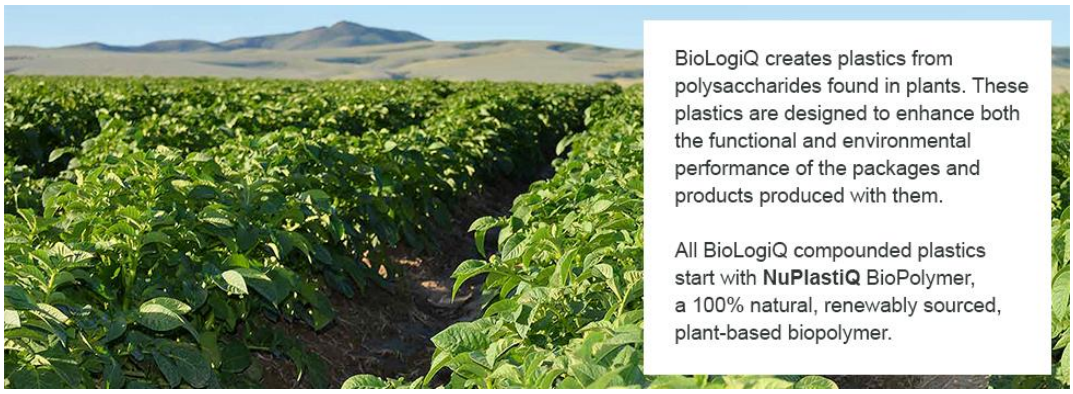
Technical Data Sheet (TDS)

Product: BioBlend® XP 22250



Description

- One of the BioBlend® XP family of high-performance BioPolymers designed for blown film applications.
- BioBlend® XP 22250 is a masterbatch that contains 50% NuPlastiQ BioPolymer compounded with HDPE.
- Made from 50% annually renewable agricultural resources.
- Supplied in pellet form.

Applications

- BioBlend® XP 22250 is intended for bags, liners, shipping sacks and other film applications that require high tensile strength and good stiffness.

Properties

PHYSICAL	TEST METHOD	NOMINAL VALUE	UNITS
Density:	ASTM D792	1.2	g/cm^3
THERMAL			
Melt Flow Index	ASTM D1238	0.9	g/10 min (190 °C/10 kg)
Melting Temperature Range:	ASTM D3418	126 - 136	° C
ADDITIONAL INFORMATION			
Moisture Content:(1)	ASTM D6980	≤ 0.9	%
MECHANICAL PROPERTIES(2)			
Tensile Properties			
Secant Modulus @ 1%	ASTM D638	770	MPa
Tensile Strength at Break	ASTM D638	25	MPa
Elongation at Break	ASTM D638	9	%
Flexural Properties			
Flexural Modulus	ASTM D790	930	MPa
Notched Impact Strength			
Izod - Notched	ASTM D256	15	J/m
FILM PROPERTIES(3)			
Tensile Strength			
MD	ASTM D882	5400	psi
TD	ASTM D882	2000	psi
Elongation at Break			
MD	ASTM D882	430	%
TD	ASTM D882	< 5	%
Elmendorf Tear			
MD	ASTM D1922	< 10	g
TD	ASTM D1922	400	g
Dart Drop Test			
	ASTM D1709	< 50	g

May 9, 2024

Technical Data Sheet (TDS)

Product: BioBlend® XP 22250

Table Notes:

1) Moisture content was measured with an infrared moisture analyzer at 110°C for 10 minutes.
2) Mechanical properties were measured on injection molded parts made directly from the 50% NuPlastiQ / 50% polyethylene masterbatch.
3) The reported film properties are for a monolayer blown film that was let-down with 50% additional HDPE to a concentration of 25% NuPlastiQ. The thickness was 1.0 mil, and the blow-up ratio was 2.5:1.
4) These values are typical properties only and should not be used for specification purposes. End users should confirm results with their own tests.

Processing Considerations

- XP 22250 is designed to be diluted with polyethylene to a final NuPlastiQ® content between 10% and 35%.
- XP 22250 can be run on existing process equipment with a few adjustments.
- Films made with NuPlastiQ are more sensitive to processing conditions such as temperature profile, residence time, die gap, and blow-up ratio. See the NuPlastiQ Film Processing Guide for additional information.
  - A typical recommended temperature profile will be in the 160°C – 190°C range.
  - Depending on equipment, process conditions, and residence time, as temperatures increase in this range the glycerin plasticizer may experience some volatilization. This may cause a slight odor and/or smoke and is expected under normal processing conditions. Always use proper ventilation. See the BioBlend® XP 22250 SDS for details.
- Some equipment (multi-layer, higher output, lower residence time) may allow for higher processing temperatures (190°C - 200°C).
- Melt temperatures above 205°C may cause material degradation, lensing and fish-eyes in the film.
- When extruder operation has to be stopped temporarily, it is recommended to purge the material in the barrel before resuming film processing.
- This TDS covers the following BioBlend® XP BioPolymers: XP 22250 and XP 22251

Packaging

- XP 22250 can be shipped in the following formats:
  - 25kg moisture barrier bags.
  - 1000kg gaylord boxes with a moisture barrier bag.

Storage

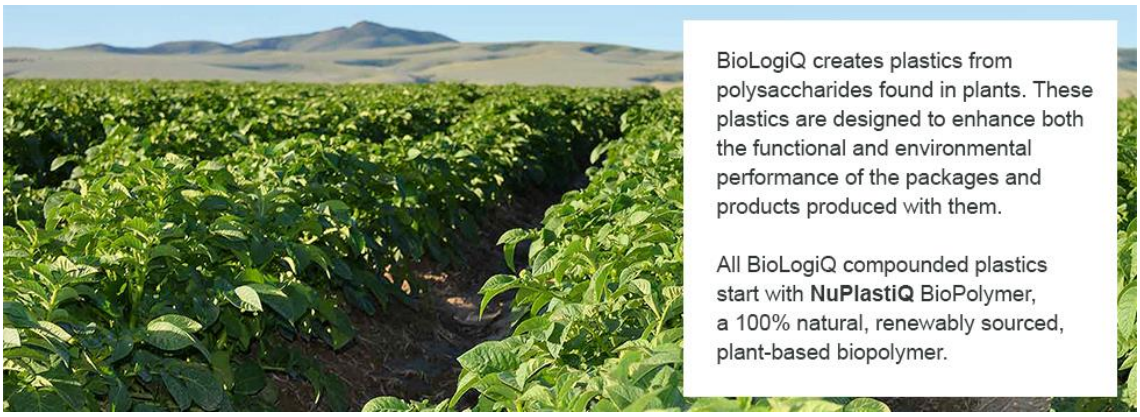
- XP 22250 should be stored in a dry location away from heat and direct sunlight. Material must remain sealed in moisture barrier bag until used. Material should be stored under normal warehouse conditions (typical max temperature of 80°F/26°C.)

Drying

- BioLogiQ BioBlends are dried after production and shipped in sealed moisture-proof bags that are ready to use as supplied. They should be stored indoors in the sealed container away from heat until used.
- If pellets are exposed to a humid environment, they will absorb moisture from the air. If needed, dry pellets by introducing warm dry air at no more than 80°C for 1-4 hours.
- The estimated moisture content of a BioLogiQ BioBlend can be measured with an infrared moisture analyzer at 110°C for 10 minutes. The result of the measurement will not perfectly equal the moisture content, due to possible partial evaporation of plasticizer. The result from this test should be <0.9% moisture prior to processing.

Technical Data Sheet (TDS)

Product: BioBlend® XP 24250



Description

- One of the BioBlend® XP family of high performance BioPolymers designed for blown film applications.
- BioBlend® XP 24250 is a masterbatch that contains 50% NuPlastiQ GP BioPolymer compounded with metallocene LLDPE.
- Made from 50% annually renewable agricultural resources.
- Supplied in pellet form.

Applications

- Used for final products requiring strength and plasticity such as agricultural film, blown film, cast film, food packaging, and heavy duty bags.

Properties

PHYSICAL	TEST METHOD	NOMINAL VALUE	UNITS
Density:	ASTM D792	1.16	g/cm^3
THERMAL			
Melt Flow Index	ASTM D1238	0.65	g/10 min (190 °C/5 kg)
Melting Temperature Range:	ASTM D3418	114	° C
ADDITIONAL INFORMATION			
Moisture Content:(1)	ASTM D6980	1.0	%
MECHANICAL PROPERTIES(2)			
Tensile Properties			
Secant Modulus @ 1%	D638	430	MPa
Ultimate Tensile Strength	D638	16.7	MPa
Tensile Strength at Break	D638	8.4	MPa
Elongation at Break	D638	62	%
Flexural Properties			
Flexural Modulus	D790	690	MPa
Notched Impact Strength			
Izod - Notched	D256	61	J/m
FILM PROPERTIES(3)			
Tensile Strength			
MD	ASTM D882	4940	psi
TD	ASTM D882	4190	psi
Elongation at Break			
MD	ASTM D882	570	%
TD	ASTM D882	670	%
Elmendorf Tear			
MD	ASTM D1922	390	g
TD	ASTM D1922	590	g
Dart Drop Test			
	ASTM D1709	290	g

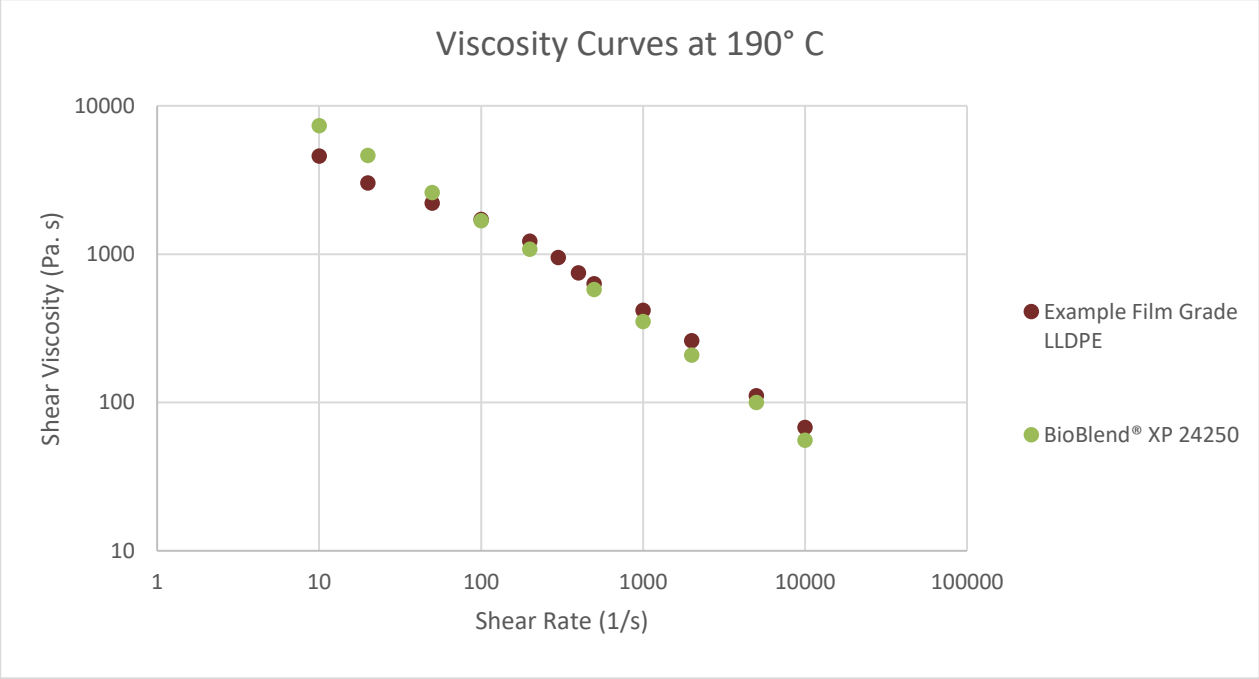
May 10th, 2024

Product: BioBlend® XP 24250

Table Notes:

1) Moisture content was measured with an infrared moisture analyzer at 110°C for 10 minutes.
2) Mechanical properties were measured on injection molded parts made directly from the 50% NuPlastiQ / 50% polyethylene masterbatch.
3) The reported film properties are for a monolayer blown film that was let-down with 50% additional LLDPE to a concentration of 25% NuPlastiQ. The thickness was 1.0 mil, and the blow-up ratio was 2.5:1.
4) These values are typical properties only and should not be used for specification purposes. End users should confirm results with their own tests.

Viscosity Curve



- The MFI of XP 24250 is lower than the MFI of a typical blown film grade of LLDPE (< 10 1/s). However, as shown above XP 24250 exhibits shear thinning behavior and performs closer to a standard film grade LLDPE under typical blown film conditions (200 1/s).

Processing Considerations

- XP 24250 is designed to be diluted with polyethylene to a final NuPlastiQ® content between 10% and 40%.
- XP 24250 can be run on existing process equipment with a few adjustments.
- Films made with NuPlastiQ are more sensitive to processing conditions such as temperature profile, residence time, die gap, and blow-up ratio. See the NuPlastiQ Film Processing Guide for additional information.
  - A typical recommended temperature profile will be in the 160°C – 190°C range.
  - Depending on equipment, process conditions, and residence time, as temperatures increase in this range the glycerin plasticizer may experience some volatilization. This may cause a slight odor and/or smoke and is expected under normal processing conditions. Always use proper ventilation. See the BioBlend® XP 24250 SDS for details.

- Some equipment (multi-layer, higher output, lower residence time) may allow for higher processing temperatures (190°C - 200°C).
- Melt temperatures above 205°C may cause material degradation, lensing and fish-eyes in the film.
- When extruder operation has to be stopped temporarily, it is recommended to purge the material in the barrel before resuming film processing.

Packaging

- XP 24250 can be shipped in the following formats:
- 25kg moisture barrier bags
- 1000 kg gaylord boxes with a moisture barrier bag

Storage

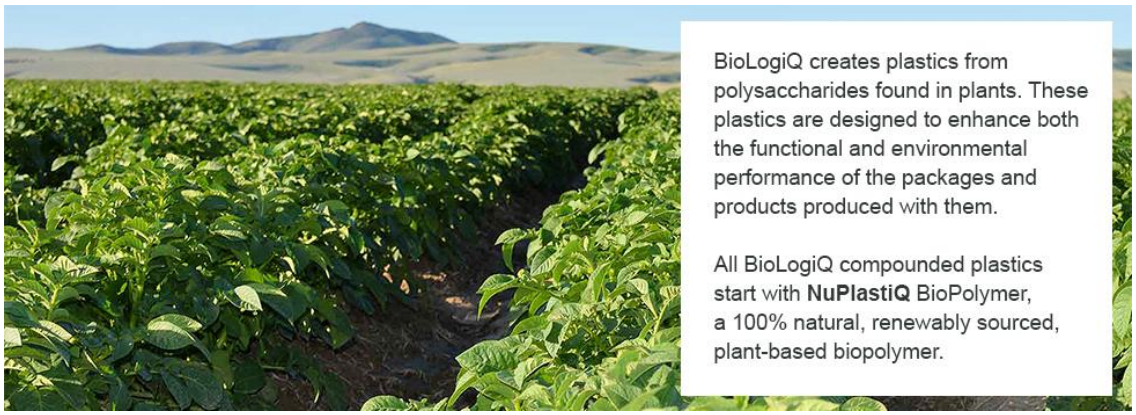
- XP 24250 should be stored in a dry location away from heat and direct sunlight. Material must remain sealed in moisture barrier bag until used. Material should be stored under normal warehouse conditions (typical max temperature of 80°F/26°C).

Drying

- BioLogiQ BioBlends are dried after production and shipped in sealed moisture-proof bags that are ready to use as supplied. They should be stored indoors in the sealed container away from heat until used.
- If pellets are exposed to a humid environment, they will absorb moisture from the air. If needed, dry pellets by introducing warm dry air at no more than 80°C for 1-4 hours.
- The estimated moisture content of a BioLogiQ BioBlend can be measured with an infrared moisture analyzer at 110°C for 10 minutes. The result of the measurement will not perfectly equal the moisture content, due to possible partial evaporation of plasticizer.

Technical Data Sheet (TDS)

Product: BioBlend® XP 24850



Description

- One of the BioBlend® XP family of high-performance BioPolymers designed for blown film applications.
- BioBlend® XP 24850 is a masterbatch that contains 50% NuPlastiQ® BioPolymer compounded with octene LLDPE.
- Made from 50% annually renewable agricultural resources.
- Supplied in pellet form.

Applications

- High Speed, thin film applications.

Properties

PHYSICAL	TEST METHOD	NOMINAL VALUE	UNITS
Density:	ASTM D792	1.16	g/cm^3
THERMAL			
Melt Flow Index	ASTM D1238	1.5	g/10 min (190 °C/10 kg)
Melting Temperature Range:	ASTM D3418	122	° C
ADDITIONAL INFORMATION			
Moisture Content:(1)	ASTM D6980	0.8	%
MECHANICAL PROPERTIES(2)			
Tensile Properties			
Secant Modulus @ 1%	ASTM D638	450	MPa
Tensile Strength at Break	ASTM D638	9	MPa
Elongation at Break	ASTM D638	70	%
Flexural Properties			
Flexural Modulus	ASTM D790	720	MPa
Notched Impact Strength			
Izod - Notched	ASTM D256	180	J/m
FILM PROPERTIES(3)			
Tensile Strength			
MD	ASTM D882	4360	psi
TD	ASTM D882	3510	psi
Elongation at Break			
MD	ASTM D882	560	%
TD	ASTM D882	690	%
Elmendorf Tear			
MD	ASTM D1922	420	g
TD	ASTM D1922	630	g
Dart Drop Test			
	ASTM D1709	240	g

May 10, 2024

Technical Data Sheet (TDS)

Product: BioBlend® XP 24850

Table Notes:

1) Moisture content was measured with an infrared moisture analyzer at 110°C for 10 minutes.
2) Mechanical properties were measured on injection molded parts made directly from the 50% NuPlastiQ / 50% polyethylene masterbatch.
3) The reported film properties are for a monolayer blown film that was let-down with 50% additional LLDPE to a concentration of 25% NuPlastiQ. The thickness was 1.0 mil, and the blow-up ratio was 2.5:1.
4) These values are typical properties only and should not be used for specification purposes. End users should confirm results with their own tests.

Processing Considerations

- XP 24850 is designed to be diluted with polyethylene to a final NuPlastiQ® content between 10% and 40%.
- XP 24850 can be run on existing process equipment with a few adjustments.
- Films made with NuPlastiQ are more sensitive to processing conditions such as temperature profile, residence time, die gap, and blow-up ratio. See the NuPlastiQ Film Processing Guide for additional information.
  - A typical recommended temperature profile will be in the 160°C – 190°C range.
  - Depending on equipment, process conditions, and residence time, as temperatures increase in this range the glycerin plasticizer may experience some volatilization. This may cause a slight odor and/or smoke and is expected under normal processing conditions. Always use proper ventilation. See the BioBlend® XP 24850 SDS for details.
- Some equipment (multi-layer, higher output, lower residence time) may allow for higher processing temperatures (190°C - 200°C).
- Melt temperatures above 205°C may cause material degradation, lensing, and fish-eyes in the film.
- When extruder operation has to be stopped temporarily, it is recommended to purge the material in the barrel before resuming film processing.

Packaging

- XP 24850 can be shipped in the following formats:
  - 25kg moisture barrier bags.
  - 1000kg gaylord boxes with a moisture barrier bag.

Storage

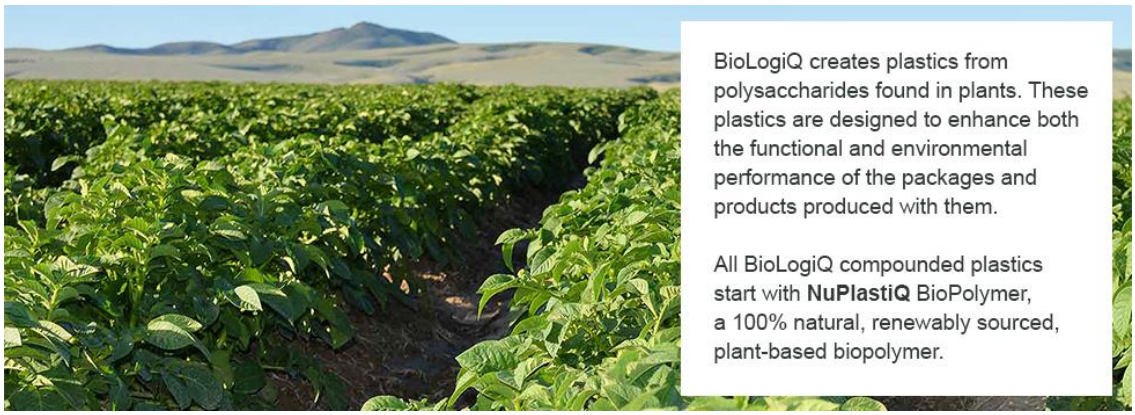
- XP 24850 should be stored in a dry location away from heat and direct sunlight. Material must remain sealed in moisture barrier bag until used. Material should be stored under normal warehouse conditions (typical max temperature of 80°F/26°C.)

Drying

- BioLogiQ BioBlends are dried after production and shipped in sealed moisture-proof bags that are ready to use as supplied. They should be stored indoors in the sealed container away from heat until used.
- If pellets are exposed to a humid environment, they will absorb moisture from the air. If needed, dry pellets by introducing warm dry air at no more than 80°C for 1-4 hours.
- The estimated moisture content of a BioLogiQ BioBlend can be measured with an infrared moisture analyzer at 110°C for 10 minutes. The result of the measurement will not perfectly equal the moisture content, due to possible partial evaporation of plasticizer.

Technical Data Sheet (TDS)

Product: BioBlend® XP 24875



Description

- One of the BioBlend® XP family of high performance BioPolymers designed for blown film applications.
- BioBlend® XP 24875 is a masterbatch that contains 50% NuPlastiQ GP BioPolymer compounded with 20% HDPE and 30% LLDPE.
- Made from 50% annually renewable agricultural resources.
- Supplied in pellet form.

Applications

- T-shirt bags, carryout bags, shipping sacks.

Properties

PHYSICAL	TEST METHOD	NOMINAL VALUE	UNITS
Density:	ASTM D792	1.17	g/cm³
THERMAL			
Melt Flow Index	ASTM D1238	0.7	g/10 min (190 °C/10 kg)
Melting Temperature Range:	ASTM D3418	122 - 136	° C
ADDITIONAL INFORMATION			
Moisture Content:(1)	ASTM D6980	1.0	%
MECHANICAL PROPERTIES (2)			
Tensile Properties			
Secant Modulus @ 1%	ASTM D638	568	MPa
Tensile Strength at Break	ASTM D638	19	MPa
Elongation at Break	ASTM D638	12	%
Flexural Properties			
Flexural Modulus	ASTM D790	708	MPa
Notched Impact Strength			
Izod - Notched	ASTM D256	47	J/m
FILM PROPERTIES (3)			
Tensile Strength			
MD	ASTM D882	2958	psi
TD	ASTM D882	2475	psi
Elongation at Break			
MD	ASTM D882	518	%
TD	ASTM D882	657	%
Elmendorf Tear			
MD	ASTM D1922	287	g
TD	ASTM D1922	567	g
Dart Drop Test			
	ASTM D1709	84	g

Technical Data Sheet (TDS)

Product: BioBlend® XP 24875

Table Notes:

1) Moisture content was measured with an infrared moisture analyzer at 110°C for 10 minutes.
2) Mechanical properties were measured on injection molded parts made directly from the 50% NuPlastiQ / 50% polyethylene masterbatch.
3) The reported film properties are for a monolayer blown film that was let-down with 50% additional LLDPE to a concentration of 25% NuPlastiQ. The thickness was 1.0 mil, and the blow-up ratio was 2.5:1.
4) These values are typical properties only and should not be used for specification purposes. End users should confirm results with their own tests.

Processing Considerations

- XP 24875 is designed to be diluted with polyethylene to a final NuPlastiQ® content between 10% and 40%.
- XP 24875 can be run on existing process equipment with a few adjustments.
- Films made with NuPlastiQ are more sensitive to processing conditions such as temperature profile, residence time, die gap, and blow-up ratio. See the NuPlastiQ Film Processing Guide for additional information.
  - A typical recommended temperature profile will be in the 160°C – 190°C range.
  - Depending on equipment, process conditions, and residence time, as temperatures increase in this range the glycerin plasticizer may experience some volatilization. This may cause a slight odor and/or smoke and is expected under normal processing conditions. Always use proper ventilation. See the BioBlend® XP 24875 SDS for details.
- Some equipment (multi-layer, higher output, lower residence time) may allow for higher processing temperatures (190°C - 200°C).
- Melt temperatures above 205°C may cause material degradation, lensing and fish-eyes in the film.
- When extruder operation has to be stopped temporarily, it is recommended to purge the material in the barrel before resuming film processing.

Packaging

- XD 24875 can be shipped in the following formats:
  - 25kg moisture barrier bags.
  - 1000kg gaylord boxes with a moisture barrier bag.

Storage

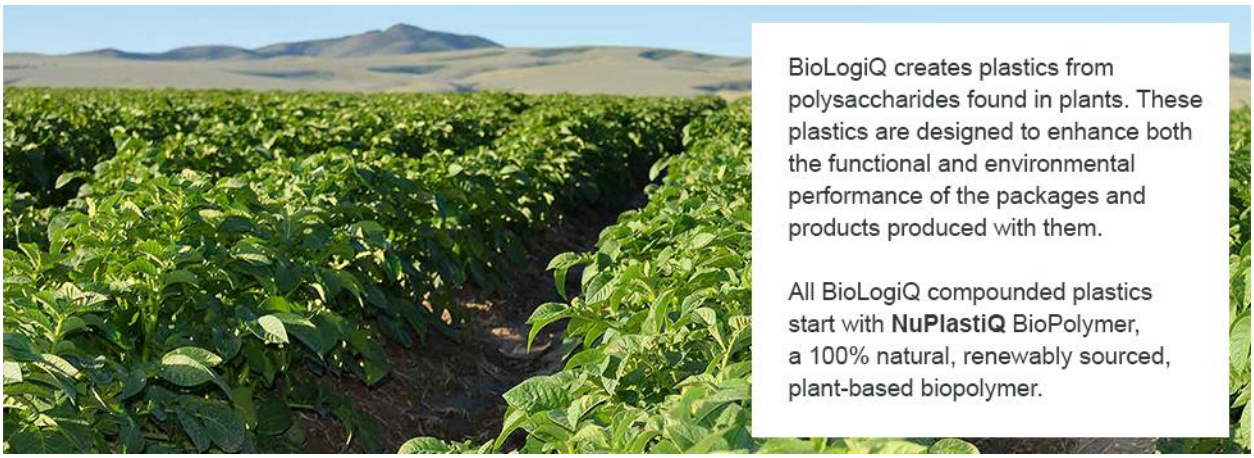
- XD 24875 should be stored in a dry location away from heat and direct sunlight. Material must remain sealed in moisture barrier bag until used. Material should be stored under normal warehouse conditions (typical max temperature of 80°F/26°C.)

Drying

- BioLogiQ BioBlends are dried after production and shipped in sealed moisture-proof bags that are ready to use as supplied. They should be stored indoors in the sealed container away from heat until used.
- If pellets are exposed to a humid environment, they will absorb moisture from the air. If needed, dry pellets by introducing warm dry air at no more than 80°C for 1-4 hours.
- The estimated moisture content of a BioLogiQ BioBlend can be measured with an infrared moisture analyzer at 110°C for 10 minutes. The result of the measurement will not perfectly equal the moisture content, due to possible partial evaporation of plasticizer.

Technical Data Sheet (TDS)

Product: BioBlend® XD 25250



Description

- One of the BioBlend® XD family of high durability BioPolymers designed for injection molding applications.
- BioBlend® XD 25250 is a masterbatch that contains 50% NuPlastiQ GP BioPolymer compounded with a random copolymer polypropylene.
- Made from 50% annually renewable agricultural resources.
- Supplied in pellet form.

Applications

- BioBlend® XD 25250 is intended for injection molding applications that require good strength such as food packaging and containers.

Properties

PHYSICAL	TEST METHOD	NOMINAL VALUE	UNITS
Density:	ASTM D792	1.15	g/cm^3
THERMAL			
Melt Flow Index	ASTM D1238	3	g/10 min (190 °C/2.16 kg)
Melting Temperature Range	ASTM D3418	140-165	°C
ADDITIONAL INFORMATION			
Moisture Content:(1)	ASTM D6980	≤ 0.5	%
MECHANICAL PROPERTIES (2)			
Tensile Properties			
Secant Modulus @ 1%	ASTM D638	800	MPa
Tensile Strength at Break	ASTM D638	28	MPa
Elongation at Break	ASTM D638	12.5	%
Flexural Properties			
Flexural Modulus	ASTM D790	1440	MPa
Ultimate Flexural Strength	ASTM D790	45	MPa
Notched Impact Strength			
Izod - Notched	ASTM D256	19.8	J/m

Table Notes:

1) Moisture content was measured with an infrared moisture analyzer at 105°C for 10 minutes.
2) Mechanical properties were measured on injection molded parts made directly from the 50% NuPlastiQ / 50% polypropylene masterbatch.
3) These values are typical properties only and should not be used for specification purposes. End users should confirm results with their own tests.

Processing Considerations

- XD 25250 is designed to be diluted with a customer specific polypropylene to achieve a final NuPlastiQ GP concentration between 10% and 40%.

- XD 25250 can be run on existing process equipment with a few adjustments.

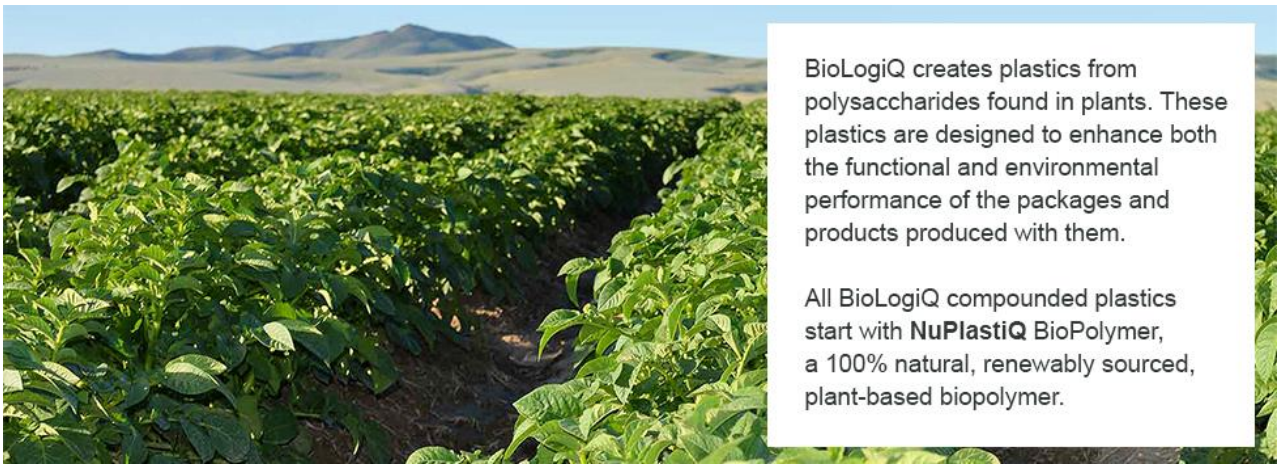
- Injection molded applications with XD 25250 are slightly more sensitive to processing conditions such as temperature profile and cycle time.
  - A typical recommended temperature profile will be in the 180°C – 210°C range.
  - Depending on equipment, process conditions, and residence time, as temperatures increase in this range the glycerin plasticizer may experience some volatilization. This may cause a slight odor and/or smoke and is expected under normal processing conditions. Always use proper ventilation. See the BioBlend® XP 25250 SDS for details.
- Some equipment (shorter residence time, higher output) may allow for higher processing temperatures (210°C - 220°C).
- If the melt temperature is too hot for the specific blend, some scorching and dark coloring may occur. Lower the extrusion temperature and continue processing until the color lightens to an acceptable level.

Storage and Drying

- BioLogiQ BioBlends are dried after production and shipped in sealed moisture-proof bags that are ready to use as supplied. They should be stored indoors in the sealed container away from heat until used.
- If pellets are exposed to a humid environment, they will absorb moisture from the air. If needed, dry pellets by introducing warm dry air at no more than 80°C for 1-4 hours.
- The estimated moisture content of a BioLogiQ BioBlend can be measured with an infrared moisture analyzer at 105°C for 10 minutes. The result of the measurement will not perfectly equal the moisture content, due to possible partial evaporation of plasticizer. The result from this test should be <0.5% moisture prior to processing.

Technical Data Sheet (TDS)

Product: BioBlend® BC 27134



Description

- One of the BioBlend® BC Biodegradable/Compostable Resins designed for mulch films.
- Made from 30% annually renewable agricultural resources blended with PBAT.
- Certified by TUV to be industrial compostable.
- BioBlend® BC 27134 is supplied in pellet form, fully compounded.

Applications

- BioBlend® BC 27134 is intended for agricultural mulch film.
- Used for products that require biodegradation or are intended for compost environments.

Properties

PHYSICAL	TEST METHOD	NOMINAL VALUE	UNITS
Density:	ASTM D792	1.3	g/cm^3
THERMAL			
Melt Flow Index	ASTM D1238	5.7	g/10 min (190 °C/2.16 kg)
Melting Temperature Range:	ASTM D3418	130	° C
ADDITIONAL INFORMATION			
Moisture Content: (1)	ASTM D6980	< 0.8	%
FILM PROPERTIES(2)			
Tensile Strength			
MD	ASTM D882	24	MPa
TD	ASTM D882	24.6	MPa
Elongation at Break			
MD	ASTM D882	680	%
TD	ASTM D882	650	%
Elmendorf Tear			
MD	ASTM D1922	540	g
TD	ASTM D1922	520	g
Dart Drop Test			
	ASTM D1709	300	g

Notes:

1) Moisture content was measured with an infrared moisture analyzer at 110°C for 10 minutes.
2) The reported film properties are for a monolayer blown film. The thickness was 1.0 mil, and the blow-up ratio was 2.5:1.
3) These values are typical properties only and should not be used for specification purposes. End users should confirm results with their own tests.

Technical Data Sheet (TDS)

Product: BioBlend® BC 27134

Processing Considerations

- BC 27134 is generally used for monolayer films and is designed to be used on existing equipment with a few adjustments.
- Films made with NuPlastiQ are more sensitive to processing conditions such as temperature profile, residence time, die gap, and blow-up ratio. See the NuPlastiQ/PBAT Film Processing Guide for additional information.
  - A typical recommended temperature profile will be in the 130°C – 165°C range.
  - Depending on equipment, process conditions, and residence time, as temperatures increase in this range the glycerin plasticizer may experience some volatilization. This may cause a slight odor and/or smoke and is expected under normal processing conditions. Always use proper ventilation. See the BioBlend® BC 27134 SDS for details.
  - Melt temperatures above 175°C may cause material degradation, lensing, and fish-eyes in the film.
- If extruder operation much be stopped temporarily, it is recommended to purge the material in the barrel before resuming film processing or material degradation will occur.

Packaging

- BC 27134 can be shipped in the following formats:
  - 25kg moisture barrier bags.
  - 1000kg gaylord boxes with a moisture barrier bag.

Storage

- Material should be stored in a dry location away from heat and direct sunlight. Material must remain sealed in moisture barrier bag. Material has a shelf life of 6 months if stored under normal warehouse conditions (typical max temperature of 80°F/26°C.)

Drying

- BioLogiQ BioBlends are dried after production and shipped in sealed moisture-proof bags that are ready to use as supplied. They should be stored indoors in the sealed container away from heat until used.
- If pellets are exposed to a humid environment, they will absorb moisture from the air. If needed, dry pellets by introducing warm dry air at no more than 60°C for 1-4 hours.
- The estimated moisture content of a BioLogiQ BioBlend can be measured with an infrared moisture analyzer at 110°C for 10 minutes. The result of the measurement will not perfectly equal the moisture content, due to possible partial evaporation of plasticizer. The result from this test should be <0.8% moisture prior to processing.