

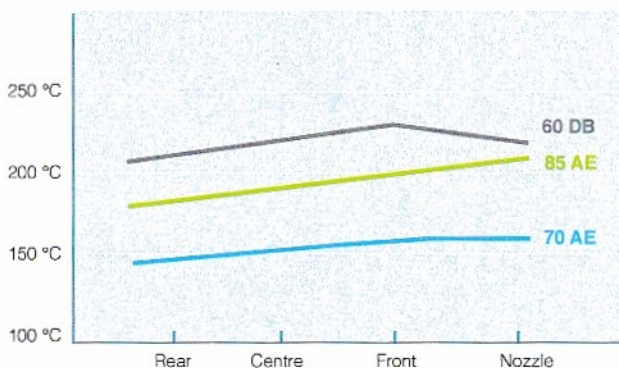
Processing recommendations

The following information describes the most ideal machine and screw configuration for a compact and expanded AVALON® TPU. It is not seen as a definitive guide as AVALON® grades can perform on a wide variety of shoe processing machines. We recommend that screw configurations of the polyamide type are not employed due to their inherent high shear characteristics. Long dwell times should be avoided.

AVALON® grade range	AVALON® soft grades	AVALON® hard grades	AVALON® Light
Material type	AVALON® 60 - 75	AVALON® > 80 Shore A	Expanded TPU
Machine type	Conventional IM and carousel machines	Conventional IM machines - vertical or horizontal	Conventional IM and carousel machines with shut-off and non-return valve
Screw configuration	Reciprocating screw Flexible PVC type	Reciprocating screw PE type (general purpose 3 stages)	Reciprocating screw PE type (general purpose 3 stages) and Flexible PVC type
Back pressure	0.3 - 3	0.3 - 3	0.3 - 50
Screw capacity cm ³	> 600	Part dependent	Part dependent
Screw speed rpm	20 - 80	20 - 100	20 - 100
Length: diameter ration (L/D)	15 - 25:1	15 - 25:1	14 - 18:1
Compression ratio	> 2:1	2.5 - 3.5:1	2.7 - 2.8:1
Injection pressure kg/cm ²	> 400	> 500	> 600
Clamping force kN	> 200	> 2000	> 1200
Heating	Electrical	Electrical	Electrical
Cooling	Water-jacketed feed zone	Water-jacketed feed zone	Water-jacketed feed zone
Process temperature °C	160 - 200	160 - 230	150 - 165
Tooling cooling	Water channels using chilled water	Water channels using chilled water	Water channels using chilled water
Tooling temperature °C	25 - 45	25 - 45	25 - 45
Injection speed (sec)	5 - 20*	5 - 20*	5 - 20*

* This parameter is dependent on the material hardness and the complexity of the tooling.

Temperature Ranges



AVALON® 60 DB

AVALON® 85 AE

AVALON® 70 AE

It is recommended that waterways are included to facilitate improved cooling in continuous production.

Runners should be short in length and large in diameter; ideally full-round or trapezoidal and tapered where possible.

Hot runner systems are recommended for continuous production runs of high volume.

The **gates** should be generous to ensure the best flow conditions.

Sprues should be kept as short as possible and a minimum 5° taper should be allowed.

Molds should be tapered and vapor- or lightly, bead-blasted to avoid sticking. All common mould making materials are suitable for use with AVALON® TPU and short run or prototype moulds can be produced in aluminium or by metallized spray.