example 7 relates to a tape with the constitution according to Example 1; the pellets were extruded at a melt temperature of 379 degrees Celsius to give a tape.

Example 8 relates to a tape with the constitution according to Example 1; the pellets were extruded at a melt temperature of 380 degrees Celsius to give a tape.

Example 9 relates to a tape with the constitution according to Example 2; the pellets were extruded at a melt temperature of 347 degrees Celsius to give a tape.

Example 10 relates to a tape with the constitution according to Example 2; the pellets were extruded at a melt temperature of 358 degrees Celsius to give a tape.

Example 11 relates to a tape with the constitution according to Example 1; the pellets were extruded at a melt temperature of 350 degrees Celsius to give a tape.

Example 12 relates to a tape with the constitution according to Example 4 or 5; the pellets were extruded at a melt temperature of 352 degrees Celsius to give a tape.

The mechanical data for the resultant tapes were as follows:

	Example 6	Example 7	Example 8	Example 9	Example 10	Example 11	Example 12
Modulus of elasticity in extrusion direction (MPa)	2 174	2 183	2 135	2 174	2 152	2 188	2 172
Modulus of elasticity perpendicular to extrusion direction (MPa)	2 166	2 118	2 170	2 127	2 145	2 190	2 184
Charpy	no fracture	no fracture	no fracture	no fracture	no fracture	no fracture	no fracture
Gardner	> 18	> 18	> 18	> 18	> 18	> 18	> 18
Coefficient of friction, static, upper surface	0.37	0.35	0.3	0.29	0.23	0.26	0.26
Coefficient of friction, static, lower surface	0.24	0.23	0.25	0.24	0.25	0.2	0.22
Coefficient of friction, dynamic, upper surface	0.34	0.35	0.26	0.28	0.2	0.26	0.21
Coefficient of friction, dynamic, lower surface	0.19	0.21	0.22	0.22	0.24	0.15	0.2

1. Process for producing polyphenyl sulphone (PPSU) and polytetrafluoroethylene (PTFE) mouldings from a mixture of PPSU and PTFE
characterized in that
the PTFE content of the mixture is from 2% by weight to 10% by weight and the PPSU content of the mixture is from 90% by weight to 98% by weight
and in that
the PPSU and PTFE are mixed with one another at a temperature of from 340°C to 385°C in an extruder, the resultant compounded material is palletized, and the pellets are extruded at from 370°C to 390°C screw temperature to give plastic mouldings.

2. Process for producing plastics mouldings according to Claim 1 characterized in that the two plastics PPSU and PTFE are mixed with one another at a temperature of from 345°C to 385°C in an extruder, the resultant compounded material is pelletized, and the pellets are extruded at from 375°C to 390°C screw temperature to give plastics mouldings.

3. Use of the process according to Claims 1 and 2 for producing anti-wear tapes by extrusion of the mixture.

~~4. Pipeline for a fluid characterized in that it is equipped with at least one anti-wear tape according to Claim 4.~~

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Examples

Compounding examples 1 and 2, Comparative examples 3, 4 and 5

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Comparative Examples 6 and 9 to 12, Extrusion Examples 7 and 8

Comparative Example 6 relates to a tape with the constitution according to Example 1; the pellets were extruded at a melt temperature of 347 degrees Celsius to give a tape.

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Coefficient of friction, dynamic, lower surface	0.19	0.21	0.22	0.22	0.24	0.15	0.2