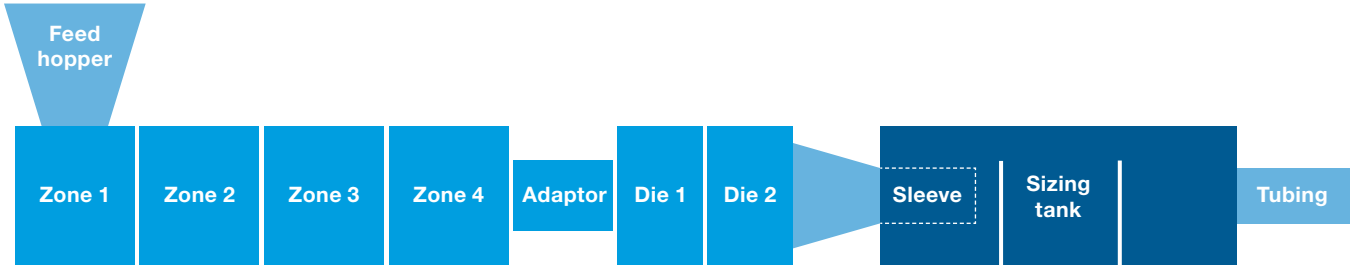
SOLVAY
asking more from chemistry®

Ryton® PPS XE Series Tube Extrusion

Listed below are general processing recommendations for extruding tubing from Ryton® PPS XE Series alloys.

Tube extrusion line schematic



Extruder set-up

- 24:1 to 28:1 L/D
- General Purpose screw with 2.5:1 to 3:1 Compression ratio metering screw. Mixing head optional.
- 20/80/20 Screen-pack
- Rupture disk
- Heated die clamp

Tubing die

- Low volume, high compression die head suitable for low melt viscosity materials
- Die bushing ID should be 1.4 to 1.6 times the tubing diameter
- Die annulus 1.6 to 1.9 times the desired tubing wall thickness

Sizing

- Short vacuum chamber sizing tank.
- Aluminum, thin wall sleeve, with 0.125-inch vacuum holes.
- Sleeve L/D = 5
- Allow for 1 % to 1.5 % shrinkage.
- Lube rings not required.

Material drying

- Dry at 80 °C to 85 °C (175 °F to 185 °F) for 4 to 6 hours prior to processing
- Hopper driers and/or desiccant driers are suggested with –40 °C (–40 °F) Dew Point recommended.

Temperature profile for production

Extruder Zone 1	288 °C (550 °F)
Extruder Zone 2	300 °C (570 °F)
Extruder Zone 3	300 °C (570 °F)
Adaptor	293 °C (560 °F)
Die 1	293 °C (560 °F)
Die 2	293 °C (560 °F)

Processing Considerations

Allowing sufficient extruder heating soak time on start-up is vital to ensure breaker plate and screen-packs are up to processing temperature. Cold breaker plates can result in freezing off of the extrudate at the screen-pack resulting in blocking of the extruder output and generating unacceptably high extruder pressures.

Ryton® PPS XE Series alloys process better at higher extruder rates where the shear from the screw does more of the melting rather than the heaters. Extruders should be sized to run above 50 % capacity for the process to generate sufficient shear heating while minimizing residence time.

Bubbles, smoke or gels are indications of the material being too hot for too long in the extruder. Temperatures may be adjusted as appropriate, but dies should not be set below 282 °C (540 °F). If melt temperatures need to be lowered, it is preferred to adjust the extruder temperature profile rather than lowering die temperatures.

Sustained melt temperatures above 315 °C (600 °F) for prolonged time periods can lead to thermal degradation of the compound on the screen-pack and result in unacceptably high extruder pressures.

Purging Procedure

Equipment used for processing Ryton® PPS XE Series alloys is best purged at processing temperatures using a fractional melt flow HDPE (Marlex® HHM 50100). After purging with HDPE, run the extruder dry, and with the extruder and die still at temperature, break down the die and clean hot. The screw should be pulled and cleaned hot. The barrel should be cleaned hot as well.

Off-gas products produced during processing can be irritants to the mucous membranes, therefore adequate ventilation is recommended.

www.solvay.com

SpecialtyPolymers.EMEA@solvay.com | Europe, Middle East and Africa
SpecialtyPolymers.Americas@solvay.com | Americas
SpecialtyPolymers.Asia@solvay.com | Asia Pacific

SOLVAY
asking more from chemistry®