

Xytron™ U1535E & U1530E

PPS

Extrusion, High Viscosity

Print date: 2024-03-13

GRADE CODING

Xytron™ PPS high viscous extrusion grades.

MATERIAL HANDLING

Storage

In order to prevent contamination, supplied packaging should be kept closed and undamaged. For the same reason, partial bags should be re-closed before re-storage.

Allow the material that has been stored elsewhere to adapt to the temperature in the processing room while keeping the bag closed.

Packaging

Xytron™ grades are supplied in polyethylene bags.

Moisture content as delivered

Xytron™ PPS grades show hardly any moisture pick up. The moisture content is not specified.

Conditioning before molding

To prevent moisture condensing on granules, bring cold granules up to ambient temperature in the molding shop while keeping the packaging closed.

Moisture content before molding

Since Xytron™ has a low moisture pick up and is not hygroscopic, still the advice is to dry Xytron™ for a short time. The advisable moisture level before molding is maximum 500 ppm.

Drying

Hot air ovens or hopper driers can be used for pre-drying Xytron™ grades, however preferred driers are dehumidified driers with dew points maintained between -30 and -40°C / -22 and -40°F. Vacuum driers with N₂ purge can also be used.

Moisture content	Time	Temperature	
		[°C]	[°F]
As delivered	4 – 8	80	176

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Regrind

Regrind can be used taking into account that this regrind must be clean/low dust content/not thermally degraded/dry, of same composition and similar particle size as the original material. The acceptable level of regrind depends on the application requirements. Be aware that regrind can cause some small color deviations.

MACHINERY

Screw geometry

Typically, 3-zone screw designs with volumetric compression ratios of approximately 3:1 up to 4:1.

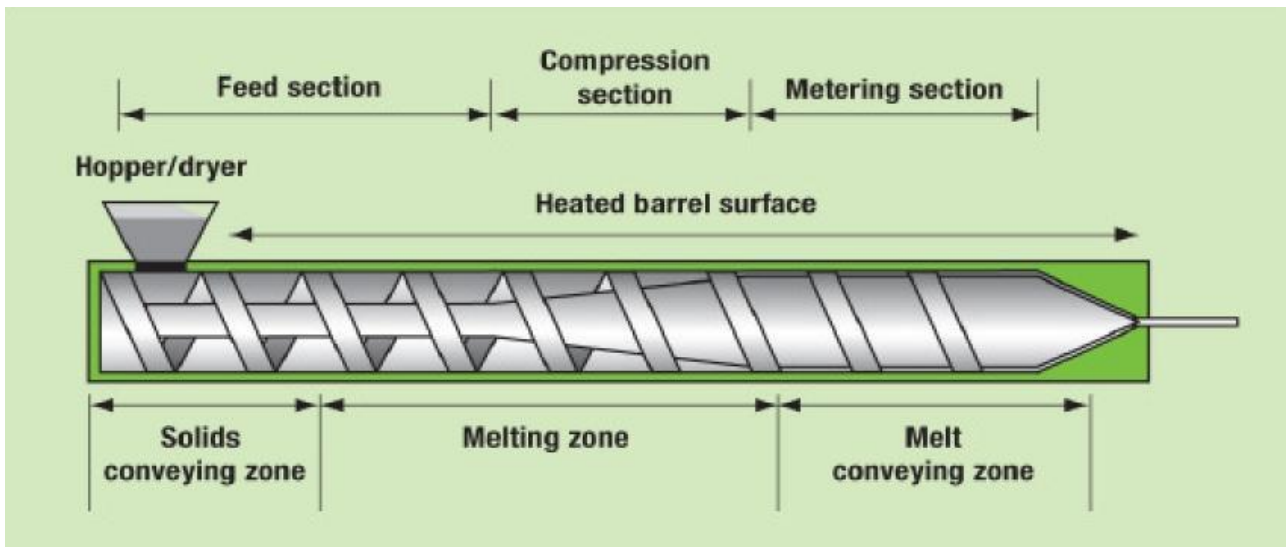
Steel type

Abrasive-resistant steel types which are generally used for glass fiber reinforced, high temperature, polyamide or PPS materials are also to be used for the Xytron™ grades in tools, nozzles, and screws. Failing to do so may result in wear, especially of the screw/barrel (due to the high temperatures involved there), which can lead to decreasing processing performance.

TEMPERATURE SETTINGS

Barrel temperature

Optimal settings are governed by barrel size and residence time.



	Rear	Center	Front	Adapter	Head/die	Melt
[°C]	310 – 330	300 – 325	300 – 325	300 – 320	290 – 320	310 - 330
[°F]	590 - 626	572 - 617	572 - 617	572 - 608	554 - 608	590 - 626

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The use of a melt filter (preferably 80-100mesh) is recommended for flame retardant grades.

Melt temperature

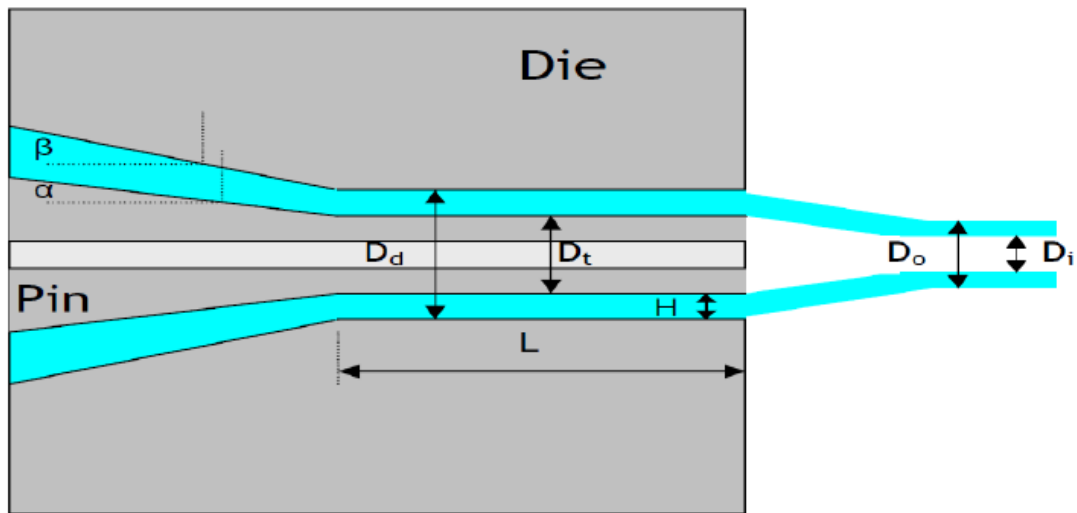
To generate a good and homogeneous melt, the melt temperature should always be above 300°C / 572°F. Optimal mechanical properties will be achieved at melt temperatures between 300-320°C / 572-608°F.

It is advised to frequently measure the melt temperature by pouring the melt in a Teflon cup and inserting a thermo probe into the melt.

Die design

For tube die's it is important that the ADR should be low.

In order to draw the cross section of the tube correctly from the die, the Draw Ratio Balance (DRB) should be max 1:2



$$ADR = \frac{D_d^2 - D_t^2}{D_o^2 - D_i^2}$$

$$DRB = \frac{D_d / D_t}{D_o / D_i}$$

Safety

Please handle the material with care by following all the guidelines indicated on the SDS.

RoHS

PPS complies fully with all RoHS requirements.

Coloring

Coloring with a masterbatch on basis of EVA or PA12 is working well.

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RESIDENCE TIME

Melt residence time (MRT) for Xytron™ U1535E and Xytron™ U1530E should not exceed 8 minutes. A formula to estimate this MRT is described below

$$MRT = \frac{\pi D^3 \rho * t}{m \cdot 60}$$

Whereas:

MRT	= Melt Residence Time [minutes]
D	= Screw Diameter [cm]
ρ	= Melt Density [g/cm ³]
m	= Shot Weight [g]
t	= Cycle Time [s]

Please note: In the calculation above, the adaptor and die volume has not been taken into account.

SAFETY

For the safety properties of the material, we refer to our SDS which can be ordered at our sales offices. During practical operation we advise to wear personal safety protections for hand/eye/body.

STARTUP/SHUT DOWN/CLEANING

Production has to be started and stopped with a clean machine. Cleaning can be done with PA6-GF or PA66-GF, applicable cleaning agents or HDPE. Hot runners can also be cleaned and put out of production cleaning them with PA6-GF or PA66-GF.

PRODUCTION BREAKS

During production breaks longer than a few minutes, we advise emptying the barrel. The temperature of the barrel and the hot runner [if applicable] should be reduced to a level far enough below the melting point of the compound in order to stop decomposition of the compound.

When the die or even the screw is blocked, be aware that under these conditions a sudden outburst of molten material can take place.

Always wear personal safety protections for eye/hand/body.

TROUBLESHOOTING

See our trouble shooting guidelines on the internet.

Contact Envalior in case more information is required from the aspect of material or processing.

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