PolyCE

Post-Consumer High-tech Recycled Polymers for a Circular Economy

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R = Document, report
DEM = Demonstrator, pilot, prototype, plan designs
DEC = Websites, patent filing, press & media actions, videos, etc.

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Summary

This deliverable summarizes the information presented in the Deliverable D5.7, comprising a matrix of the plastic types and additives developed during the project considering their potential use in WEEE, expanding the list of materials shown in the Deliverable 5.1, and supporting the technical strategy development for re-use of WEEE materials. Both polymeric compounds and additives developed are listed and their main characteristics are presented. Overall, this report can be used as a reference for the selection of materials aiming for the circularity of WEEE materials.

Content

1 Introduction 5
2 Main properties of the developed plastics materials, compounds, and additives 6
3 Concluding remarks 20

1 Introduction

This report summarizes the materials and additives developed during the PolyCE project, aiming for the improvement of processing, mechanical, and/or environmental performance of WEEE plastics, stimulating their circularity. The data presented here were obtained from the Deliverable 5.7. This deliverable provides input to WP4, WP6 and WP7.

2 Main properties of the developed plastics materials, compounds, and additives

PRELIMINARY DATASHEET

SITRAPLAS engineered plastics

PolyCE PCR-UV standard

Print date 20.08.2020

Product description Polycarbonate / Amorphous Thermoplastic / UV stabilized

Properties	Standard	Test condition	Unit	Value
Rheological Properties				
Melt Volume - Flow Rate (MVR)	ISO 1133	300°C / 1,2kg	cm³/(10min)	20
Mechanical Properties				
Tensile Modulus	ISO 527 -1, -2	1 mm/min	MPa	2.400
Yield stress	ISO 527 -1, -2	50 mm/min	MPa	50
Charpy impact strength	ISO 179 - 1eU	23 °C	kJ/m²	N
Charpy notched impact strength	ISO 179 - 1eA	23 °C	kJ/m²	8
Yield strain	ISO 527 -1, -2	5 mm/min	%	5,5
Thermal Properties				
Vicat softening point	ISO 306	50°C/h; 50N	°C	140
Other Characteristics				
Density	ISO 1183	23°C	g/cm³	1,2

Conditioning	Drying temperature	100-110 °C
	Drying time	2-4 h
	Max. moisture content	< 0,02 %
Processing	Melt temperature	280-300 °C
	Mold temperature	80-120 °C
Storage	dry, dust-free, protected from light not above 30 °C	

These material specifications are to be regarded as indicative only. They are not binding and do not exempt the buyer from the obligation to check our products on their own responsibility for suitability for the intended purposes. The Buyer is solely responsible for compliance with legal and regulatory requirements as well as the observance of third-party intellectual property rights in the use or processing of our products. The available data and recommendations correspond to the current state of our knowledge. However, we assume no liability with respect to their application, unless otherwise agreed by contract. We deliver exclusively on the basis of our International Terms and Conditions of Sale.

PRELIMINARY DATASHEET

SITRALAC (ABS) EP11762-BLUE

Print date 21.08.2020

Product description Acrylonitrile Butadiene Styrene (ABS); based on recycled material, excellent flow properties

Properties	Standard	Test condition	Unit	Value
Rheological Properties				
Melt Volume-Flow Rate (MVR)	ISO 1133	220°C / 10kg	cm³/(10min)	18
Mechanical Properties				
Tensile Modulus	ISO 527 -1, -2	1 mm/min	MPa	1.900
Tensile Strength	ISO 527 -1, -2	50 mm/min	MPa	30
Charpy impact strength	ISO 179 - 1eU	23 °C	kJ/m²	N
Charpy notched impact strength	ISO 179 - 1eA	23 °C	kJ/m²	20
Thermal Properties				
Vicat softening point	ISO 306	50°C/h; 50N	°C	95
Other Characteristics				
Density	ISO 1183	23°C	g/cm³	1,03

Conditioning	Drying temperature	80 °C
	Drying time	2-4 h
	Max. moisture content	< 0,04 %
Processing	Melt temperature	220-260 °C
	Mold temperature	60-70 °C
Storage	dry, dust-free, protected from light not above 30 °C	

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PRELIMINARY DATASHEET

SITRAPLAS engineered plastics

SITRALAC (ABS) EP11762-red

Print date 20.08.2020

Product description Acrylonitrile Butadiene Styrene (ABS); based on recycled material, excellent flow properties

Properties	Standard	Test condition	Unit	Value
Rheological Properties				
Melt Volume-Flow Rate (MVR)	ISO 1133	220°C / 10kg	cm³/(10min)	18
Mechanical Properties				
Tensile Modulus	ISO 527 -1, -2	1 mm/min	MPa	1.900
Tensile Strength	ISO 527 -1, -2	50 mm/min	MPa	30
Yield stress	ISO 527 -1, -2	50 mm/min	MPa	-
Nominal tensile strain at break	ISO 527 -1, -2	50 mm/min	%	-
Charpy impact strength	ISO 179 - 1eU	23 °C	kJ/m²	N
Charpy notched impact strength	ISO 179 - 1eA	23 °C	kJ/m²	20
Thermal Properties				
Vicat softening point	ISO 306	50°C/h; 50N	°C	95
Other Characteristics				
Density	ISO 1183	23°C	g/cm³	1,03

Conditioning	Drying temperature	80 °C
	Drying time	2-4 h
	Max. moisture content	< 0,04 %
Processing	Melt temperature	220-260 °C
	Mold temperature	60-70 °C
Storage	trocken, staubfrei, lichtgeschützt nicht über 30 °C	

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PRELIMINARY DATASHEET

SITRALAC (ABS) EP11762 / C01000

Print date 20.08.2020

Product description Acrylonitrile Butadiene Styrene (ABS); based on recycled material, excellent flow properties

Properties	Standard	Test condition	Unit	Value
Rheological Properties				
Melt Volume-Flow Rate (MVR)	ISO 1133	220°C / 10kg	cm³/(10min)	25
Mechanical Properties				
Tensile Modulus	ISO 527 -1, -2	1 mm/min	MPa	1.900
Tensile Strength	ISO 527 -1, -2	50 mm/min	MPa	30
Yield stress	ISO 527 -1, -2	50 mm/min	MPa	-
Nominal tensile strain at break	ISO 527 -1, -2	50 mm/min	%	-
Yield strain	ISO 527 -1, -2	50 mm/min	%	-
Charpy impact strength	ISO 179 - 1eU	23 °C	kJ/m²	N
Charpy notched impact strength	ISO 179 - 1eA	23 °C	kJ/m²	15
Thermal Properties				
Vicat softening point	ISO 306	50°C/h; 50N	°C	95
Other Characteristics				
Density	ISO 1183	23°C	g/cm³	1,03

Conditioning	Drying temperature	80 °C
	Drying time	2-4 h
	Max. moisture content	< 0,04 %
Processing	Melt temperature	220-260 °C
	Mold temperature	60-70 °C
Storage	trocken, staubfrei, lichtgeschützt nicht über 30 °C	

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PRELIMINARY DATASHEET

SITRAPLAS engineered plastics

SITRALAC (ABS) S20-IM / C9405

Print date 21.08.2020

Product description Acrylonitrile Butadiene Styrene (ABS); based on recycled material, excellent flow properties, impact modified

Properties	Standard	Test condition	Unit	Value
Rheological Properties				
Melt Volume-Flow Rate (MVR)	ISO 1133	220°C / 10kg	cm³/(10min)	20
Mechanical Properties				
Tensile Modulus	ISO 527 -1, -2	1 mm/min	MPa	2.300
Yield stress	ISO 527 -1, -2	50 mm/min	MPa	35
Nominal tensile strain at break	ISO 527 -1, -2	50 mm/min	%	10
Yield strain	ISO 527 -1, -2	50 mm/min	%	4
Charpy impact strength	ISO 179 - 1eU	23 °C	kJ/m²	100
Charpy notched impact strength	ISO 179 - 1eA	23 °C	kJ/m²	15
Thermal Properties				
Vicat softening point	ISO 306	50°C/h; 50N	°C	95
Other Characteristics				
Density	ISO 1183	23°C	g/cm³	1,05

Conditioning	Drying temperature	80 °C
	Drying time	2-4 h
	Max. moisture content	< 0,04 %
Processing	Melt temperature	220-260 °C
	Mold temperature	60-70 °C
Storage	dry, dust-free, protected from light not above 30 °C	

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PRELIMINARY DATASHEET

SITRAPLAS engineered plastics

SITRALON (PC) EP11762 / C6600

Print date 21.08.2020

Product description Polycarbonate (PC); based on recycled material, excellent flow properties

Properties	Standard	Test condition	Unit	Value
Rheological Properties				
Melt Volume - Flow Rate (MVR)	ISO 1133	300°C / 1,2kg	cm³/(10min)	20
Mechanical Properties				
Tensile Modulus	ISO 527 -1, -2	1 mm/min	MPa	2.200
Yield stress	ISO 527 -1, -2	50 mm/min	MPa	50
Nominal tensile strain at break	ISO 527 -1, -2	50 mm/min	%	50
Yield strain	ISO 527 -1, -2	50 mm/min	%	4
Charpy impact strength	ISO 179 - 1eU	23 °C	kJ/m²	N
Charpy notched impact strength	ISO 179 - 1eA	23 °C	kJ/m²	10
Thermal Properties				
Vicat softening point	ISO 306	50°C/h; 50N	°C	140
Other Characteristics				
Density	ISO 1183	23°C	g/cm³	1,2

Conditioning	Drying temperature	100-110 °C
	Drying time	2-4 h
	Max. moisture content	< 0,02 %
Processing	Melt temperature	280-300 °C
	Mold temperature	80-120 °C
Storage	dry, dust-free, protected from light not above 30 °C	

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PRELIMINARY DATASHEET

SITRALOY (PC+ABS) EP11762 / grey

Print date 21.08.2020

Product description Polycarbonate with Acrylonitrile Butadiene Styrene (PC+ABS); based on recycled polmyer, excellent flow properties

Properties	Standard	Test condition	Unit	Value
Rheological Properties				
Melt Volume-Flow Rate (MVR)	ISO 1133	260°C / 5kg	cm³/(10min)	24
Mechanical Properties				
Tensile Modulus	ISO 527 -1, -2	1 mm/min	MPa	2.200
Yield stress	ISO 527 -1, -2	50 mm/min	MPa	45
Nominal tensile strain at break	ISO 527 -1, -2	50 mm/min	%	50
Yield strain	ISO 527 -1, -2	50 mm/min	%	4
Charpy impact strength	ISO 179 - 1eU	23 °C	kJ/m²	N
Charpy notched impact strength	ISO 179 - 1eA	23 °C	kJ/m²	30
Thermal Properties				
Vicat softening point	ISO 306	50°C/h; 50N	°C	115
Other Characteristics				
Density	ISO 1183	23°C	g/cm³	1,11

Conditioning	Drying temperature	100-110 °C
	Drying time	2-4 h
	Max. moisture content	< 0,04 %
Processing	Melt temperature	230-280 °C
	Mold temperature	70-100 °C
Storage	dry, dust-free, protected from light not above 30 °C	

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Table 2-1: Compounds prepared using different Prolabin&Tefarm additives

SAMPLE	Sitraplas Sample denomination	Prolabin&Tefarm Additive
C5	SITRALON (PC) EP11762; 207822-5	Zinc Aluminium Hydrotalcite UV STAB 02 low conc
C6	SITRALON (PC) EP11762; 207822-6	Zinc Aluminium Hydrotalcite UV STAB 02 low conc
C7	SITRALON (PC) EP11762; 207822-7	Zinc Aluminium Hydrotalcite UV STAB 02 High conc
C8	SITRALON (PC) EP11762; 207822-8	Zinc Aluminium Hydrotalcite UV STAB 02 High conc
C9	SITRALON (PC) EP11762; 207822-9	Alfa Zirconium Phosphate-UV STAB 01
C10	SITRALON (PC) EP11762; 207822-10	Alfa Zirconium Phosphate-UV STAB 01
Sitraplas Reference Sample	SITRALON (PC) 22E-UV / C05005 blue; 208245-1	none

Figure 2-1: Transparency and visual aspect of the PC samples compounded using different additives from Prolabin&Tefarm

Table 2-2: Properties of the PP starting material and the compound with 40% talc

Material	PP2131 HR 90104	PP2131HR 90104+40%Talc
Melt Volume-Flow Rate (MVR) (cm³/10 min)	8	3
Tensile Modulus (MPa)	1350	4200
Yield stress (MPa)	24	30
Charpy Impact strength (notched) (kJ/m²)	5	3
Charpy Impact strength (unnotched) (kJ/m²)	N	16
Vicat-softening-temperature (°C)	80	80
Density (g/cm³)	0.92	1.23

Table 2-3: Properties of the PMMA/ABS blends

Property	ABS-Content (wt.%)			
	0	50	60	70
Melt Volume-Flow Rate (MVR) (cm³/10 min)	2	4	5	5
Tensile Modulus (MPa)	3600	2500	2550	2390
Yield stress (MPa)	74	47	48	45
Charpy Impact strength (notched) (kJ/m²)	-	10	10	12
Charpy Impact strength (unnotched) (kJ/m²)	13	68	80	80
Vicat-softening-temperature (°C)	105	103	105	101
Density (g/cm³)	1.18	1.09	1.1	1.07
Filament Production	No	Yes	Yes	Yes
Limit	Brittleness	-	-	-

Table 2-4: Properties of the PMMA/ABS blends

Property	Composition		
	1	2	3
Improvement	Starting Point	Toughner	Change ABS type
Melt Volume-Flow Rate (MVR) (cm³/10 min)	26	24	6
Tensile Modulus (MPa)	2551	2434	1900
Yield stress (MPa)	42	41	36
Charpy Impact strength (notched) (kJ/m²)	9.72	13.79	18.92
Charpy Impact strength (unnotched) (kJ/m²)	39	52	N
Vicat-softening-temperature (°C)	94.7	93.3	100
Density (g/cm³)	1.06	1.06	1.05

Table 2-5: Properties of the PC/ABS blends

Property	Composition			
	1	2	3	4
Improvement	Starting Point	Higher PC amount	Use toughner	Increasing toughner content
Melt Volume-Flow Rate (MVR) (cm³/10 min)	23	28	16	20
Tensile Modulus (MPa)	2204	2243	2011	2.350
Yield stress (MPa)	45	48	44	52
Yield strain (%)	3.76	4.36	4	4.0
Charpy Impact strength (notched) (kJ/m²)	12	22	30	35
Charpy Impact strength (unnotched) (kJ/m²)	N	N	N	N
Vicat-softening-temperature (°C)	113	120	117	115
Density (g/cm³)	1.11	1.13	1.11	1.12

Table 2-6: Properties of the rPP-Wollastonite composites

Property	rPP MGG-PP 2131 HR (baseline)	MGG_20wt% Wollastonite	MGG_40wt% Wollastonite
E-modulus (MPa)	1196 ± 49	2055 ± 96	2992 ± 217
Yield (MPa)	12.17 ± 0.37	12.22 ± 0.41	13.54 ± 0.18
Yield Strain (%)	1.15 ± 0.04	0.74 ± 0.04	0.59 ± 0.01
Break stress (MPa)	17.66 ± 0.540	16.64 ± 0.36	16.16 ± 0.29
Strain at break (%)	27.50 ± 6.29	13.67 ± 2.79	13.42 ± 2.00
Impact resistance (kJ/m²)	7.13 ± 0.24	5.60 ± 0.28	6.90 ± 0.47
HDT (°C)	102.0 ± 9.8	114.8 ± 0.8	120.7 ± 0.07
MFI (220°C/ 2,16 kg) (g/10min)	9.85 ± 0.16	6.45 ± 0.06	6.28 ± 0.80
Density (g/cm³)	0.930 ± 0.00	1.045 ± 0.004	1.201 ± 0.004

Table 2-7: Properties of the rPP-Mica composites

Property	rPP MGG-PP 2131 HR (baseline)	MGG_20wt% Mica	MGG_40wt% Mica
E-modulus (MPa)	1196 ± 49	3207 ± 261	4518 ± 277
Yield (MPa)	12.17 ± 0.37	18.67 ± 0.19	22.29 ± 1.11
Yield Strain (%)	1.15 ± 0.04	0.74 ± 0.04	0.65 ± 0.01
Break stress (MPa)	17.66 ± 0.54	20.33 ± 0.57	25.01 ± 0.68
Strain at break (%)	27.50 ± 6.29	4.68 ± 0.48	1.65 ± 0.29
Impact resistance (kJ/m²)	7.13 ± 0.24	4.38 ± 0.57	4.71 ± 0.11
HDT (°C)	102.0 ± 9.8	118.2 ± 0.00	121.0 ± 0.00
MFI (220°C/ 2,16 kg) (g/10min)	9.85 ± 0.16	5.53 ± 0.10	3.97 ± 0.15
Density (g/cm³)	0.930 ± 0.00	1.054 ± 0.004	1.205 ± 0.01

Table 2-8: Properties of the rPP-Talc composites

Property	rPP MGG-PP 2131 HR (baseline)	MGG_20wt% Talc	MGG_40wt% Talc
E-modulus (MPa)	1196 ± 49	2185 ± 60	3236 ± 236
Yield (MPa)	12.17 ± 0.37	14.69 ± 0.26	18.38 ± 0.20
Yield Strain (%)	1.15 ± 0.04	0.82 ± 0.03	0.72 ± 0.04
Break stress (MPa)	17.66 ± 0.54	19.20 ± 0.68	22.66 ± 0.65
Strain at break (%)	27.50 ± 6.29	7.81 ± 0.63	3.03 ± 0.17
Impact resistance (kJ/m²)	7.13 ± 0.24	5.45 ± 0.41	4.64 ± 0.83
HDT (°C)	102.0 ± 9.8	117.8 ± 0.2	121.0 ± 0.4
MFI (220°C/ 2,16 kg) (g/10min)	9.85 ± 0.16	5.13 ± 0.26	3.26 ± 0.12
Density (g/cm³)	0.930 ± 0.00	1.046 ± 0.003	1.202 ± 0.002

Table 2-9: Properties of the rPP-Talc Masterbatch composites

Property	rPP MGG-PP 2131 HR (baseline)	MGG_20wt% TalcMB	MGG_40wt% TalcMB
E-modulus (MPa)	1196 ± 49	2299 ± 204	3923 ± 87
Yield (MPa)	12.17 ± 0.37	15.22 ± 1.28	19.66 ± 0.08
Yield Strain (%)	1.15 ± 0.04	0.82 ± 0.03	0.66 ± 0.01
Break stress (MPa)	17.66 ± 0.54	19.15 ± 1.89	22.45 ± 0.92
Strain at break (%)	27.50 ± 6.29	10.02 ± 0.52	2.53 ± 0.17
Impact resistance (kJ/m²)	7.13 ± 0.24	4.72 ± 0.30	4.29 ± 0.62
HDT (°C)	102.0 ± 9.8	121.4 ± 0.7	121 ± 0.00
MFI (220°C/ 2,16 kg) (g/10min)	9.85 ± 0.16	6.64 ± 0.11	8.12 ± 1.28
Density (g/cm³)	0.930 ± 0.00	1.079 ± 0.003	1.285 ± 0.009

Table 2-10: Properties of the ABS Magnum 3453 (ref) and ABS compounds modified by different antioxidant systems

Property	Composition		
	ABS 0 (ref)	**ABS 1**	**ABS 2**
Tensile modulus (MPa)	1943.2 ± 61.6	1930.1 ± 57.5	1949.1 ±21.7
Tensile strength (MPa)	32.24 ± 2.3	31.80 ± 0.15	31.90 ± 0.11
Strain at yield (%)	4.99 ± 0.05	4.82 ± 0.04	4.86 ± 0.20
Strain at break (%)	78.27 ± 5.58	64.74 ± 3.12	49.96 ± 15.68
Impact strength (Notched) (kJ/m²)	15.67 ± 0.86	16.02 ± 0.86	16.09 ± 0.70
Impact strength (Unnotched) (kJ/m²)	92.05 ± 24.43	79.87 ± 22.18	86.71 ± 24.71

Table 2-11: Properties of the compounds based on recycled PC and flame retardant

Properties	PCR-PIR PC standard	F1-FR	F2-FR
UL 94 (4 mm)	V2	V2	V2+
Impact Charpy Notched (KJ/m²)	9.01 ± 1.05	7.93 ± 0.41	7.53 ± 0.81
Tensile Modulus (MPa)	2400.5 ± 47.5	2397.7 ± 49.8	2362.0 ± 38.0
Tensile Strength at yield (MPa)	56.9 ± 0.5	56.8 ± 0.5	57 ± 0.5
Tensile elongation at yield (%)	5.2 ± 0.2	5.5 ± 0.2	5.4 ± 0.1

Table 2-12: Properties of the compounds based on recycled and flame retardant - extended

Properties	F3-FR	PCR-PIR PC v2	F4-FR	F5-FR	F6-FR	F7-FR
UL 94 (4 mm)	V0 (6/11) V2 (5/11)	V0 (6/10) V2 (4/10)	V0 (7/10) V2 (3/10)	V0 (5/5) ∑t1 = 5 s ∑t2 = 30 s t(t1+t2) = 35 s	V0 (5/5) ∑t1 = 3 s ∑t2 = 18 s t(t1+t2) = 21 s	V0 (5/5) ∑t1 = 3 s ∑t2 = 27 s t(t1+t2) = 30 s
MVR	-	17.97	21.52	26.95	28.55	24.24
Impact Charpy Notched (KJ/m²)	5.8 ± 0.3	8.9 ± 0.2	8.6 ± 0.2	6.3 ± 0.4	5.9 ± 0.3	7.7 ± 0.7

Figure 2-2: Transparency and visual aspect of the PC samples

Table 2-13: Properties of the compounds based on recycled PC/ABS and flame retardant

Properties	PCR PC/ABS MGG	F1 PCR FR PC/ABS MGG	F2 PCR FR PC/ABS MGG	F3 PCR FR PC/ABS MGG
UL 94 (1,6 mm)	N.C.	V0 ∑t1 = 5 s ∑t2 = 14 s t(t1+t2) = 19 s	V0 (7/10)	V0 (6/10)
Impact Charpy Notched (KJ/m²)	9.9 ± 0.9	6.1 ± 0.6	11.4 ± 0.9	9.8 ± 0.5
MVR (250ºC/5 Kg)	36	156	126.67	140.88
Tensile Modulus (MPa)	2683.1 ± 93.5	2613.8 ± 104.8	2464.9 ± 115.0	2649.9 ± 67.4
Tensile Strength at yield (MPa)	57.4 ± 1.3	43.4 ± 0.5	41.0 ± 0.6	41.4 ± 0.8
Tensile elongation at yield (%)	4.1 ± 0.2	2.2 ± 0.1	2.0 ± 0.1	2.0 ± 0.1

Table 2-14: Properties of the compounds based on recycled PC/ABS containing flame retardants and impact modifier

Properties	F4 PCR FR PC/ABS MGG	F5 PCR FR PC/ABS MGG	F6 PCR FR PC/ABS MGG	F7 PCR FR PC/ABS MGG
UL 94 (1,6 mm)	V0 (9/10)	V0 (5/5) ∑t1 = 0 s ∑t2 = 12 s t(t1+t2) = 12 s	V0 (5/5) ∑t1 = 3 s ∑t2 = 11 s t(t1+t2) = 14 s	V0 (5/5) ∑t1 = 4 s ∑t2 = 9 s t(t1+t2) = 13 s
Impact Charpy Notched (KJ/m²)	7.6 ± 1.3	7.5 ± 1.0	6 ± 0.2	6.3 ± 0.4
MVR (250ºC/5 Kg)	184.95	220.39	193	162

Table 2-15: Properties of the compounds based on PC/ABS containing different flame retardants

Materials 1st injection	FR1 (3/1)	FR2 (3/1)	FR3 (3/1)	FR4 (3/1)
UL94 (@ 4 mm)	V0 ∑t1 = 0 s ∑t2 = 13 s t(t1+t2) = 13 s	V0 ∑t1 = 0 s ∑t2 = 10 s t(t1+t2) = 10	V0 ∑ t1 = 0 ∑ t2 = 17 s t(t1+t2) = 17 s	V0 ∑t1 = 0 s ∑t2 = 8 s t(t1+t2) = 8 s
Impact Charpy Notched (KJ/m2)	5.4 ± 0.2	3.3 ± 0.2	3.0 ± 0.2	5.9 ± 0.5
MVR (250ºC/5 Kg)	234	233	76	104
Tensile Modulus (MPa)	2647.8 ± 84.4	2694.2 ± 78.4	2737.2 ± 44.4	3016.4 ± 53.9
Tensile Strength at yield (MPa)	36.46 ± 1	54.99 ± 0.71	36.17 ± 0.15	59.93 ± 0.17
Tensile elongation at yield (%)	2.05 ± 0.07	2.93 ± 0.11	1.72 ± 0.07	2.99 ± 0.01
Tensile elongation at break (%)	48.16 ± 16.61	77.40 ± 2.44	57.98 ± 12.49	80.64 ± 2.56

Table 2-16: P&T additives prepared for Ghent University

Prolabin&Tefarm ADDITIVE	PRODUCT CODE/BATCH
Magnesium Aluminium Stearate Hydrotalcite Irregular morphology	HTC-122-COP/06F7
Magnesium Aluminium Stearate Hydrotalcite Desert rose morphology	HTC-122-NO3/08N6
Magnesium Aluminium Stearate Hydrotalcite Flat morphology	HTC-122-Cl/11A7
Zinc Aluminium Stearate Hydrotalcite Irregular morphology	HTC-222-COP/06D5
Alfa Zirconium Phosphate	ZP-101/18B7
Alfa Zirconium Phosphate organically modified with Octadecylamine	ZP-120/06C8
Alfa Zirconium Phosphate organically modified with 2MBHT	ZP-302/05E8
Alfa Zirconium Phosphate organically modified with MB2HT	ZP-301/04C8

Table 2-17: Samples of P&T additives prepared for Sitraplas

Prolabin&Tefarm ADDITIVE	PRODUCT CODE/BATCH
Zinc Aluminium Nitrate Hydrotalcite	HT-203/01F9
Alfa Zirconium Phosphate	ZP-101/18B7
Alfa Zirconium Phosphate – UV STAB 01	ZP-P001/07G9
Zinc Aluminium Hydrotalcite – UV STAB 02 High concentration	HT-P002L/06G9L
Zinc Aluminium Hydrotalcite – UV STAB 02 Low concentration	HT-P002H/13G9L

Table 2-18: Samples of active molecules delivered to Sitraplas

Prolabin&Tefarm ADDITIVE	BATCH
5-Benzoyl-4-hydroxy-2-methoxybenzenesulfonic acid	06N9L
Bis(2,2,6,6-tetramethyl-4-piperidyl) sebacate	05N9L

Table 2-19: Samples of P&T additives prepared for Tecnalia

Prolabin&Tefarm ADDITIVE	PRODUCT CODE/BATCH
Hydrotalcite MgAl Stearate	P-MA-111/06F7
Hydrotalcite ZnAl Stearate	P-ZA-111/06D5
ZrP Octadecylamine	P-ZP-306/02F8

Table 2-20: Masterbatches based on ABS containing different stabilization systems prepared by UGent

Masterbatch	Irganox 1076 (wt.%)	Irganox 245 (wt.%)	Irgafos 168 (wt.%)
1	5.0	-	-
2	5.0	5.0	5.0

3 Concluding remarks

This deliverable summarizes the properties of the most relevant plastic compounds and additives developed during the PolyCE project considering their potential use in WEEE, expanding the matrix of materials initially listed in the Deliverable 5.1.

The present document aims to support the technical strategy development for re-use of WEEE materials, presenting the main characteristics of modified WEEE materials and possible additives. The information reported here can be used as a reference for the selection or development of materials, aiming the circularity of WEEE.