Plastic is good
We make it better

BiologIQ
BioLogiQ is creating a sustainable future for the plastics industry by revolutionizing the way plastic products are manufactured. The company makes bioplastic resins from all-natural, renewable resources. These resins allow plastics manufacturers to greatly reduce fossil fuel-based plastic use and greenhouse gas emissions.

BioLogiQ makes plastic from annually renewable starch, rather than petroleum to address environmental concerns. Mixing BioLogiQ’s NuPlastiQ BioPolymer resins with petroleum-based plastic resins results in a dramatic reduction of “greenhouse gas” emissions, helping future generations.

The company formed in 2011 to create a useful plastic from potatoes. Our proprietary process uses various starches, including starch by-product from processing French fries and potato chips. There’s a reason we’re based in Idaho.
WITH A 100% PLANT-BASED BIOPOLYMER CALLED NUPLASTIQ, BIOLOGIQ IS THE WAY OF THE FUTURE

NuPlastiQ® BioPolymer is a unique type of thermoplastic resin made with our proprietary process that converts highly crystalline starch powder into a low crystalline (mostly amorphous) plastic resin.

NuPlastiQ is supplied in pellet form. This thermoplastic material, when partnered with mainstream high performance polymers, has many properties which are desirable for manufacturing a variety of products, including films and bags, injection molded parts, blow molded bottles, and thermoformed parts.

NuPlastiQ’s unique properties allow it to be easily blended with other plastic resins, including both fossil-fuel and bio-based materials. It is drop-in-compatible with polyolefins (PE, PP, PS) and compostables (PLA, PBAT, PHA).

Because of its strength, some bags made with 25% NuPlastiQ and 75% PE can be downgauged by 30%. The result is 50% less fossil-based plastics being used to make the bags.
RECYCLING
BioPlastIQ partnered with Llalia and Muaro to accelerate scale-up of a chemical recycling unit with capacity to process up to 20,000 tons per year of post-consumer plastics that otherwise would have been landfilled. 2021 scheduled start-up.

BioLogIQ’s approach is inspired by the Ellen MacArthur Foundation’s “New Plastics Economy.”

130k+ BARRELS OF OIL NOT EXTRACTED

OTHER MATERIAL STREAMS

REUSE

RENEWABLE SOURCED VIRGIN FEEDSTOCK

DESIGN & PRODUCTION

USER

Energy Recovery
1/2 the carbons.
1/2 the CO₂ from incineration:

Polyethylene NuPlastIQ

AD+ AND/OR COMPOSTING

RECOVER

ADDITIONAL ENERGY

ENVELOPE

Composting
- NuPlastIQ enhances performance requirements in compostable products.
- Cost effective solution for ASTM D6400 compliance.
- NuPlastIQ improves marine biodegradation in case of incomplete compost run off to waterways. One year marine biodegradation achievable under ASTM D6991.

Leakage
Less persistent in the unfortunate case of unavoidable environmental leakage.

- Preventing environmental leakage will always be the best strategy to ensure healthy soils and oceans for generations to come;
- Some level of environmental leakage is unavoidable;
- While there is no excuse for littering, engineering mainstream plastics for reduced environmental persistence is a valuable “insurance policy”.

Biodegradability information for B2B discussions and decision making.
BioLogIQ doesn’t support B2C communication on polyolefin biodegradation.

- BioLogIQ has conclusive evidence that NuPlastIQ accelerated polyolefin biodegradation under lab conditions (ASTM D6338 and D5511).
- The mechanism is not fragmentation. Polyolefin BioBlends are shelf stable under normal storage conditions.
- Investment of approximately one million dollars has been allocated to projects learning if and how NuPlastIQ-induced biodegradation would reduce environmental impacts of polyolefins that leak into the environment. Results expected in two years.

Renewable Feedstock From responsible sources with a benign LCA profile
- NuPlastIQ BioPolymer is 100% natural, responsibly and renewably sourced.
- Carbon neutral at BioLogIQ’s gate

3Rs to Live By
Reduce: NuPlastIQ’s great mechanical performance when matched to polyolefins or compostable resins enable high performance, lightweight products and packaging.
Recycle: Polyolefin BioBlends are shelf stable under normal storage conditions.

Biodigestor

Low concentrations did not require any change in processing conditions.

BioBlend BC and MB
- Plastic to CO₂ and H₂O
- Biodegradation without need for prior fragmentation.
- Cost effective solution for biodegradability (Industrially Compostable).
- Not mechanically recyclable in most streams. Please check local requirements and label accordingly.

BioBlend XP and XD
- Reduced carbon footprint versus fossil-based.
- Drop-in manufacturing.
- Potential for light weighting extruded films and sheets.
- Recyclable with special consideration.
- 5 to 40% renewable content.
  (In many cases only practical route)
## NuPlastiQ® XP High Performance BioPolymers for Packaging & Films

<table>
<thead>
<tr>
<th>BioBlend</th>
<th>Partner Resin</th>
<th>Typical Use</th>
<th>Density (g/cm³)</th>
<th>MFI (g/10min)</th>
</tr>
</thead>
<tbody>
<tr>
<td>XP 22150</td>
<td>HDPE</td>
<td>Blown Film, Blow Molding, Extrusion</td>
<td>1.17</td>
<td>0.64 190°C @ 5.0 kg</td>
</tr>
<tr>
<td>XP 22250</td>
<td>HDPE</td>
<td>Blown Film</td>
<td>1.20</td>
<td>0.88 190°C @ 5.0 kg</td>
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<tr>
<td>XP 24150</td>
<td>LDPE</td>
<td>Blown Film</td>
<td>1.16</td>
<td>0.67 190°C @ 5.0 kg</td>
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<tr>
<td>XP 24250</td>
<td>mLLDPE</td>
<td>Blown Film</td>
<td>1.16</td>
<td>0.65 190°C @ 5.0 kg</td>
</tr>
<tr>
<td>XP 24550</td>
<td>LLDPE butene</td>
<td>Blown Film</td>
<td>1.16</td>
<td>0.30 190°C @ 5.0 kg</td>
</tr>
<tr>
<td>XP 24850</td>
<td>LLDPE octene</td>
<td>Blown Film</td>
<td>1.16</td>
<td>0.64 190°C @ 5.0 kg</td>
</tr>
<tr>
<td>XP 24875</td>
<td>HDPE/LLDPE</td>
<td>Blown Film</td>
<td>1.17</td>
<td>0.56 190°C @ 5.0 kg</td>
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</tbody>
</table>

## NuPlastiQ® XD High Durability BioPolymers for Durable Goods

<table>
<thead>
<tr>
<th>BioBlend</th>
<th>Partner Resin</th>
<th>Typical Use</th>
<th>Density (g/cm³)</th>
<th>MFI (g/10min)</th>
</tr>
</thead>
<tbody>
<tr>
<td>XD 25050</td>
<td>PP</td>
<td>Injection Molding</td>
<td>1.16</td>
<td>5.40 190°C @ 2.16 kg</td>
</tr>
<tr>
<td>XD 25150</td>
<td>PP</td>
<td>Injection Molding</td>
<td>1.16</td>
<td>3.5-4.4 190°C @ 2.16 kg</td>
</tr>
<tr>
<td>XD 25250</td>
<td>PP</td>
<td>Injection Molding, Extrusion</td>
<td>1.20</td>
<td>3.00 190°C @ 2.16 kg</td>
</tr>
<tr>
<td>XD 22620</td>
<td>HDPE</td>
<td>Blow Molding</td>
<td>1.04</td>
<td>1.08 190°C @ 5.0 kg</td>
</tr>
<tr>
<td>XD 26150</td>
<td>PS</td>
<td>Injection Molding</td>
<td>1.23</td>
<td>1.90 190°C @ 5.0 kg</td>
</tr>
</tbody>
</table>

## NuPlastiQ® BC Biodegradable/Compostable BioPolymers for Packaging & Films

<table>
<thead>
<tr>
<th>BioBlend</th>
<th>Partner Resin</th>
<th>Typical Use</th>
<th>Density (g/cm³)</th>
<th>MFI (g/10min)</th>
</tr>
</thead>
<tbody>
<tr>
<td>BC 27130</td>
<td>PBAT</td>
<td>Mulch Film</td>
<td>1.30</td>
<td>2.75-4.25 190°C @ 2.16 kg</td>
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<tr>
<td>BC 27240</td>
<td>PBAT/PLA</td>
<td>Blown film, bags</td>
<td>1.30</td>
<td>3.70 190°C @ 2.16 kg</td>
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</table>
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