



BIOPLASTICS MATERIALS PORTFOLIO



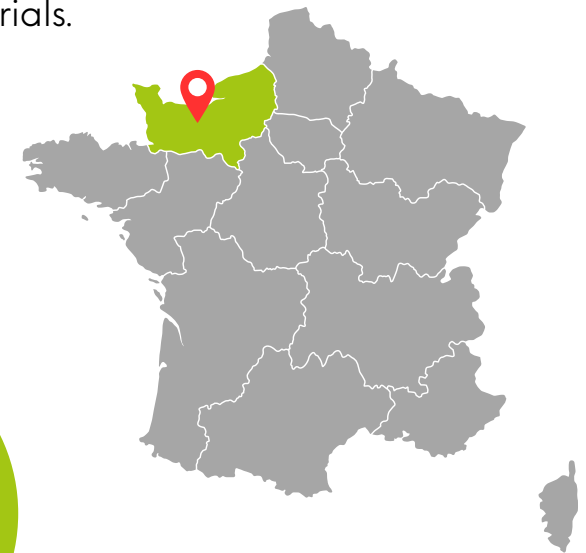
Who are we?

Since **2007**, **NaturePlast**, based in **France, Normandy** has established itself as a key player in Europe **in the development, production and distribution** of bio-based and/or biodegradable plastic pellets.

It specialises in supporting companies wishing to develop products based **on bioplastics**.

Our aims

- To support manufacturers in the use of biobased and/or biodegradable materials.
- To formulate and design materials that are right for you.
- Enhance the value of by-products from French industries.



4 000

formulations
developed since
our inception



2 900

clients served
since our
inception



30%

R&D
investment
share





Production of
compounds and
biocomposites



Distribution of raw
materials



R&D



Custom grinding



Training
Studies

Our activities



Application markets



Packaging



Sports & Leisure



Technical parts



Transportation



Others



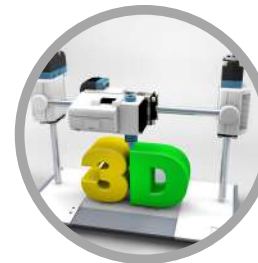
Construction



Consumer goods



Luxury
industry



3D print



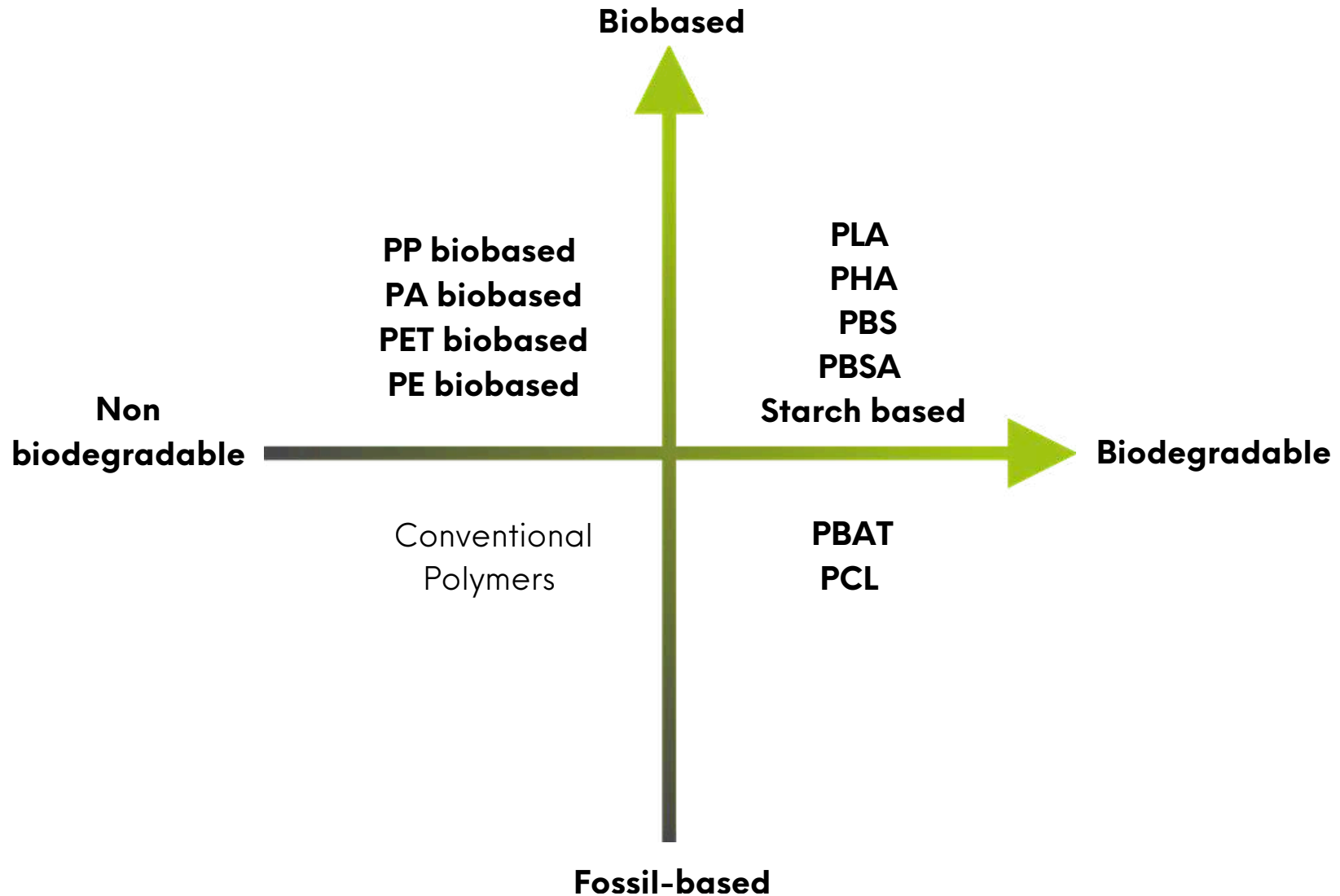
Agriculture
Horticulture

Bioplastics



Bioplastics Materials

The three main families of bioplastics by origin and end-of-life:



Our 3 ranges of bioplastics

We offer bioplastics designed to meet the needs of manufacturers looking for alternatives to conventional plastics. Our portfolio is not exhaustive, please consult us.



Bioplastics raw materials

Distribution of a wide range of biobased and/or biodegradable plastics.



Compounds

Production of bioplastic compounds with optimised properties.



Biocomposites

Production of biocomposites from by-products (plant fibres, seashells, etc.).



Contents

1 - Raw materials

Biodegradable range1

- PLA : Poly(lactides)
- PHAs : Poly(hydroxy alcanoates)
- Biopolyesters

Non biodegradable range2

- Biobased PA
- Biobased PET
- Cellulose esters
- Biobased elastomers
- Biobased PE (only in compounds)
- Biobased PP

2 - Bioplastics compounds

- NP SOFT range3
- NP HIGH TEMPERATURE range
- NP HIGH FLUIDITY range

3 - Fibres and by-products biocomposites

PLA matrix 4

PP matrix 5

PA matrix 6

- Cereals : NPW CER range
- Sea: NPW SEA range
- Shells and kernels : NPW SHE range
- Fruits : NPW VEG range
- Natural fibres : NPW FIB range

Non-exhaustive list. Please contact us for more information.

The information contained in this document are accurate and precise to the best of our knowledge at the time of publication. Before using any materials, customers and users should imperatively verify their adequacy to the application for which they are intended. NaturePlast accepts no liability whatsoever in respect of the handling, use and processing of these products.



Biodegradable range



		Grade	Biobased content (%)	Food contact	End of life	Tensile modulus (MPa)	Charpy impact unnotched (kJ/m ²)	Thermal resistance (°C, HDT B)	MFI (g/10min; 190°C/2.16 kg)	Density	Transparency
I N J E C T I O N	PLA	PLI 211	100	✓	●	3 500	/	60	30	1,24	✓
	PHA	PHI 002	96	✓	●	3 300	5	121	10 - 20	1,25	✗
		PHI 003	98	✓	● ● ●	4 200	5	134	5 - 15	1,25	✗
		PHI 011	100	✓	/	2 000	/	140	12 - 25	1,25	✗
	Biopolyester	PBI 120	49	✓	●	37	/	93	16-22	1.26	✗
		PBI 012	0	✓	● ● ● ●	300	/	51	7 (160°C)	/	✗

E X T R U S I O N	PLA	PLE 005	100	✓	●	3 500	20	61	23 (210°C /2.16 kg)	1,24	✓
		PLE 005-1	100	✓	●	3 500	21	55-60	8 (210°C /2.16 kg)	1,24	✓
		PLE 111	100	✓	●	3 500	/	60	10	1,24	✓
		PLE 111-1	100	✓	●	3 500	/	60	4	1,24	✓
		PLE 111-A	100	✓	●	3 500	/	60	4	1,24	✓
	PHA	PHE 005	100	In progress	● ● ● ●	/	/	/	4	1,23	✗
	Biopolyester	PBE 121	35	✓	● ●	24	/	82-88	4,2	1,23	✗
		PBE 120	49	✓	●	38	/	93	3-6	1,26	✗
		PBE 006	0	✓	● ● ●	85	No Break	90 (Vicat A)	4 - 6	1,26	✗
		PBE 010	38	✓	● ●	22	/	115-125	3-5	1,22	✗



Industrial compost



Home compost



Soil biodegradation



Marine biodegradation

Non biodegradable range



		Grade	Biobased content (%)	Food contact	End of life	Tensile modulus (MPa)	Charpy impact unnotched (kJ/m²)	Thermal resistance (°C, HDT B)	Density	Transparency
I N J E C T I O N	PA	NP BioPA1010-201	100	✓	Same end-of-life as petroleum-based PA	1 700	No Break	171 (Vicat B)	1.05	✗
		NP BioPA11-251	98	✓	Same end-of-life as petroleum-based PA	1 280	No Break	145	1.03	✗
		NP BioPA11-252	45	✓	Same end-of-life as petroleum-based PA	1 622	No Break	135	1.01	Translucid
		NP BioPA11-253	98	✓	Same end-of-life as petroleum-based PA	1 280	No Break	133	1.03	✗
	Cellulose esters	ACI 002	45	✗	✗	/	/	79	1.27	✓
	PET	BioPET 002	20	✓	Classic PET recycling stream	2 400	/	70	1.35	✓
	PE	BioPE	95 - 100	✓	Classic PE recycling stream	Only available in compound form.				
	PP	BioPP	40	✓	Classic PP recycling stream	1250	5	90	0.9	✗

		Range	Biobased content (%)	Food contact	Shore	Charpy impact unnotched (kJ/m²)	Transparency
I N J E C T I O N	E L A S T O M E R S	NP EL 209 range	20 to 84	Possible	50 A to 87 A	No Break	✗
		NP EL 210 range	29 to 46	Possible	82 A to 55 D	No Break	Possible
		NP EL 211 range	50 to 70	✗	72 A to 57 D	No Break	Possible

*non-exhaustive list

Compounds range



		Grade	Biobased content (%)	Food contact	Tensile modulus (MPa)	Charpy impact unnotched (kJ/m²)	Thermal resistance (°C, HDT B)	MFI (g/10min; 190°C/2.16 kg)	Density	Transparency
I N J E C T I O N	High temperature	NP HT 201	> 90	✓	3 620	38	118	50 - 60	1.24	✗
		NP HT 202	> 85	✓	2 400	77	120	39	1.23	✗
		NP HT 203	91	✓	3 200	38	118	17 - 23	1.24	✗
	Soft	NP SF 231	> 25	✓	195	No Break	50	36	1.22	✗
		NP SF 232	58	✓	1 600	No Break	67	6	1.27	✗
		NP SF 241	50	✓	1 600	No Break	48	13	1.23	✗
		NP SF 243	80	✓	2 000	35	55	5 - 10	1.24	✗
		NP SF 244	100	✓	3 200	45	/	32	1.17	✗
		NP SF 245	100	✓	2 600	138	/	24	1.16	✗
		NP SF 246	100	✓	1 800	No Break	/	17	1.21	✗
		NP SF 251	100	✓	1 560	68	/	31 (180°C/ 2.16 kg)	1.23	✗
	High fluidity	NP HF 201	> 90	✓	3 000	17	42	87	1.18	Translucid
		NP HF 231	49	✓	650	144	77	70	1.25	✗
E X T R U S I O N	High temperature	NP HT 101	> 90	✓	3 500	33	130	5	1.32	✗
		NP HT 102	> 90	✓	4 400	47	110	5	/	✗
		NP HT 103	> 80	✓	2 300	No Break	107	7	1.31	✗
	Soft	NP SF 137	51	✓	/	No Break	/	1	/	✗
		NP SF 141	> 85	✓	1 850	> 50	/	8	1,21	Translucide
		NP SF 152	59	✗	230	33	/	2,5 (180°C/ 2,16 kg)	/	✗

Biocomposites range

Biodegradable - PLA



	Grade	Matrix	Filler	Incorporation rate (%)	Renewable content (%)	Food contact	Tensile modulus (MPa)	Charpy impact unnotched (kJ/m ²)	Thermal resistance (°C, Vicat A50)	MFI (g/10min; 190°C/2.16 kg)	Density
Sea range	NPW SEA 241	PLA	Scallop inf 500 µm	20	100	✗	/	9.3	59	33	1.36
	NPW SEA 242	PLA	Scallop 0.5 - 1 mm	20	100	✗	/	6.6	57	66	1.42
Natural fibres range	NPW FIB 241	PLA	Flax inf 250 µm	20	100	✗	/	6.7	64	14	1.23
	NPW FIB 242	PLA	Flax inf 1 mm	20	100	✗	/	5.5	68	24	1.21
	NPW FIB 243	PLA	Brewers' grains inf 500 µm	20	100	✗	/	5.6	58	56	1.23
	NPW FIB 244	PLA	Brewers' grains 0.5 - 1 mm	20	100	✗	/	4.9	/	23	1.21
Fruits range	NPW VEG 240	PLA	Grapes inf 0.5 mm	20	100	✗	/	5.6	55	43	1.23
	NPW VEG 241	PLA	Grapes 0.5 - 1mm	20	100	✗	/	3.3	60	51	1.22
Shells and kernels range	NPW SHE 240	PLA	Egg shell inf 0.5 mm	20	100	✗	/	7.3	58	62	1.37
	NPW SHE 241	PLA	Egg shell 0.5 - 1 mm	20	100	✗	/	5.9	58	39	1.30

Biocomposites range

Non biodegradable – PP *exist in biobased PP



	Grade	Matrix*	Filler	Incorporation rate (%)	Renewable content (%)	Food contact	Tensile modulus (MPa)	Charpy impact unnotched (kJ/m ²)	Thermal resistance (°C, Vicat A50)	MFI (g/10min; 190°C/2.16 kg)	Density
Sea range	NPW SEA 217	PP	Scallop inf 500 µm	20	20	✗	/	22	151	15	1.04
	NPW SEA 218	PP	Scallop 0.5 – 1 mm	20	20	✗	/	17	150	14	1.08
Natural fibres range	NPW FIB 213	PP	Flax 250 µm	20	20	✗	/	13	153	11	0.95
	NPW FIB 214	PP	Flax inf 1 mm	20	20	✗	/	9.5	155	5.2	0.97
	NPW FIB 215	PP	Brewers' grains inf 500 µm	20	20	✗	/	13	149	11	0.96
	NPW FIB 216	PP	Brewers' grains 0.5 – 1 mm	20	20	✗	/	12	152	9	0.97
Fruits range	NPW VEG 210	PP	Grapes inf 0.5 mm	20	20	✗	/	12	151	12	0.97
	NPW VEG 211	PP	Grapes 0.5 – 1mm	20	20	✗	/	9	152	12	0.97
Shells and kernels range	NPW SHE 210	PP	Egg shell inf 0.5 mm	20	20	✗	/	16	148	15	1.04
	NPW SHE 211	PP	Egg shell 0.5 – 1 mm	20	20	✗	/	13	151	15	1.04
Other by-products range	NPW BUILD 210	PP	Brick inf 300 µm	20	20	✗	1 600	38	149	13	1

Biocomposites range

Non biodegradable – PA biobased



	Grade	Matrix	Filler	Incorporation rate (%)	Renewable content (%)	Food contact	Tensile modulus (MPa)	Charpy impact unnotched (kJ/m²)	Thermal resistance (°C, Vicat A50)	Density
Sea range	NPW SEA 250	PA 11	Scallop 0.5 – 1 mm	5	98	✗	1 650	4.6	182	1.05
	NPW SEA 251	PA 11	Scallop 0.5 – 1 mm	20	98	✗	2 100	3.2	182	1.11
	NPW SEA 252	PA 11	Mussel inf 100 µm	5	98	✗	1 500	27	/	1.04
	NPW SEA 253	PA 11	Mussel inf 100 µm	20	98	✗	1 800	16	/	1.09
	NPW SEA 254	PA 11	Mussel 0.5 – 1 mm	5	98	✗	1 950	4.5	/	1.03
	NPW SEA 255	PA 11	Mussel 0.5 – 1 mm	20	98	✗	1 950	3.1	/	1.14
Shells and kernels range	NPW SHE 250	PA 11	Almond shell 0.5 – 1 mm	5	98	✗	1 350	9.3	182	1.02
	NPW SHE 251	PA 11	Almond shell 0.5 – 1 mm	20	98	✗	1 750	6.7	182	1.01

Contact us

6 Rue Ada Lovelace, 14120 Mondeville

Normandy, France

contact@natureplast.eu

+33 (0)2 31 83 50 87

www.natureplast.eu

