



PEXIDAN® Processing Quick Reference for PEX Pipe Extrusion

The following information is applicable to extrusion of small-diameter PEX pipe and tubing such as used for hot & cold plumbing and radiant heating applications. The information may not be applicable to large-diameter pipe, that is pipe greater than 2" in diameter.

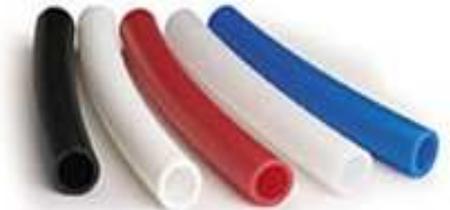
Equipment Recommendations

Extruder:	2 ½" to 4 ½" 24:1 or higher (see also 'Processing' for sizing considerations)
Screw Type:	Polyethylene type – Spiral Maddock, 2.5:1 compression
Barrel Type:	Non-grooved feed section
Die:	Land minimum 1.5 D
Drawdown:	DDR of 1.5 to 2.0 suggested, DDB of near 1.0
Feeder:	Gravimetric or loss-in-weight
Dryer:	Regenerative-desiccant-type capable of -40°F/°C Dew Point
Vacuum Tank:	with water ring (approx. 0.040" over finished OD) and segmented-ring sizer or sleeve
Curing:	Sauna Room or Hot Water Immersion tank capable of producing 100% RH at 180°F / 82°C or higher

In general, PE pipe extrusion lines and tooling are suitable with the addition of a dryer and curing chamber.

Processing Parameters (a good starting point)

Extruder Profile:	Feed:	320°F / 160°C
	Transition:	340°F / 171°C
	Metering:	350°F / 177°C
	Crosshead:	365°F / 185°C
	Die:	365°F / 185°C



Target Melt Temperature:	370 - 380°F / 187 - 193°C
Feed Throat cooling:	None
Screw Cooling:	None
Breaker Plate:	No screens - use of choke preferred
Line Speed:	30 - 80 RPM range
Sizing:	Water ring (0.040" over finish diameter) and segmented-ring

sizer

Curing:	Typically 16 hours in sauna at above conditions
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Handling and Storage

PEXIDAN® A-1001 Graft Compound:

- Has 6 month shelf life under normal conditions.
- Must be stored dry and unopened until ready to use.
- Should be used within a few days once opened.
- Suggest packaging be evacuated of air and completely re-sealed if product cannot be used immediately – may be restored up to 30-days if properly resealed.
- Must not be dried or heated before using.
- Must not be pre-blended with Catalyst Masterbatch unless pre-blend is to be used within 4 hours.

PEXIDAN® Catalyst Masterbatch:

- Has no shelf life, but stock should be rotated using FIFO principal.
- Should be dried 4 to 6 hours @ 150°F / 66°C maximum before use.

Color/additive Masterbatches should also be dried 4 to 6 hours @ 150°F / 66°C maximum before use.

Processing

PEXIDAN® IS SENSITIVE TO BOTH HEAT AND MOISTURE, and both must be minimized during the extrusion process to insure good processibility and high extrusion quality, thus:

- Run the extrusion line as fast as attainable to minimize residence time - suggested minimum speed is 25 rpm so the extruder should be sized accordingly – a large extruder may run too slowly on small diameter pipe.
- Resist the temptation to increase temperatures to correct rough surface – surface will usually get worse.
- Avoid idle time - bleed at low speed or purge when lengthy downtimes are experienced.
- Purge at high RPM for 1-2 minutes or until smooth and lump-free before start-up following extended downtime (more than 5 minutes).

Shutdown

- Discard any unused PEXIDAN® A-1001 compound or blend left in the extrusion or blending equipment.
- Purge the extruder and tooling with polyethylene to remove excess graft material - do not leave graft in the extruder as it will crosslink, even without catalyst masterbatch.
- If pulling screw - use a semi-rigid PVC at reduced temperatures to scrub the screw and facilitate the tear-down.
- Clean feeders, screw, barrel, chock, crosshead and tooling to eliminate all traces of material.

Curing

PEXIDAN® is crosslinked by reaction with moisture at elevated temperatures. Both high temperature and high humidity are desirable for obtaining the fastest cure. Either alone is not sufficient. 'Sauna' rooms, hot-water immersion processes or hot water circulation systems are typically used to cure PEX pipe. Considerations:

- Doubling the moisture level will cut cure time in half. Water immersion is ideal below the boiling point of water, but not practical above 100°C unless it is done under pressure (autoclave).
- Cure rate approximately doubles for every 10°C temperature rise (all at the same %RH).

Cure rate is inversely proportional to the square of the thickness - doubling thickness takes 4 times longer to cure all the way through.

The technical information contained herein is, to the best of our knowledge, believed to be accurate. However, SACO AEI Polymers makes no guarantee or warranty, and does not assume any liability, with respect to the accuracy or completeness of such information. Suitability of material for a specific final end use is the sole responsibility of the user. The data contained herein are typical properties only and are not to be used as specifications.

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