PLA-PREMIUM

GRADES PORTFOLIO

PLA is one of the most important biobased and compostable thermoplastic polyester in the current market. **PLA-premium** is designed specifically to improve the properties

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of the virgin PLA. The resources used in PLA-premium production have been certified as GMO free.

	Grade	Appearance	Density (Kg/m³)	MFI (g/10 min)	Melting temperature (°C)	Tensile Modulus (Mpa)	Elongation at break (%)
Standard		---	**ISO 1183-1**	**ISO 1133**	**ISO 11357-3**	**ISO 527-2**	**ISO 527-2**
EXTRUSION/ INJECTION	**W 751**	Transparent	1,2	4	155	3200	4
	W 711	Transparent	1,2	5	155-160	3100	5-6
	W 721	Transparent	1,2	6-7	155-160	3000	5
	WX 751	Opaque	1,24	4	155-160	3700	4
	WX 711	Opaque	1,25	3-4	155-160	3900	3-4
INJECTION	**Y 013**	Transparent	1,24	44	175	3100	4-5
	Y 023	Transparent	1,24	54	175	3000	5
	Z 314	Translucent	1,24	15	175-180	3100	4-5
	ZX 314	Opaque	1,24	13	175-180	3300	4-5

PROPERTIES

- ✓ High Biobased content
- ✓ Compostable
- ✓ Good processability
- ✓ Food contact

APPLICATIONS

- ✓ Cast Sheet/ Film extrusión
- ✓ Thermoforming
- ✓ Blown film extrusion
- ✓ Injection blow molding
- ✓ Injection mold

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TECHNICAL DATA SHEET (TDS)

Trade product name: PLA-Premium W 751

Biobased and fully compostable thermoplastic material suitable for conventional extrusion and injection processes. Specifically, this PLA-Premium grade presents high percentage of biobased composition, since 98% of PLA-Premium W 751 is produced using renewable and eco-friendly source, in this case biomass.

PROPERTIES

According to data below PLA-Premium W 751 exhibits the following properties:

- High biobased composition (98%)
- Semi-crystalline structure
- Good flexibility (in comparison to virgin PLA)
- Good processability on conventional extrusion and injection machines
- Transparent

Physical properties	Typical value	Unit	Test method
Density	1,23	[kg/m3]	ISO 1183-1
Water content	<0,1	[%]	ISO 15512
	<1000	ppm	
Appearance	Transparent	-	-
Mechanical properties	**Typical value**	**Unit**	**Test method**
Tensile strength at yield	75	[Mpa]	ISO 527-2
Tensile modulus	3200	[Mpa]	ISO 527-2
Elongation at break	4	[%]	ISO 527-2
Tensile stress at break	60	[Mpa]	ISO 527-2
Flexural modulus	3400	[MPa]	ISO 178
Unnotched Charpy impact	19,0	[kJ/m^2]	ISO 179
Unnotched Izod impact	17,5	[kJ/m^2]	ISO 180
Thermal properties	**Typical value**	**Unit**	**Test method**
Melting temperature	155	[°C]	ISO 11357-3
Heat distortion temperature HDT 66 psi (0.45 MPa)	50-55	[°C]	ASTM D648*
Melt flow rate (190°C, 2.16kg)	4	[g/10 min]	ISO 1133
Melt volume rate (190 °C/2.16 kg)	3	[cm^3/10 min]	

*This standard has been adapted to be used in DMA equipment

Barrier properties	Specimen thickness 500 µm	Unit	Test conditions (°C/%HR)	Test method
Oxygen transmission rate OTR	49	[mL/m^{2}d]	23°C/0%	ASTM D3985
Water vapor transmission rate WVTR	16	[g/m^{2}d]	38°C/90%	ASTM F1249

PLA-Premium W 751 is an additivated polymeric material which presents improved properties in comparison to virgin PLA, due to the Premium additive addition. This improvement depends largely on the processing conditions, specifically cooling parameters. Thus, final properties, such as barrier and mechanical properties,

do not present a linear correlation with thickness, rather these properties are related to the processing conditions.

The values listed above have been established on standardized test specimens at standard temperature and humidity conditions, and figures are typical properties; not to be interpreted as specifications.

APPLICATION

PLA-Premium W 751 grade allows production of a wide range of applications on conventional extrusion and injection processing machines. That shows benefits in terms of flexibility and resilience, decreasing the brittleness characteristic of pure PLA.

GMO FREE

The product is free from Genetically Modified Organisms. GMO free self-declaration is available upon request.

BIODEGRADABILITY AND COMPOSTABILITY

TÜV AUSTRIA CERT GMBH checked that **this PLA-Premium grade** (a thermoplastic bio-material natural transparent granulates composed of commercial PLA and **a specific percentage of ADBio PLA+ additive**) complies with the requirements stipulated in the OK compost INDUSTRIAL certification scheme, under requirements of the EN 13432 standard, which applies to packaging and packaging materials. Thus, accreditation can be only mentioned if the raw material is integrated in a packaging. The OK compost INDUSTRIAL certificate guarantees compostability in an industrial composting plant.

Certificate	Date	Licensee code	Logo
TA8012105739	20/05/2021	S2274	

Certified maximum nominal thickness in film format is **up to 1000 µm.**

<u>Remark for customers</u>

A finished product made of PLA-Premium, does not automatically comply with the requirements of the OK compost INDUSTRIAL certification scheme. Because of the other unknown components that can be added to the finished product (ink, reinforcement path, glue, ...), this finished product needs to be submitted to OK compost INDUSTRIAL certification in order to have the permission to put the OK compost INDUSTRIAL mark on this finished product.

For further information ask for ENVIRONMENTAL PRODUCT DECLARATION

MOISTURE AND DRYING

PLA-premium is a hygroscopic material. It absorbs moisture if kept unprotected. The product must be processed directly from the original moisture-tight packaging. Moisture content checking, additional drying time to get optimal processing moisture content, or crystallization step (before drying) are recommended, especially when the PLA-premium pellets have been exposed to the atmosphere during long time periods. The moisture content in the processing should generally be ≤ 250ppm (0,025%). If the moisture

content during melting process is too high, damage and/ or decrease in certain properties can occur. The drying and crystallization conditions are presented in the table below:

Drying conditions		
Moisture uptake, max.	ppm	250
Recommended moisture to process	ppm	50-150
Drying temperature	°C	90°C
Drying time	h	4-6
Crystallization conditions		
Drying temperature	°C	100
Drying time	h	2

PROCESSING RECOMENDATIONS

Extrusion:

PLA-Premium can be processed on conventional extrusion equipment. It is recommended to use a general-purpose screw with L/D ratios from 24 to 40 and processing temperatures 10-30°C above the melting temperature, specifically the recommended range of temperatures is 170-200°C.

Recommendations for extrusion applications	
Melt Temperature (extrusion profile)	180-200°C
Speed screw	100-200 rpm*
Torque	25-50%*
Cooling step	Recommended: >20-25°C

*Depending on the production and extrusion equipment

Injection:

PLA-Premium can be processed on conventional injection equipment. It is recommended to use a pre-heated mold (80-90°C) so that the cooling step will be done gradually. The recommended temperature to inject the melted material is around 10-30°C above melting temperature, specifically the recommended range of temperatures is 160-200°C.

Recommendations for injection moulding applications	
Melt Temperature	160-200°C
Feed Throat	40°C
Feed Temperature	180-190°C
Mold	Recommended: 80-90°C Other: 20-25°C
Feed speed	80-120 cc/s*
Injection speed	90-110 cc/s*

*Four-cavity mould and screw of 30 mm diameter

When a change of material, at the end of production, or in case of prolonged stops, it is recommended to clean/ purge the processing equipment (screw, cylinder, ….) with thermoplastic polyolefin such as LDPE, PP or high-molecular-weight polymers.

ADDITIVATION

Our material can be mixed with other types of additives (such as inorganic ones). It should only be taken into account two aspects, the percentage of additive, that is going to be added, and the matrix of the additive masterbatch. In general, additives are delivered in masterbatch form, so they have mixed previously with another polymeric matrix/base. In these cases, the recommended polymeric matrix is PLA.

QUALITY CONTROL

The product is produced as a standard material. The melt flow rate (MFR) at 190 °C, 2.16 kg, according to ISO 1133) has been established as specified parameter for quality control.

DELIVERY FORMAT/ FORM SUPPLIED

Bulk density: 1,2 g/cm3 | Standard pack: 20 kg/bag (vacuum-sealed)

STORAGE

Pellet packaging must be stored in dry conditions and be opened only immediately before the processing, thus ensuring that the dry pellet does not absorb room moisture. Original packaging must be sealed again and stay undamaged when not processed portions of material are left in it. However, when the packaging is reopened, it is recommended that PLA-premium is dried as specified in section MOISTURE AND DRYING.

SAFETY DATA

The material is not a dangerous product as defined by EU Regulation (EC) No 1272/2008 on classification, labelling and packaging of substances and mixtures and not subject to transport regulations. Nevertheless, general safety, protection and hygiene rules for its handling should be followed.

This mixture does not contain any substances to be mentioned according to the criteria of section 3.2 of annex II of REACH (European Regulation on Registration, Evaluation, Authorisation and Restriction of Chemicals)

For further details please refer to or request the Material Safety Data Sheet (MSDS).

LEGAL NOTICE

The information and figures in this TDS, based on current know-how and experience should be considered as guide values without warranty. That is not legally binding for a specific purpose, intended process or use given that material properties can be influenced by many factors involved in processing and application beyond our control. Therefore, processors must check product own use performance, adequacy or validity by carrying their own testing and experiments, also based on our technical advice and support.

FURTHER INFORMATION

For further technical or commercial information please contact ADBioplastics via our website or by clicking here.

Version 6.0/ 05-2021

TECHNICAL DATA SHEET (TDS)

Trade product name: PLA-Premium W 711

Biobased and fully compostable compound suitable for conventional extrusion and injection processes. Specifically, this PLA-Premium grade presents high percentage of biobased composition, since 97% of PLA-Premium W 711 is produced using renewable and eco-friendly source, in this case biomass.

PROPERTIES

According to data below PLA-Premium W 711 exhibits the following properties:

- High biobased composition (97%)
- Semi-crystalline structure
- Good flexibility (in comparison to virgin PLA)
- Good processability on conventional extrusion and injection machines
- Transparent

Physical properties	Typical value		Unit	Test method
Density	1,20		[kg/m3]	ISO 1183-1
Water content	<0,1		[%]	ISO 15512
	<1000		ppm	
Appearance	Transparent		-	-
Mechanical properties	**Specimen thickness 2000 µm**	**80 µm**	**Unit**	**Test method**
Tensile strength at yield	72	51	[Mpa]	ISO 527-2/ISO 527-3
Tensile modulus	3100	2700	[Mpa]	ISO 527-2/ISO 527-3
Elongation at break	5,5	15	[%]	ISO 527-2/ISO 527-3
Tensile stress at break	54,0	38,1	[Mpa]	ISO 527-2/ISO 527-3
Flexural modulus	3300		[MPa]	ISO 178
Molding shrinkage, parallel	0,4		[%]	ISO 294-4
Molding shrinkage, normal	0,3		[%]	ISO 294-4
Thermal properties	**Typical value**		**Unit**	**Test method**
Melting temperature	158		[°C]	ISO 11357-3
Heat distortion temperature HDT 66 psi (0.45 MPa)	50-55		[°C]	ASTM D648*
Melt flow rate (190°C, 2.16kg)	5		[g/10 min]	ISO 1133
Melt volume rate (190 °C/2.16 kg)	4		[cm^3/10 min]	

*This standard has been adapted to be used in DMA equipment

Barrier properties	Specimen thickness 500 µm	80 µm	Unit	Test conditions (°C/%HR)	Test method
Oxygen transmission rate OTR	44	230	[mL/m^2d]	23°C/0%	ASTM D3985
Water vapor transmission rate WVTR	14	95	[g/m^2d]	38°C/90%	ASTM F1249

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PLA-Premium W 711 is an additivated polymeric material which presents improved properties in comparison to virgin PLA, due to the Premium additive addition. This improvement depends largely on the processing conditions, specifically cooling parameters. Thus, final properties, such as barrier and mechanical properties, do not present a linear correlation with thickness, rather these properties are related to the processing conditions.

The values listed above have been established on standardized test specimens at standard temperature and humidity conditions, and figures are typical properties; not to be interpreted as specifications.

APPLICATION

PLA-Premium W 711 grade allows production of a wide range of applications on conventional extrusion and injection processing machines. That shows benefits in terms of flexibility and resilience, decreasing the brittleness characteristic of pure PLA.

GMO FREE

The product is free from Genetically Modified Organisms. GMO free self-declaration is available upon request.

BIODEGRADABILITY AND COMPOSTABILITY

TÜV AUSTRIA CERT GMBH checked that this PLA-Premium grade (a thermoplastic bio-material natural transparent granulates composed of commercial PLA and a specific percentage of ADBio PLA+ additive) complies with the requirements stipulated in the OK compost INDUSTRIAL certification scheme, under requirements of the EN 13432 standard, which applies to packaging and packaging materials. Thus, accreditation can be only mentioned if the raw material is integrated in a packaging. The OK compost INDUSTRIAL certificate guarantees compostability in an industrial composting plant.

Certificate	Date	Licensee code	Logo
TA8012105739	20/05/2021	S2274	

Certified maximum nominal thickness in film format is **up to 400 µm.**

<u>Remark for customers</u>

A finished product made of PLA-Premium, does not automatically comply with the requirements of the OK compost INDUSTRIAL certification scheme. Because of the other unknown components that can be added to the finished product (ink, reinforcement path, glue, ...), this finished product needs to be submitted to OK compost INDUSTRIAL certification in order to have the permission to put the OK compost INDUSTRIAL mark on this finished product.

For further information ask for ENVIRONMENTAL PRODUCT DECLARATION

MOISTURE AND DRYING

PLA-premium is a hygroscopic material. It absorbs moisture if kept unprotected. The product must be processed directly from the original moisture-tight packaging. Moisture content checking, additional

drying time to get optimal processing moisture content, or crystallization step (before drying) are recommended, especially when the PLA-premium pellets have been exposed to the atmosphere during long time periods. The moisture content in the processing should generally be ≤ 250ppm (0,025%). If the moisture content during melting process is too high, damage and/ or decrease in certain properties can occur. The drying and crystallization conditions are presented in the table below:

Drying conditions		
Moisture uptake, max.	ppm	250
Recommended moisture to process	ppm	50-150
Drying temperature	°C	90°C
Drying time	h	4-6
Crystallization conditions		
Drying temperature	°C	100
Drying time	h	2

PROCESSING RECOMENDATIONS

Extrusion:

PLA-Premium can be processed on conventional extrusion equipment. It is recommended to use a general-purpose screw with L/D ratios from 24 to 40 and processing temperatures 10-30°C above the melting temperature, specifically the recommended range of temperatures is 170-200°C.

Recommendations for extrusion applications	
Melt Temperature (extrusion profile)	180-200°C
Speed screw	100-200 rpm*
Torque	25-50%*
Cooling step	Recommended: >20-25°C

*Depending on the production and extrusion equipment

Injection:

PLA-Premium can be processed on conventional injection equipment. It is recommended to use a pre-heated mold (80-90°C) so that the cooling step will be done gradually. The recommended temperature to inject the melted material is around 10-30°C above melting temperature, specifically the recommended range of temperatures is 165-195°C.

Recommendations for injection moulding applications	
Melt Temperature	165-195°C
Feed Throat	40°C
Feed Temperature	180-190°C
Mold	Recommended: 80-90ºC Other: 20-25°C
Feed speed	80-120 cc/s*
Injection speed	90-110 cc/s*

*Four-cavity mould and screw of 30 mm diameter

When a change of material, at the end of production, or in case of prolonged stops, it is recommended to clean/ purge the processing equipment (screw, cylinder, ….) with thermoplastic polyolefin such as LDPE, PP or high-molecular-weight polymers.

ADDITIVATION

Our material can be mixed with other types of additives (such as inorganic ones). It should only be taken into account two aspects, the percentage of additive, that is going to be added, and the matrix of the additive masterbatch. In general, additives are delivered in masterbatch form, so they have mixed previously with another polymeric matrix/base. In these cases, the recommended polymeric matrix is PLA.

QUALITY CONTROL

The product is produced as a standard material. The melt flow rate (MFR) at 190 °C, 2.16 kg, according to ISO 1133) has been established as specified parameter for quality control.

DELIVERY FORMAT/ FORM SUPPLIED

Bulk density: 1,2 g/cm3
Standard pack: 20 kg/bag (vacuum-sealed)

STORAGE

Pellet packaging must be stored in dry conditions and be opened only immediately before the processing, thus ensuring that the dry pellet does not absorb room moisture. Original packaging must be sealed again and stay undamaged when not processed portions of material are left in it. However, when the packaging is reopened, it is recommended that PLA-premium is dried as specified in section MOISTURE AND DRYING.

SAFETY DATA

The material is not a dangerous product as defined by EU Regulation (EC) No 1272/2008 on classification, labelling and packaging of substances and mixtures and not subject to transport regulations. Nevertheless, general safety, protection and hygiene rules for its handling should be followed.
This mixture does not contain any substances to be mentioned according to the criteria of section 3.2 of annex II of REACH (European Regulation on Registration, Evaluation, Authorisation and Restriction of Chemicals)
For further details please refer to or request the Material Safety Data Sheet (MSDS).

LEGAL NOTICE

The information and figures in this TDS, based on current know-how and experience should be considered as guide values without warranty. That is not legally binding for a specific purpose, intended process or use given that material properties can be influenced by many factors involved in processing and application beyond our control. Therefore, processors must check product own use performance, adequacy or validity by carrying their own testing and experiments, also based on our technical advice and support.

FURTHER INFORMATION

For further technical or commercial information please contact ADBioplastics via our website or by clicking here.

Version 6.0/ 05-2021

TECHNICAL DATA SHEET (TDS)

Trade product name: PLA-Premium W 721

Biobased and fully compostable compound suitable for conventional extrusion and injection processes. Specifically, this PLA-Premium grade presents high percentage of biobased composition, since 93% of PLA-Premium W 721 is produced using renewable and eco-friendly source, in this case biomass.

PROPERTIES

According to data below PLA-Premium W 721 exhibits the following properties:

- High biobased composition (93%)
- Semi-crystalline structure
- Good flexibility (in comparison to virgin PLA)
- Good processability on conventional extrusion and injection machines
- Transparent

Physical properties	Typical value		Unit	Test method
Density	1,20		[kg/m3]	ISO 1183-1
Water content	<0,1		[%]	ISO 15512
	<1000		ppm	
Appearance	Transparent		-	-
Mechanical properties	**Typical value 2000 µm**	**80 µm**	**Unit**	**Test method**
Tensile strength at yield	70	53	[Mpa]	ISO 527-2/ISO 527-3
Tensile modulus	3000	2700	[Mpa]	ISO 527-2/ISO 527-3
Elongation at break	5	80	[%]	ISO 527-2/ISO 527-3
Tensile stress at break	51,4	34,5	[Mpa]	ISO 527-2/ISO 527-3
Flexural modulus	3200		[MPa]	ISO 178
Unnotched Charpy impact	19,5		[kJ/m^2]	ISO 179
Unnotched Izod impact	17,6		[kJ/m^2]	ISO 180
Molding shrinkage, parallel	0,5		[%]	ISO 294-4
Molding shrinkage, normal	0,4		[%]	ISO 294-4
Thermal properties	**Typical value**		**Unit**	**Test method**
Melting temperature	160		[°C]	ISO 11357-3
Heat distortion temperature HDT 66 psi (0.45 MPa)	50-55		[°C]	ASTM D648*
Melt flow rate (190°C, 2.16kg)	6		[g/10 min]	ISO 1133
Melt volume rate (190 °C/2.16 kg)	5		[cm^3/10 min]	

*This standard has been adapted to be used in DMA equipment

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Barrier properties	Specimen thickness 500 µm	80 µm	Unit	Test conditions (TºC/%HR)	Test method
Oxygen transmission rate OTR	49	214	[mL/m^{2}d]	23ºC/0%	ASTM D3985
Water vapor transmission rate WVTR	15	85	[g/m^{2}d]	38ºC/90%	ASTM F1249

PLA-Premium W 721 is an additivated polymeric material which presents improved properties in comparison to virgin PLA, due to the Premium additive addition. This improvement depends largely on the processing conditions, specifically cooling parameters. Thus, final properties, such as barrier and mechanical properties, do not present a linear correlation with thickness, rather these properties are related to the processing conditions.

The values listed above have been established on standardized test specimens at standard temperature and humidity conditions, and figures are typical properties; not to be interpreted as specifications.

APPLICATION

PLA-Premium W 721 grade allows production of a wide range of applications on conventional extrusion and injection processing machines. That shows benefits in terms of flexibility and resilience, decreasing the brittleness characteristic of pure PLA.

GMO FREE

The product is free from Genetically Modified Organisms. GMO free self-declaration is available upon request.

BIODEGRADABILITY AND COMPOSTABILITY

TÜV AUSTRIA CERT GMBH checked that this PLA-Premium grade (a thermoplastic bio-material natural transparent granulates composed of commercial PLA and a specific percentage of ADBio PLA+ additive) complies with the requirements stipulated in the OK compost INDUSTRIAL certification scheme, under requirements of the EN 13432 standard, which applies to packaging and packaging materials. Thus, accreditation can be only mentioned if the raw material is integrated in a packaging. The OK compost INDUSTRIAL certificate guarantees compostability in an industrial composting plant.

Certificate	Date	Licensee code	Logo
TA8012105739	20/05/2021	S2274	

Certified maximum nominal thickness in film format is **up to 400 µm.**

<u>Remark for customers</u>

A finished product made of PLA-Premium, does not automatically comply with the requirements of the OK compost INDUSTRIAL certification scheme. Because of the other unknown components that can be added to the finished product (ink, reinforcement path, glue, ...), this finished product needs to be submitted to OK compost INDUSTRIAL certification in order to have the permission to put the OK compost INDUSTRIAL mark on this finished product.

For further information ask for ENVIRONMENTAL PRODUCT DECLARATION

MOISTURE AND DRYING

PLA-premium is a hygroscopic material. It absorbs moisture if kept unprotected. The product must be processed directly from the original moisture-tight packaging. Moisture content checking, additional drying time to get optimal processing moisture content, or crystallization step (before drying) are recommended, especially when the PLA-premium pellets have been exposed to the atmosphere during long time periods. The moisture content in the processing should generally be ≤ 250ppm (0,025%). If the moisture content during melting process is too high, damage and/ or decrease in certain properties can occur. The drying and crystallization conditions are presented in the table below:

Drying conditions		
Moisture uptake, max.	ppm	250
Recommended moisture to process	ppm	50-150
Drying temperature	°C	90°C
Drying time	h	4-6
Crystallization conditions		
Drying temperature	°C	100
Drying time	h	2

PROCESSING RECOMENDATIONS

Extrusion:

PLA-Premium can be processed on conventional extrusion equipment. It is recommended to use a general-purpose screw with L/D ratios from 24 to 40 and processing temperatures 10-30°C above the melting temperature, specifically the recommended range of temperatures is 170-200°C.

Recommendations for extrusion applications	
Melt Temperature (extrusion profile)	180-200°C
Speed screw	100-200 rpm*
Torque	25-50%*
Cooling step	Recommended: >20-25°C

*Depending on the production and extrusion equipment

Injection:

PLA-Premium can be processed on conventional injection equipment. It is recommended to use a pre-heated mold (80-90°C) so that the cooling step will be done gradually. The recommended temperature to inject the melted material is around 10-30°C above melting temperature, specifically the recommended range of temperatures is 170-200°C.

Recommendations for injection moulding applications	
Melt Temperature	170-200°C
Feed Throat	40°C
Feed Temperature	180-190°C
Mold	Recommended: 80-90°C Other: 20-25°C
Feed speed	80-120 cc/s*
Injection speed	90-110 cc/s*

*Four-cavity mould and screw of 30 mm diameter

When a change of material, at the end of production, or in case of prolonged stops, it is recommended to clean/ purge the processing equipment (screw, cylinder, ….) with thermoplastic polyolefin such as LDPE, PP or high-molecular-weight polymers.

ADDITIVATION

Our material can be mixed with other types of additives (such as inorganic ones). It should only be tacked into account two aspects, the percentage of additive, that is going to be added, and the matrix of the additive masterbatch. In general, additives are delivered in masterbatch form, so they have mixed previously with another polymeric matrix/base. In these cases, the recommended polymeric matrix is PLA.

QUALITY CONTROL

The product is produced as a standard material. The melt flow rate (MFR) at 190 °C, 2.16 kg, according to ISO 1133) has been established as specified parameter for quality control.

DELIVERY FORMAT/ FORM SUPPLIED

Bulk density: 1,2 g/cm3
Standard pack: 20 kg/bag (vacuum-sealed)

STORAGE

Pellet packaging must be stored in dry conditions and be opened only immediately before the processing, thus ensuring that the dry pellet does not absorb room moisture. Original packaging must be sealed again and stay undamaged when not processed portions of material are left in it. However, when the packaging is reopened, it is recommended that PLA-premium is dried as specified in section MOISTURE AND DRYING.

SAFETY DATA

The material is not a dangerous product as defined by EU Regulation (EC) No 1272/2008 on classification, labelling and packaging of substances and mixtures and not subject to transport regulations. Nevertheless, general safety, protection and hygiene rules for its handling should be followed.
This mixture does not contain any substances to be mentioned according to the criteria of section 3.2 of annex II of REACH (European Regulation on Registration, Evaluation, Authorisation and Restriction of Chemicals)
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LEGAL NOTICE

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FURTHER INFORMATION

For further technical or commercial information please contact ADBioplastics via our website or by clicking here.

Version 5.0/ 05-2021

TECHNICAL DATA SHEET (TDS)

Trade product name: PLA-Premium Y 013

Biobased and fully compostable compound suitable for conventional injection processes. Specifically, this PLA-Premium grade presents high percentage of biobased composition, since 97% of PLA-Premium Y 013 is produced using renewable and eco-friendly source, in this case biomass.

PROPERTIES

According to data below PLA-Premium Y 013 exhibits the following properties:

- High biobased composition (97%)
- Semi-crystalline structure
- Good flexibility (in comparison to virgin PLA)
- Good processability on conventional injection machines
- Transparent

Physical properties	Typical value	Unit	Test method
Density	1,24	[kg/m3]	ISO 1183-1
Water content	<0,1	[%]	ISO 15512
	<1000	ppm	
Appearance	Transparent	-	-
Mechanical properties	**Typical value**	**Unit**	**Test method**
Tensile strength at yield	70	[Mpa]	ISO 527-2
Tensile modulus	3100	[Mpa]	ISO 527-2
Elongation at break	4-5	[%]	ISO 527-2
Tensile stress at break	57,0	[Mpa]	ISO 527-2
Flexural modulus	3200	[MPa]	ISO 178
Thermal properties	**Typical value**	**Unit**	**Test method**
Melting temperature	175	[°C]	ISO 11357-3
Heat distortion temperature HDT 66 psi (0.45 MPa)	50-55	[°C]	ASTM D648*
Melt flow rate (190°C, 2.16kg)	44	[g/10 min]	ISO 1133
Melt volume rate (190 °C/2.16 kg)	35	[cm^3/10 min]	

*This standard has been adapted to be used in DMA equipment

The values listed above have been established on standardized test specimens at standard temperature and humidity conditions, and figures are typical properties; not to be interpreted as specifications.

APPLICATION

PLA-Premium Y 013 grade allows production of a wide range of applications on conventional injection machines. That shows benefits in terms of flexibility and resilience, decreasing the brittleness characteristic of pure PLA.

GMO FREE

The product is free from Genetically Modified Organisms. GMO free self-declaration is available upon request.

BIODEGRADABILITY AND COMPOSTABILITY

TÜV AUSTRIA CERT GMBH checked that this PLA-Premium grade (a thermoplastic bio-material natural transparent granulates composed of commercial PLA and a specific percentage of ADBio PLA+ additive) complies with the requirements stipulated in the OK compost INDUSTRIAL certification scheme, under requirements of the EN 13432 standard, which applies to packaging and packaging materials. Thus, accreditation can be only mentioned if the raw material is integrated in a packaging. The OK compost INDUSTRIAL certificate guarantees compostability in an industrial composting plant.

Certificate	Date	Licensee code	Logo
TA8012105739	20/05/2021	S2274	

Certified maximum nominal thickness in film format is **up to 400 µm.**

Remark for customers

A finished product made of PLA-Premium, does not automatically comply with the requirements of the OK compost INDUSTRIAL certification scheme. Because of the other unknown components that can be added to the finished product (ink, reinforcement path, glue, ...), this finished product needs to be submitted to OK compost INDUSTRIAL certification in order to have the permission to put the OK compost INDUSTRIAL mark on this finished product.

For further information ask for ENVIRONMENTAL PRODUCT DECLARATION

MOISTURE AND DRYING

PLA-premium is a hygroscopic material. It absorbs moisture if kept unprotected. The product must be processed directly from the original moisture-tight packaging. Moisture content checking, additional drying time to get optimal processing moisture content, or crystallization step (before drying) are recommended, especially when the PLA-premium pellets have been exposed to the atmosphere during long time periods. The moisture content in the processing should generally be ≤ 250ppm (0,025%). If the moisture content during melting process is too high, damage and/ or decrease in certain properties can occur. The drying and crystallization conditions are presented in the table below:

Drying conditions		
Moisture uptake, max.	ppm	250
Recommended moisture to process	ppm	50-150
Drying temperature	°C	90°C
Drying time	h	4-6
Crystallization conditions		
Drying temperature	°C	100
Drying time	h	2

PROCESSING RECOMENDATIONS

Injection:

PLA-Premium can be processed on conventional injection equipment. It is recommended to use a pre-heated mold (80-90°C) so that the cooling step will be done gradually. The recommended temperature to inject the melted material is around 10-30°C above melting temperature, specifically the recommended range of temperatures is 180-210°C. More specific processing conditions are presented in table below:

Recommendations for injection moulding applications	
Melt Temperature	180-210°C
Feed Throat	40°C
Feed Temperature	180-190°C
Mold	Recommended: 80-90°C Other: 20-25°C
Feed speed	80-120 cc/s*
Injection speed	90-110 cc/s*

*Four-cavity mould and screw of 30 mm diameter

When a change of material, at the end of production, or in case of prolonged stops, it is recommended to clean/ purge the processing equipment (screw, cylinder, ….) with thermoplastic polyolefin such as LDPE, PP or high-molecular-weight polymers.

ADDITIVATION

Our material can be mixed with other types of additives (such as inorganic ones). It should only be taken into account two aspects, the percentage of additive, that is going to be added, and the matrix of the additive masterbatch. In general, additives are delivered in masterbatch form, so they have mixed previously with another polymeric matrix/base. In these cases, the recommended polymeric matrix is PLA.

QUALITY CONTROL

The product is produced as a standard material. The melt flow rate (MFR) at 190 °C, 2.16 kg, according to ISO 1133) has been established as specified parameter for quality control.

DELIVERY FORMAT/ FORM SUPPLIED

Bulk density: 1,2 g/cm3
Standard pack: 20 kg/bag (vacuum-sealed)

STORAGE

Pellet packaging must be stored in dry conditions and be opened only immediately before the processing, thus ensuring that the dry pellet does not absorb room moisture. Original packaging must be sealed again and stay undamaged when not processed portions of material are left in it. However, when the packaging is reopened, it is recommended that PLA-premium is dried as specified in section MOISTURE AND DRYING.

SAFETY DATA

The material is not a dangerous product as defined by EU Regulation (EC) No 1272/2008 on classification, labelling and packaging of substances and mixtures and not subject to transport regulations. Nevertheless, general safety, protection and hygiene rules for its handling should be followed.
This mixture does not contain any substances to be mentioned according to the criteria of section 3.2 of annex II of REACH (European Regulation on Registration, Evaluation, Authorisation and Restriction of Chemicals)
For further details please refer to or request the Material Safety Data Sheet (MSDS).

LEGAL NOTICE

The information and figures in this TDS, based on current know-how and experience should be considered as guide values without warranty. That is not legally binding for a specific purpose, intended process or use given that material properties can be influenced by many factors involved in processing and application beyond our control. Therefore, processors must check product own use performance, adequacy, or validity by carrying their own testing and experiments, also based on our technical advice and support.

FURTHER INFORMATION

For further technical or commercial information please contact ADBioplastics via our website or by clicking here.

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Version 5.0/ 05-2021

TECHNICAL DATA SHEET (TDS)

Trade product name: PLA-Premium Y 023

Biobased and fully compostable compound suitable for conventional injection processes. Specifically, this PLA-Premium grade presents high percentage of biobased composition, since 93% of PLA-Premium Y 023 is produced using renewable and eco-friendly source, in this case biomass.

PROPERTIES

According to data below PLA-Premium Y 023 exhibits the following properties:

- High biobased composition (93%)
- Semi-crystalline structure
- Good flexibility (in comparison to virgin PLA)
- Good processability on conventional injection machines
- Transparent

Physical properties	Typical value	Unit	Test method
Density	1,24	[kg/m3]	ISO 1183-1
Water content	<0,1	[%]	ISO 15512
	<1000	ppm	
Appearance	Transparent	-	-
Mechanical properties	**Typical value**	**Unit**	**Test method**
Tensile strength at yield	67	[Mpa]	ISO 527-2
Tensile modulus	3000	[Mpa]	ISO 527-2
Elongation at break	5	[%]	ISO 527-2
Tensile stress at break	50,0	[Mpa]	ISO 527-2
Flexural modulus	3000	[MPa]	ISO 178
Unnotched Charpy impact	18,2	kJ/m^2	ISO 179
Unnotched Izod impact	18,0	kJ/m^2	ISO 180
Thermal properties	**Typical value**	**Unit**	**Test method**
Melting temperature	175	[°C]	ISO 11357-3
Heat distortion temperature HDT 66 psi (0.45 MPa)	50-55	[°C]	ASTM D648*
Melt flow rate (190°C, 2.16kg)	54	[g/10 min]	ISO 1133
Melt volume rate (190 °C/2.16 kg)	44	[cm^3/10 min]	

*This standard has been adapted to be used in DMA equipment

The values listed above have been established on standardized test specimens at standard temperature and humidity conditions, and figures are typical properties; not to be interpreted as specifications.

APPLICATION

PLA-Premium Y 023 grade allows production of a wide range of applications on conventional injection processing machines. That shows benefits in terms of flexibility and resilience, decreasing the brittleness characteristic of pure PLA.

GMO FREE

The product is free from Genetically Modified Organisms. GMO free self-declaration is available upon request.

BIODEGRADABILITY AND COMPOSTABILITY

TÜV AUSTRIA CERT GMBH checked that this PLA-Premium grade (a thermoplastic bio-material natural transparent granulates composed of commercial PLA and a specific percentage of ADBio PLA+ additive) complies with the requirements stipulated in the OK compost INDUSTRIAL certification scheme, under requirements of the EN 13432 standard, which applies to packaging and packaging materials. Thus, accreditation can be only mentioned if the raw material is integrated in a packaging. The OK compost INDUSTRIAL certificate guarantees compostability in an industrial composting plant.

Certificate	Date	Licensee code	Logo
TA8012105739	20/05/2021	S2274	OK compost TÜV AUSTRIA INDUSTRIAL S2274

Certified maximum nominal thickness in film format is **up to 400 µm.**

Remark for customers

A finished product made of PLA-Premium, does not automatically comply with the requirements of the OK compost INDUSTRIAL certification scheme. Because of the other unknown components that can be added to the finished product (ink, reinforcement path, glue, ...), this finished product needs to be submitted to OK compost INDUSTRIAL certification in order to have the permission to put the OK compost INDUSTRIAL mark on this finished product.

For further information ask for ENVIRONMENTAL PRODUCT DECLARATION

MOISTURE AND DRYING

PLA-premium is a hygroscopic material. It absorbs moisture if kept unprotected. The product must be processed directly from the original moisture-tight packaging. Moisture content checking, additional drying time to get optimal processing moisture content, or crystallization step (before drying) are recommended, especially when the PLA-premium pellets have been exposed to the atmosphere during long time periods. The moisture content in the processing should generally be ≤ 250ppm (0,025%). If the moisture content during melting process is too high, damage and/ or decrease in certain properties can occur. The drying and crystallization conditions are presented in the table below:

Drying conditions		
Moisture uptake, max.	ppm	250
Recommended moisture to process	ppm	50-150
Drying temperature	°C	90°C
Drying time	h	4-6
Crystallization conditions		
Drying temperature	°C	100
Drying time	h	2

PROCESSING RECOMENDATIONS

Injection:

PLA-Premium can be processed on conventional injection equipment. It is recommended to use a pre-heated mold (80-90°C) so that the cooling step will be done gradually. The recommended temperature to inject the melted material is around 10-30°C above melting temperature, specifically the recommended range of temperatures is 180-210°C. More specific processing conditions are presented in table below:

Recommendations for injection moulding applications	
Melt Temperature	180-210°C
Feed Throat	40°C
Feed Temperature	180-190°C
Mold	Recommended: 80-90°C Other: 20-25°C
Feed speed	80-120 cc/s*
Injection speed	90-110 cc/s*

*Four-cavity mould and screw of 30 mm diameter

When a change of material, at the end of production, or in case of prolonged stops, it is recommended to clean/ purge the processing equipment (screw, cylinder, ….) with thermoplastic polyolefin such as LDPE, PP or high-molecular-weight polymers.

ADDITIVATION

Our material can be mixed with other types of additives (such as inorganic ones). It should only be taken into account two aspects, the percentage of additive, that is going to be added, and the matrix of the additive masterbatch. In general, additives are delivered in masterbatch form, so they have mixed previously with another polymeric matrix/base. In these cases, the recommended polymeric matrix is PLA.

QUALITY CONTROL

The product is produced as a standard material. The melt flow rate (MFR) at 190 °C, 2.16 kg, according to ISO 1133) has been established as specified parameter for quality control.

DELIVERY FORMAT/ FORM SUPPLIED

Bulk density: 1,2 g/cm3

Standard pack: 20 kg/bag (vacuum-sealed)

STORAGE

Pellet packaging must be stored in dry conditions and be opened only immediately before the processing, thus ensuring that the dry pellet does not absorb room moisture. Original packaging must be sealed again and stay undamaged when not processed portions of material are left in it. However, when the packaging is reopened, it is recommended that PLA-premium is dried as specified in section MOISTURE AND DRYING.

SAFETY DATA

The material is not a dangerous product as defined by EU Regulation (EC) No 1272/2008 on classification, labelling and packaging of substances and mixtures and not subject to transport regulations. Nevertheless, general safety, protection and hygiene rules for its handling should be followed.

This mixture does not contain any substances to be mentioned according to the criteria of section 3.2 of annex II of REACH (European Regulation on Registration, Evaluation, Authorisation and Restriction of Chemicals)
For further details please refer to or request the Material Safety Data Sheet (MSDS).

LEGAL NOTICE
The information and figures in this TDS, based on current know-how and experience should be considered as guide values without warranty. That is not legally binding for a specific purpose, intended process or use given that material properties can be influenced by many factors involved in processing and application beyond our control. Therefore, processors must check product own use performance, adequacy, or validity by carrying their own testing and experiments, also based on our technical advice and support.

FURTHER INFORMATION
For further technical or commercial information please contact ADBioplastics via our website or by clicking here.

Version 5.0/ 05-2021

TECHNICAL DATA SHEET (TDS)

Trade product name: PLA-Premium Z 314

Biobased and fully compostable compound suitable for conventional injection processes. Specifically, this PLA-Premium grade presents high percentage of biobased composition, since 97% of PLA-Premium Z 314 is produced using renewable and eco-friendly source, in this case biomass.

PROPERTIES

According to data below PLA-Premium Z 314 exhibits the following properties:

- High biobased composition (97%)
- Semi-crystalline structure
- Good flexibility (in comparison to virgin PLA)
- Good processability on conventional injection machines
- Translucent

Physical properties	Typical value	Unit	Test method
Density	1,24	[kg/m3]	ISO 1183-1
Water content	<0,1	[%]	ISO 15512
	<1000	ppm	
Appearance	Translucent	-	-
Mechanical properties	**Typical value**	**Unit**	**Test method**
Tensile strength at yield	71	[Mpa]	ISO 527-2
Tensile modulus	3100	[Mpa]	ISO 527-2
Elongation at break	4-5	[%]	ISO 527-2
Tensile stress at break	55,5	[Mpa]	ISO 527-2
Flexural modulus	3200	[MPa]	ISO 178
Unnotched Charpy impact	19,5	[kJ/m^2]	ISO 179
Unnotched Izod impact	19,2	[kJ/m^2]	ISO 180
Thermal properties	**Typical value**	**Unit**	**Test method**
Melting temperature	176	[°C]	ISO 11357-3
Heat distortion temperature HDT 66 psi (0.45 MPa)	50-55	[°C]	ASTM D648*
Melt flow rate (190°C, 2.16kg)	15	[g/10 min]	ISO 1133
Melt volume rate (190 °C/2.16 kg)	12	[cm^3/10 min]	

*This standard has been adapted to be used in DMA equipment

The values listed above have been established on standardized test specimens at standard temperature and humidity conditions, and figures are typical properties; not to be interpreted as specifications.

APPLICATION

PLA-Premium Z 314 grade allows production of a wide range of applications on conventional injection machines. That shows benefits in terms of flexibility and resilience, decreasing the brittleness characteristic of pure PLA.

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www.adbioplastics.com

GMO FREE

The product is free from Genetically Modified Organisms. GMO free self-declaration is available upon request.

BIODEGRADABILITY AND COMPOSTABILITY

TÜV AUSTRIA CERT GMBH checked that this PLA-Premium grade (a thermoplastic bio-material natural transparent granulates composed of commercial PLA and a specific percentage of ADBio PLA+ additive) complies with the requirements stipulated in the OK compost INDUSTRIAL certification scheme, under requirements of the EN 13432 standard, which applies to packaging and packaging materials. Thus, accreditation can be only mentioned if the raw material is integrated in a packaging. The OK compost INDUSTRIAL certificate guarantees compostability in an industrial composting plant.

Certificate	Date	Licensee code	Logo
TA8012105739	20/05/2021	S2274	OK compost TÜV AUSTRIA INDUSTRIAL S2274

Certified maximum nominal thickness in film format is **up to 400 µm.**

Remark for customers

A finished product made of PLA-Premium, does not automatically comply with the requirements of the OK compost INDUSTRIAL certification scheme. Because of the other unknown components that can be added to the finished product (ink, reinforcement path, glue, ...), this finished product needs to be submitted to OK compost INDUSTRIAL certification in order to have the permission to put the OK compost INDUSTRIAL mark on this finished product.

For further information ask for ENVIRONMENTAL PRODUCT DECLARATION

MOISTURE AND DRYING

PLA-premium is a hygroscopic material. It absorbs moisture if kept unprotected. The product must be processed directly from the original moisture-tight packaging. Moisture content checking, additional drying time to get optimal processing moisture content, or crystallization step (before drying) are recommended, especially when the PLA-premium pellets have been exposed to the atmosphere during long time periods. The moisture content in the processing should generally be ≤ 250ppm (0,025%). If the moisture content during melting process is too high, damage and/ or decrease in certain properties can occur. The drying and crystallization conditions are presented in the table below:

Drying conditions		
Moisture uptake, max.	ppm	250
Recommended moisture to process	ppm	50-150
Drying temperature	°C	90°C
Drying time	h	4-6
Crystallization conditions		
Drying temperature	°C	100
Drying time	h	2

PROCESSING RECOMENDATIONS

Injection:

PLA-Premium can be processed on conventional injection equipment. It is recommended to use a pre-heated mold (80-90°C) so that the cooling step will be done gradually. The recommended temperature to inject the melted material is around 10-30°C above melting temperature, specifically the recommended range of temperatures is 180-210°C.

Recommendations for injection moulding applications	
Melt Temperature	180-210°C
Feed Throat	40°C
Feed Temperature	180-190°C
Mold	Recommended: 80-90°C Other: 20-25°C
Feed speed	80-120 cc/s*
Injection speed	90-110 cc/s*

*Four-cavity mould and screw of 30 mm diameter

When a change of material, at the end of production, or in case of prolonged stops, it is recommended to clean/ purge the processing equipment (screw, cylinder, ….) with thermoplastic polyolefin such as LDPE, PP or high-molecular-weight polymers.

ADDITIVATION

Our material can be mixed with other types of additives (such as inorganic ones). It should only be taken into account two aspects, the percentage of additive, that is going to be added, and the matrix of the additive masterbatch. In general, additives are delivered in masterbatch form, so they have mixed previously with another polymeric matrix/base. In these cases, the recommended polymeric matrix is PLA.

QUALITY CONTROL

The product is produced as a standard material. The melt flow rate (MFR) at 190 °C, 2.16 kg, according to ISO 1133) has been established as specified parameter for quality control.

DELIVERY FORMAT/ FORM SUPPLIED

Bulk density: 1,2 g/cm3

Standard pack: 20 kg/bag (vacuum-sealed)

STORAGE

Pellet packaging must be stored in dry conditions and be opened only immediately before the processing, thus ensuring that the dry pellet does not absorb room moisture. Original packaging must be sealed again and stay undamaged when not processed portions of material are left in it. However, when the packaging is reopened, it is recommended that PLA-premium is dried as specified in section MOISTURE AND DRYING.

SAFETY DATA

The material is not a dangerous product as defined by EU Regulation (EC) No 1272/2008 on classification, labelling and packaging of substances and mixtures and not subject to transport regulations. Nevertheless, general safety, protection and hygiene rules for its handling should be followed.

This mixture does not contain any substances to be mentioned according to the criteria of section 3.2 of annex II of REACH (European Regulation on Registration, Evaluation, Authorisation and Restriction of Chemicals)
For further details please refer to or request the Material Safety Data Sheet (MSDS).

LEGAL NOTICE
The information and figures in this TDS, based on current know-how and experience should be considered as guide values without warranty. That is not legally binding for a specific purpose, intended process or use given that material properties can be influenced by many factors involved in processing and application beyond our control. Therefore, processors must check product own use performance, adequacy, or validity by carrying their own testing and experiments, also based on our technical advice and support.

FURTHER INFORMATION
For further technical or commercial information please contact ADBioplastics via our website or by clicking here.

Version 4.0/ 05-2021

TECHNICAL DATA SHEET (TDS)

Trade product name: PLA-Premium ZX 314

Biobased and fully compostable compound suitable for conventional injection processes. Specifically, this PLA-Premium grade presents high percentage of biobased composition, since 97% of PLA-Premium ZX 314 is produced using renewable and eco-friendly source, in this case biomass.

PROPERTIES

According to data below PLA-Premium ZX 314 exhibits the following properties:

- High biobased composition (97%)
- Semi-crystalline structure
- Good flexibility (in comparison to virgin PLA)
- Good processability on conventional injection machines
- Opaque

Physical properties	Typical value	Unit	Test method
Density	1,24	[kg/m3]	ISO 1183-1
Water content	<0,1	[%]	ISO 15512
	<1000	ppm	
Appearance	Opaque	-	-
Mechanical properties	**Typical value**	**Unit**	**Test method**
Tensile strength at yield	67	[Mpa]	ISO 527-2
Tensile modulus	3300	[Mpa]	ISO 527-2
Elongation at break	4-5	[%]	ISO 527-2
Tensile stress at break	46	[Mpa]	ISO 527-2
Flexural modulus	4000	[MPa]	ISO 178
Unnotched Charpy impact	35,0	[kJ/m^2]	ISO 179
Unnotched Izod impact	29,0	[kJ/m^2]	ISO 180
Thermal properties	**Typical value**	**Unit**	**Test method**
Melting temperature	177	[°C]	ISO 11357-3
Heat distortion temperature HDT 66 psi (0.45 MPa)	50-55	[°C]	ASTM D648*
Melt flow rate (190°C, 2.16kg)	13	[g/10 min]	ISO 1133
Melt volume rate (190 °C/2.16 kg)	10	[cm^3/10 min]	

*This standard has been adapted to be used in DMA equipment

The values listed above have been established on standardized test specimens at standard temperature and humidity conditions, and figures are typical properties; not to be interpreted as specifications.

APPLICATION

PLA-Premium ZX 314 grade allows production of a wide range of applications on conventional injection machines. That shows benefits in terms of flexibility and resilience, decreasing the brittleness characteristic of pure PLA.

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GMO FREE

The product is free from Genetically Modified Organisms. GMO free self-declaration is available upon request.

COMPOSTABILITY

According to the EN 13432 standard, the grade fulfils the requirements of compostable polymers, because it can be degraded by microorganisms.

MOISTURE AND DRYING

PLA-premium is a hygroscopic material. It absorbs moisture if kept unprotected. The product must be processed directly from the original moisture-tight packaging. Moisture content checking, additional drying time to get optimal processing moisture content, or crystallization step (before drying) are recommended, especially when the PLA-premium pellets have been exposed to the atmosphere during long time periods. The moisture content in the processing should generally be ≤ 250ppm (0,025%). If the moisture content during melting process is too high, damage and/ or decrease in certain properties can occur. The drying and crystallization conditions are presented in the table below:

Drying conditions		
Moisture uptake, max.	ppm	250
Recommended moisture to process	ppm	50-150
Drying temperature	°C	90°C
Drying time	h	4-6
Crystallization conditions		
Drying temperature	°C	100
Drying time	h	2

PROCESSING RECOMENDATIONS

Injection:

PLA-Premium can be processed on conventional injection equipment. It is recommended to use a pre-heated mold (80-90°C) so that the cooling step will be done gradually. The recommended temperature to inject the melted material is around 10-30°C above melting temperature, specifically the recommended range of temperatures is 185-215°C.

Recommendations for injection moulding applications	
Melt Temperature	185-215°C
Feed Throat	40°C
Feed Temperature	180-190°C
Mold	Recommended: 80-90°C Other: 20-25°C
Feed speed	80-120 cc/s*
Injection speed	90-110 cc/s*

*Four-cavity mould and screw of 30 mm diameter

When a change of material, at the end of production, or in case of prolonged stops, it is recommended to clean/ purge the processing equipment (screw, cylinder, ….) with thermoplastic polyolefin such as LDPE, PP or high-molecular-weight polymers.

ADDITIVATION
Our material can be mixed with other types of additives (such as inorganic ones). It should only be taken into account two aspects, the percentage of additive, that is going to be added, and the matrix of the additive masterbatch. In general, additives are delivered in masterbatch form, so they have mixed previously with another polymeric matrix/base. In these cases, the recommended polymeric matrix is PLA.

QUALITY CONTROL
The product is produced as a standard material. The melt flow rate (MFR) at 190 °C, 2.16 kg, according to ISO 1133) has been established as specified parameter for quality control.

DELIVERY FORMAT/ FORM SUPPLIED
Bulk density: 1,2 g/cm3
Standard pack: 20 kg/bag (vacuum-sealed)

STORAGE
Pellet packaging must be stored in dry conditions and be opened only immediately before the processing, thus ensuring that the dry pellet does not absorb room moisture. Original packaging must be sealed again and stay undamaged when not processed portions of material are left in it. However, when the packaging is reopened, it is recommended that PLA-premium is dried as specified in section MOISTURE AND DRYING.

SAFETY DATA
The material is not a dangerous product as defined by EU Regulation (EC) No 1272/2008 on classification, labelling and packaging of substances and mixtures and not subject to transport regulations. Nevertheless, general safety, protection and hygiene rules for its handling should be followed.
This mixture does not contain any substances to be mentioned according to the criteria of section 3.2 of annex II of REACH (European Regulation on Registration, Evaluation, Authorisation and Restriction of Chemicals)
For further details please refer to or the Material Safety Data Sheet (MSDS).

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FURTHER INFORMATION
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