



## PRODUCT DATA

### AVALON® 60 DB

Thermoplastic Polyurethane

#### INTRODUCTION

AVALON 60 DB is a high performance polyester based thermoplastic polyurethane for injection moulding.

AVALON 60 DB is part of the AVALON Perform Range and offers a premium soling material for sports footwear and top-pieces.

The features offered include :

- Durability
- Excellent surface definition
- Abrasion resistance
- Flex resistance
- Phthalate free TPU

Table 1: Typical Physical Properties <sup>(1)</sup>

Property	Method	Unit	Value
Density	ISO 2781	g/cm <sup>3</sup>	1.23
Hardness, Shore A	ISO 868	A	-
Hardness, Shore D	ISO 868	D	60
Tensile Strength	ISO 37	MPa	43
Elongation at Break	ISO 37	%	350
100% Modulus	ISO 37	MPa	19
300% Modulus	ISO 37	MPa	31
Tear Strength (Angle)	ISO 34B	kN/m	180
Compression Set @ 23°C	ISO 815	%	20
Abrasion Resistance	ISO 4649	mm <sup>3</sup>	35
Ross Flex @ -10°C	BS 5131	k.cycles	250
Flexural Modulus @ 23°C	ISO 178	MPa	184

<sup>(1)</sup> : Test plates conditioned 20 hours at 100°C before testing

#### HEALTH AND SAFETY ADVICE

Before undertaking any trials with this product it is essential that all personnel are aware of the necessary precautions that must be taken. These are detailed in the relevant Safety Data Sheet that will be provided by Huntsman Polyurethanes.

#### POLYMER SELECTION

Before selecting this product it is necessary that the user ensures its performance will meet all operational and end use requirements. Having satisfied these requirements, should changes be contemplated in method of application, materials, service conditions or any other change that could affect the ultimate performance of the end product, then further tests and trials should be carried out.

For assistance with particular problems and applications, please contact the AVALON TPU Technical Service Department.

#### PACKAGING & STORAGE

AVALON TPU is supplied in 20 or 25 kg moisture guarded sacks, 40 per pallet and shrink wrapped.

AVALON Thermoplastic Polyurethanes may be stored for 24 months from the date of manufacture, sealed in the manufacturers original packaging.



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#### MATERIAL PREPARATION

AVALON TPU grades are supplied pre dried in moisture guarded sacks.

To ensure trouble free processing and high quality injection moulded parts, it is preferable to dry AVALON TPU grades.

The recommended drying conditions are 2hrs at 80-90°C in a desiccant dryer.

For specific advice on colouring AVALON TPU grades, the use of additives and regrind, please contact the AVALON TPU Technical Service group.

#### SCREW DESIGN

Injection moulding machines with general purpose polyethylene type 3 stage screws are most suitable for processing AVALON TPU grades.

High shear screws with mixing pins, nylon type screws or short compression stage screws are not recommended.

The most suitable configuration is listed in Table 2.

#### MOULD CONSIDERATIONS

To avoid shear degradation the runner system should be as generous as possible with a full round / circular or trapezoid section offering the best results.

Gating should be as large as possible with a relatively short length to ensure maximum transference of holding pressure.

Most designs are appropriate with the exception of submarine and pin gating.

Mould cavities with a sand blasted finish will improve demoulding.

However polished moulds give best transparency properties.

Standard venting techniques should be employed to eliminate air trapping and burn marks.

Enquiries should be addressed to the nearest Huntsman Sales Office or to:  
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#### The address of your nearest technical centre is:

Huntsman (Europe) BVBA, Everslaan 45, B-3078 Everberg, Belgium.  
Tel: +32 2 758 98 74 Fax: +32 2 758 90 18

Table 2: Typical Processing Parameters

Typical Screw Diameter	40 – 120 mm
L/D Ratio	20 – 25 :1
Compression ratio	2.0 – 3.0 :1
3 Stage Design	
Feed Zone	0.4L
Compression Zone	0.3L
Metering Zone	0.3L
Screw rotation speed	20 – 80 rpm
Injection pressure	20 – 100 Bar
Secondary or holding pressure	10 – 50 Bar
Back pressure	0.3 – 3 Bar
Injection speed	As slow as possible
Mould temperature	25 – 50°C
Temperature profile:	
Feed Zone	25 – 35°C
Rear Zone	190 – 210°C
Centre Zone	195 – 215°C
Front Zone	200 – 220°C
Nozzle Tip	195 – 210°C

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