



## Technical Data Sheet for BIAxis-HS (High Shrink) Films

General Properties	Units	BIAxis 10-HS	BIAxis 12-HS	BIAxis 15-HS	BIAxis 20-HS	BIAxis 25-HS	Standard / Test Method
Thickness	Gauge	40 ± 3%	48 ± 3%	60 ± 3%	80 ± 3%	100 ± 3%	Basis Weight (ABI)
Yield	in <sup>2</sup> / lb.	61,200 ± 3%	51,000 ± 3%	40,800 ± 3%	30,600 ± 3%	24,500 ± 3%	Calculated
Melting Point	°F	428 ± 4	428 ± 4	428 ± 4	428 ± 4	428 ± 4	ISO 3146-C / DSC
Shrinkage	See Attached						
<b>Mechanical Properties</b>							
Tensile Strength	psi	> 32,000	> 32,000	> 32,000	> 32,000	> 32,000	ASTM D 882
Elongation at Break	% (MD / TD)	120 / 100 ± 30	120 / 100 ± 30	120 / 100 ± 30	120 / 100 ± 30	120 / 100 ± 30	ASTM D 882
Puncture Resistance	lbf	> 2.5	> 2.9	> 3.6	> 4.7	> 6.1	Pointed Probe (ABI)
Flex-Crack	holes / 15.5 in <sup>2</sup>	< 1	< 1	< 1	< 2	< 2	900 cycles (ABI)
<b>Surface Properties</b>							
COF (film to film)	(static / dynamic)	< 0.8 / < 0.8	< 0.8 / < 0.8	< 0.8 / < 0.8	< 0.8 / < 0.8	< 0.8 / < 0.8	ASTM D 1894
(film to metal)	(static / dynamic)	< 0.4 / < 0.4	< 0.4 / < 0.4	< 0.4 / < 0.4	< 0.4 / < 0.4	< 0.4 / < 0.4	ASTM D 1894
Surface Tension (treated / non-treated)	dynes / cm	> 52 / > 38	> 52 / > 38	> 52 / > 38	> 52 / > 38	> 52 / > 38	ASTM D 2579
Surface Tension (both sides treated)	dynes / cm	> 48	> 48	> 48	> 48	> 48	ASTM D 2579
<b>Optical Properties</b>							
Haze	%	< 3	< 3	< 3	< 3	< 3	ASTM D 1003
Transmittance	%	> 92	> 92	> 92	> 92	> 92	ASTM D 1003
Gloss (20°)	Gloss Units	> 80	> 80	> 80	> 80	> 80	ASTM D 2457
<b>Barrier Properties</b>							
O <sub>2</sub> Transmission Rate	cm <sup>3</sup> / 100in <sup>2</sup> / 24h	< 3.0	< 2.6	< 2.3	< 1.7	< 1.3	73°F, 50% RH; ASTM D 3985
WV Transmission Rate	g / 100in <sup>2</sup> / 24h	< 16.1	< 13.3	< 11.6	< 8.8	< 8.1	100°F, 90% RH (ABI)

BIAXIS film: complies with FDA regulation 21 CFR, Part 177, Subpart B, Paragraph 177.1500,  
is approved for meat, cheese, seafood and liquid packing by the Canadian Food Inspection Agency,  
complies with European Directive 90/128 EEC relating to materials in direct contact with food.

Recommendations and data given are based on experience to date. No liability can be assumed in connection with their usage.



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General Properties	Units	BIAXIS 10-HS	BIAXIS 12-HS	BIAXIS 15-HS	BIAXIS 20-HS	BIAXIS 25-HS	Standard / Test Method
Thickness	μm	10 ± 3%	12 ± 3%	15 ± 3%	20 ± 3%	25 ± 3%	Basis Weight (ABI)
Yield	m <sup>2</sup> / kg	87.0 ± 3%	72.5 ± 3%	58.0 ± 3%	43.5 ± 3%	34.8 ± 3%	Calculated
Melting Point	°C	220 ± 2	220 ± 2	220 ± 2	220 ± 2	220 ± 2	ISO 3146-C / DSC
Shrinkage	See Attached						

### Mechanical Properties

Tensile Strength	MPa	> 220	> 220	> 220	> 220	> 220	ASTM D 882
Elongation at Break	% (MD / TD)	120 / 100 ± 30	120 / 100 ± 30	120 / 100 ± 30	120 / 100 ± 30	120 / 100 ± 30	ASTM D 882
Puncture Resistance	N	> 11	> 13	> 16	> 21	> 27	Pointed Probe (ABI)
Flex-Crack	holes / dm <sup>2</sup>	< 1	< 1	< 1	< 2	< 2	900 cycles (ABI)

### Surface Properties

COF (film to film)	(static / dynamic)	< 0.8 / <0.8	< 0.8 / <0.8	< 0.8 / <0.8	< 0.8 / <0.8	< 0.8 / <0.8	ASTM D 1894
(film to metal)	(static / dynamic)	< 0.4 / <0.4	< 0.4 / <0.4	< 0.4 / <0.4	< 0.4 / <0.4	< 0.4 / <0.4	ASTM D 1894
Surface Tension (treated / non-treated)	dynes / cm	> 52 / > 38	> 52 / > 38	> 52 / > 38	> 52 / > 38	> 52 / > 38	ASTM D 2579
Surface Tension (both sides treated)	dynes / cm	> 48	> 48	> 48	> 48	> 48	ASTM D 2579

### Optical Properties

Haze	%	< 3	< 3	< 3	< 3	< 3	ASTM D 1003
Transmittance	%	> 92	> 92	> 92	> 92	> 92	ASTM D 1003
Gloss (20°)	Gloss Units	> 80	> 80	> 80	> 80	> 80	ASTM D 2457

### Barrier Properties

O <sub>2</sub> Transmission Rate	cm <sup>3</sup> / m <sup>2</sup> / 24h	< 46.5	< 40	< 36	< 26	< 20	23°C, 50% RH; ASTM D 3985
WV Transmission Rate	g / m <sup>2</sup> / 24h	< 250	< 206	< 180	< 136	< 126	38°C, 90% RH (ABI)

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## Typical Shrinkage Properties of BIAXIS-HS (High Shrink) Films

<b>Air Temperature (°C)</b>	<b>Exposure Time (min)</b>	<b>MD Shrinkage (%)</b>	<b>TD Shrinkage (%)</b>
160	0.5	14	14
160	1.0	17	17
160	5.0	19	21
140	1.0	12	14
110	1.0	5	6