

# General Product Data Sheet

## Arla Plast AB

Valid from date: 2010-01-22

### 1. Description

General data for extruded solid sheet produced by Arla Plast AB. Detailed product specifications available upon request and General Conditions of Sale available on web site, [www.arlaplast.com](http://www.arlaplast.com).

### 2. Tolerances

#### 2.1 - Length and width, 23 °C; 50% RH

Length or Width	Tolerance [mm]
Standard sheet up to 3050 mm	+5 / -0
Special sheet length over 3050 mm	request
Standard width up to 2050 mm	+5 / -0
Uncut edges	+20 / +2
Cut to size	± 0.5

#### 2.2 - Deviation of shape from rectangular

Width of sheet [mm]	Tolerance of $\Delta L$ [mm] (the difference between the lengths of the two diagonals)
Width	$< 3.5 \times 10^{-3} \times \text{width}$ but need not be less than 5 mm

#### 2.3 - Thickness

Thickness [mm]	Tolerance [%]
Thickness $\leq 5$	± 10
Thickness $> 5$	± 5


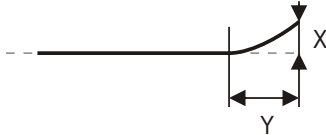
#### 2.4 - Maximum shrinkage, ISO 11963:1995


Thickness [mm]	Tolerance [%]
Thickness $\leq 5$	30
Thickness $> 5$	15

#### 2.5 - Flatness

##### 2.5.1 - Transparent products


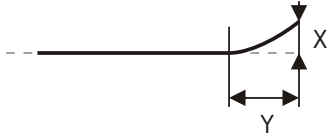

Tolerances – to be measured on sheet size 500 mm x extrusion width. Always position the sheet in such a way that deformation on edges can be measured. Always measure on a flat surface.

Type of deformation	Sheet thickness	Length Y	Height X
 Sheet is fully warped	Upto 8 mm	-	Max 5 mm
	Over 8 mm	-	Max 7 mm
 Sheet edge is warped	Upto 8 mm	< 50 mm	Max 3 mm
		< 100 mm	Max 3.5 mm
		< 200 mm	Max 4 mm
		> 200 mm	Max 5 mm
	Over 8 mm	< 50 mm	Max 4 mm
		< 100 mm	Max 5 mm
	> 200 mm	Max 8 mm	

Type of deformation	Sheet thickness	Length Y	Height X
 <p>Sheet has a return-deformation (Press the uttermost edge to the table)</p>	Upto 8 mm	< 100 mm	Max 3 mm
		< 300 mm	Max 3.5 mm
		> 300 mm	Max 4 mm
	Over 8 mm	< 100 mm	Max 4 mm
		< 300 mm	Max 5 mm
		> 300 mm	Max 6 mm

### 2.5.2 - Opaque products

Tolerances – to be measured on sheet size 500 mm x extrusion width. Always position the sheet in such a way that deformation on edges can be measured. Always measure on a flat surface.

Type of deformation	Sheet thickness	Length Y	Height X
 <p>Sheet is fully warped</p>	Upto 8 mm	-	Max 7 mm
		Over 8 mm	-
 <p>Sheet edge is warped</p>	Upto 8 mm	< 50 mm	Max 5 mm
		< 100 mm	Max 5.5 mm
		< 200 mm	Max 6 mm
	Over 8 mm	> 200 mm	Max 7 mm
		< 50 mm	Max 6 mm
		< 100 mm	Max 7 mm
 <p>Sheet has a return-deformation (Press the uttermost edge to the table)</p>	Upto 8 mm	< 100 mm	Max 5 mm
		< 300 mm	Max 5.5 mm
		> 300 mm	Max 6 mm
	Over 8 mm	< 100 mm	Max 6 mm
		< 300 mm	Max 7 mm
		> 300 mm	Max 8 mm

When flatness is a critical requirement, tolerance is to be communicated to Arla Plast AB and also to be approved by Arla Plast AB. Note: When flatness is critical, packaging with chipboard on top and bottom + special pallet in the same size as the sheet size should be requested.

## 3 - Appearance

**3.1 - Maximum number of visual defects (black specs, pin holes, inclusions) checked on arm length distance, 50-70 cm. Defect size measured with measuring scale printed with circles of different diameters. Optical distortions around defect not included. Area of 30x30 cm<sup>2</sup>.**

Defect size [mm]	Sheet thickness 6 mm	Sheet thickness > 6 mm
>2	0	0
>1.5-2	2	3
>1.0-1.5	4	7
>0.5-1.0	7	13
≥0.25-0.5	30	38
<0.25	Accepted	Accepted
Total combination of defects as specified above.	30	40

**3.2 - Maximum number of lints and fibres, with out protective film, checked on arm length distance. Sample area of 30x30 cm<sup>2</sup>.**

Defect size	Number of defects
Width ≤ 0.8 mm, length 3-25 mm	3
Width > 0.8 mm	0

### 3.3 - Maximum number of scratches in a sample area of 30x30 cm<sup>2</sup> without protective film.

Defect size	Number of defects
Width ≤ 0.5 mm, length >25 mm	0
Width ≤ 0.5 mm, length 13 - 25 mm	1
Width ≤ 0.5 mm, length 6 -13 mm	2
Width > 0.5 mm	0

### 3.4 - Maximum number of continuous extrusion defects of total sheet width, visual inspection, sheets will be inspected at approximately arms length, indoor light.

Defect size	Number of defects
Width 0.5 mm	5

Note: Lines can occur on sheets produced with metallic colors because of orientation of the pigments.

### 3.5 - Light transmission (LT) according to ASTM D1003/Opacity

#### 3.5.1 - Transparent Products

Products	Tolerance [%]
Standard colours at specified thickness and LT >5%	± 5
Special colours at specified thickness, unless agreed otherwise	± 7

#### 3.5.2 - Opaque Products

Light colours and thin gauges may have certain light transmission. Levels are indicated on colour matched samples combined with the correct thickness, verified first in production. Future production will be judged versus first production master sample.

### 3.6 - Colour according to CIELAB (D65)

#### 3.6.1 - Opaque Products

Products	Tolerance [%]
All colours except red, yellow, orange and metallic / pearl, at specified thickness and grain	DE < 2
Red, yellow, orange at specified thickness and grain	DE < 3
Metallic / Pearl: Visual judgement towards first production master sample. Standard production deviations normally occur. Special customer demands must be approved and verified by Arla Plast AB.	Not possible to measure

#### 3.6.2 Transparent products:

First production is evaluated versus the colour matched sample.

Future production runs are evaluated versus the first production master sample. Some deviation is normally acceptable. Special customer demands must be approved and verified by Arla Plast AB.

### 3.7 - Grain

No tolerance set. Product will be evaluated versus first production master sample. Grain depth and thus visual appearance may vary between different thicknesses, colours and co-ex materials.

### 3.8 - Edges

Three edge types occur on extruded sheet. To be checked with Arla Plast AB if relevant for secondary operations or application.

#### 3.8.1 - Saw Cut edges:

Saw cut edges are expected to be sharp edges.



### **3.8.2 - Slit Cut edges**

Slit cut edges will have a bead. Adds “edge thickness” when pile of sheet is placed on pallet. This may result in pallets that are inappropriate for automatic robot pickers.

### **3.8.3 - Uncut edges**

Rounded edges, out of thickness tolerance, thickness for sheet to be measured minimum 100 mm from the edge.

### **3.9 - Backside of sheet for opaque products**

If backside of sheets is to be visible, this is to be communicated to Arla Plast AB and to be verified.

### **3.10 - Gloss measured as mirror reflection at 60° according to ISO 2813**

Product will be judged towards first production master sample. Grain depth and thus visual appearance may vary between different thicknesses, colours and co-ex materials.

## **4. Protective film ( also named "masking" )**

Unless specified, Arla Plast AB standard film to be used per product and thickness.

### **4.1 - Transparent products**

Protective film to cover both sides of the sheets. No protective film on textured side, except for products with “Anti-Reflex” products. Some gels and scratches in film to be accepted, unless sheet surface has been damaged. If customer order products without protective film, Arla Plast AB will not approve any claims caused by the absence of the protective film.

### **4.2 - Opaque products**

No protective film on opaque products except for ABS PMMA smooth and Makrotech® smooth ( top side only ). Some gels and scratches in film to be accepted, unless sheet surface has been damaged. Sheet edge will not be protected with film. Film width to be verified with Arla Plast AB for respective product and width.

## **5. Packaging**

Unless specified, Arla Plast AB standard packaging for opaque and transparent products, respectively, to be used.

## **6. Documentation**

Unless specified, Arla Plast AB standard documentation to be used.

