

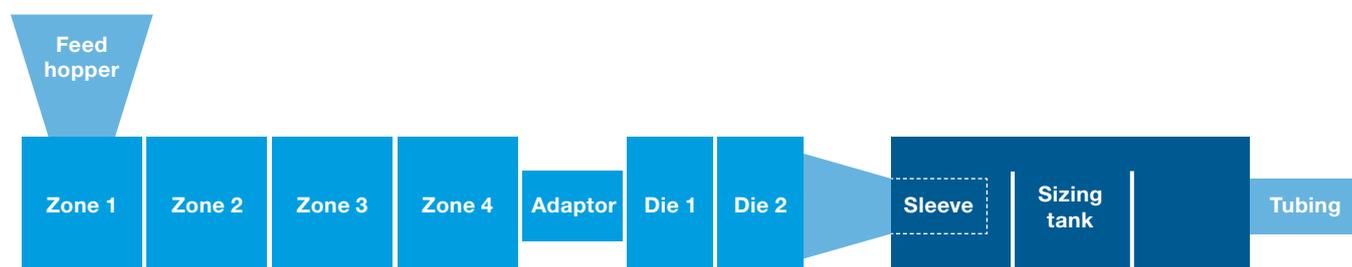


**SOLVAY**  
asking more from chemistry®

# 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](http://www.solvay.com)

[SpecialtyPolymers.EMEA@solvay.com](mailto:SpecialtyPolymers.EMEA@solvay.com) | Europe, Middle East and Africa

[SpecialtyPolymers.Americas@solvay.com](mailto:SpecialtyPolymers.Americas@solvay.com) | Americas

[SpecialtyPolymers.Asia@solvay.com](mailto:SpecialtyPolymers.Asia@solvay.com) | Asia Pacific



**SOLVAY**

asking more from chemistry®

Safety Data Sheets (SDS) are available by emailing us or contacting your sales representative. Always consult the appropriate SDS before using any of our products. Neither Solvay Specialty Polymers nor any of its affiliates makes any warranty, express or implied, including merchantability or fitness for use, or accepts any liability in connection with this product, related information or its use. Some applications of which Solvay's products may be proposed to be used are regulated or restricted by applicable laws and regulations or by national or international standards and in some cases by Solvay's recommendation, including applications of food/feed, water treatment, medical, pharmaceuticals, and personal care. Only products designated as part of the Solviva® family of biomaterials may be considered as candidates for use in implantable medical devices. The user alone must finally determine suitability of any information or products for any contemplated use in compliance with applicable law, the manner of use and whether any patents are infringed. The information and the products are for use by technically skilled persons at their own discretion and risk and does not relate to the use of this product in combination with any other substance or any other process. This is not a license under any patent or other proprietary right. All trademarks and registered trademarks are property of the companies that comprise Solvay Group or their respective owners.

© 2015 Solvay Specialty Polymers. All rights reserved. D 04/2014 | R 01/2015 | Version 1.0