Supplementary Material

# Supplementary Data

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# Supplementary Figures and Tables

**2.1 Supplementary Table S1.** Biodegradation Certification Systems

1. Certifications based on industrial composting test

|  |  |  |  |
| --- | --- | --- | --- |
| **Country** | **Certification** | | **Label** |
| European  Union | **Std.**  **Name**  **Assoc.** | DIN EN 13432  OK Compost Industrial / Seedling  TÜV AUSTRIA, DIN CERTCO | 텍스트이(가) 표시된 사진  자동 생성된 설명 |
| **Std.**  **Name**  **Assoc.** | AS 5810(2010), NF T 51800(2015), prEN 17427(2020)  OK Compost Home / DIN-Geprüft Home Compostable  TÜV AUSTRIA / DIN CERTCO | 텍스트이(가) 표시된 사진  자동 생성된 설명 |
| Germany | **Std.**  **Name**  **Assoc.** | DIN EN 13432  DIN-Geprüft  DIN CERTCO |  |
| Italy | **Std.**  **Name**  **Assoc.** | EN 13432  Compostable CIC  The Italian Composting and Biogas Association |  |
| United States | **Std.**  **Name**  **Assoc.** | ASTM 5338, ASTM 6400, ASTM 6868  BPI Certification Mark  Biodegradable Products Institute | 2019 certified compostable logo |
| Australia | **Std.**  **Name**  **Assoc.** | AS 4736  Seedling  Australasian Bioplastics Association, DIN CERTCO |  |
| **Std.**  **Name**  **Assoc.** | AS5810(2010)  Home Compostable  Australasian Bioplastics Association, DIN CERTCO |  |
| Korea | **Std.**  **Name**  **Assoc.** | KS M ISO 14855  Korea Eco-Label  Korea Environmental Industry & Technology Institute |  |
| Japan | **Std.**  **Name**  **Assoc.** | JIS K 6950, JIS K 6951, JIS K 6953-1, JIS K 6955  GreenPla  Japan Bioplastics Association (JPBA) | "Green Pla" mark for products made from biodegradable plastics authorized by the Japan BioPlastic Association (JBPA). |
| China | **Std.**  **Name**  **Assoc.** | GB/T 19276.1, GB/T 19276.2, GB/T 32106 GB/T 19277.1(2011)  Biodegradable Plastic Logo  China National Light Industry Council | 텍스트, 클립아트이(가) 표시된 사진  자동 생성된 설명 |

2. Certifications based on soil, marine, aquatic test

|  |  |  |  |
| --- | --- | --- | --- |
| **Country** | **Certification** | | **Label** |
| Belgium | **Std.**  **Name**  **Assoc.** | TÜV AUSTRIA’s Own Standard  OK Biodegradable Water, OK Biodegradable Soil,  OK Biodegradable Marine  TÜV AUSTRIA | 텍스트, 때리는, 표지판이(가) 표시된 사진  자동 생성된 설명테이블이(가) 표시된 사진  자동 생성된 설명텍스트이(가) 표시된 사진  자동 생성된 설명 |
| Germany | **Std.**  **Name**  **Assoc.** | DIN EN 17033  DIN-Geprüft biodegradable in soil  DIN CERTCO |  |

**Supplementary Table S2.** Biodegradation Study Results

1. PLA-based bioplastics

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Bioplastic** | **Environment** | **Condition** | | **Indicator** | **Period**  **(day)** | **Biodegradability (%)** | **Reference** |
| **Temp. (℃)** | **etc** |
| PLA | Composting | 58 |  | CO2 produced | 60 | 13 | H.K. Ahn et al., 2011 |
| PLA/Starch/Poultry feather (80/15/5) | Composting | 58 |  | CO2 produced | 60 | 53 | H.K. Ahn et al., 2011 |
| PLA | Composting | 58 | Humidity=90% | CO2 produced | 58 | 84 | G. Kale et al., 2007 |
| PLA | Composting | 65 | **Nature**,  pH=8.5, humidity=63% | Weight loss | 30 | >90 | G. Kale et al., 2007 |
| PLA | Composting | 55 |  | CO2 produced | 28 | 70 | R.Y. Tabasi, A. Ajji., 2015 |
| PLA/PBAT (50/50) | Composting | 55 |  | CO2 produced | 28 | 43~45 | R.Y. Tabasi, A. Ajji., 2015 |
| PLA | Composting | 55 |  | Weight loss | 30 | 60 | M. Mihai et al., 2014 |
| PLA/Wood fiber (70/30) | Composting | 55 |  | Weight loss | 30 | 40 | M. Mihai et al., 2014 |
| PLA (with foaming agent; PS) | Composting | 58 | Humidity=55% | Weight loss | 90 | 63.6 | J. Sarasa et al., 2009 |
| PLA/corn (90/10) | Composting | 58 | Humidity=55% | Weight loss | 90 | 79.7 | J. Sarasa et al., 2009 |
| PLA | Composting | 58 | Humidity=55% | Weight loss | 28 | >90 | M.P. Arrieta et al., 2014 |
| plasticized PLA (with ATBC) | Composting | 58 | Humidity=55% | Weight loss | 28 | >90 | M.P. Arrieta et al., 2014 |
| plasticized PLA (with PEG) | Composting | 58 | Humidity=55% | Weight loss | 28 | >90 | M.P. Arrieta et al., 2014 |
| plasticized PLA/PHB  (75/25, with ATBC) | Composting | 58 | Humidity=55% | Weight loss | 28 | >90 | M.P. Arrieta et al., 2014 |
| plasticized PLA/PHB  (75/25, with PEG) | Composting | 58 | Humidity=55% | Weight loss | 35 | >90 | M.P. Arrieta et al., 2014 |
| PLA | Composting | 58 | Humidity=55% | Weight loss | 84 | 42.3 | M.P. Balaguer et al., 2016 |
| PLA | Composting | 58 | Humidity=55% | CO2 produced | 130 | >70 | M.P. Balaguer et al., 2016 |
| PLA + Clay1 | Composting | 58 | Humidity=55% | Weight loss | 84 | 41.6 | M.P. Balaguer et al., 2016 |
| PLA + Clay1 | Composting | 58 | Humidity=55% | CO2 produced | 130 | >90 | M.P. Balaguer et al., 2016 |
| PLA + Nano-CaCO₃ | Composting | 58 | Humidity=55% | Weight loss | 84 | 40.8 | M.P. Balaguer et al., 2016 |
| PLA + Nano-CaCO₃ | Composting | 58 | Humidity=55% | CO2 produced | 130 | >90 | M.P. Balaguer et al., 2016 |
| PLA + Nano-SiO₂ | Composting | 58 | Humidity=55% | Weight loss | 84 | 43.8 | M.P. Balaguer et al., 2016 |
| PLA + Nano-SiO₂ | Composting | 58 | Humidity=55% | CO2 produced | 130 | >80 | M.P. Balaguer et al., 2016 |
| PLA | Composting | 58 |  | CO2 produced | 75 | 100 | T. Narancic et al., 2018 |
| PLA/PCL (80/20) | Composting | 58 |  | CO2 produced | 75 | 100 | T. Narancic et al., 2018 |
| PLA/PBS (80/20) | Composting | 58 |  | CO2 produced | 75 | 100 | T. Narancic et al., 2018 |
| PLA/PHB (80/20) | Composting | 58 |  | CO2 produced | 75 | 98 | T. Narancic et al., 2018 |
| PLA | Soil |  | Humidity=30% | Weight loss | 98 | 12 | Wu, 2012 |
| PLA/Sisal (80/20) | Soil |  | Humidity=30% | Weight loss | 98 | 47~49 | Wu, 2012 |
| PLA/Sisal (60/40) | Soil |  | Humidity=30% | Weight loss | 98 | 67~70 | Wu, 2012 |
| PLA/NPK fertilizer (62.5/37.5) | Soil | 30 | Humidity=80% | Weight loss | 56 | 35-40 | Harmaen et al., 2015 |
| PLA/NPK fertilizer/EFB fiber (37.5/37.5/30) | Soil | 30 | Humidity=80% | Weight loss | 56 | 45 | Harmaen et al., 2015 |
| PLA | Soil | 25 | Humidity=35~40% | Decrease in soil TC | 28 | 13.8 | D. Adhikari et al., 2016 |
| PLA | Fresh Water | 30 | pH=7, sludge | O2 consumed | 28 | 3.7 | V. Massardier-Nageotte et al., 2006 |
| PLA | Fresh Water | 25 | 16h light and 8h dark | Weight loss | 365 | <2 | A.R.Bagheri et al., 2017 |
| PLA | Sea Water | 25 | 16h light and 8h dark | Weight loss | 365 | <2 | A.R.Bagheri et al., 2017 |
| PLGA | Fresh Water | 25 | 16h light and 8h dark | Weight loss | 270 | 100 | A.R.Bagheri et al., 2017 |
| PLGA | Sea Water | 25 | 16h light and 8h dark | Weight loss | 270 | 100 | A.R.Bagheri et al., 2017 |
| PLA | Anaerobic | 55 | pH=8.5, sludge | Conversion to biogas | 60 | 90 | H. Yagi et al., 2009 |
| PLA | Anaerobic | 37 | Sludge | Conversion to biogas | 277 | 49 | H. Yagi et al., 2009 |
| PLA | Anaerobic | 37 | Sludge | Conversion to biogas | 277 | 29 | H. Yagi et al., 2009 |
| PLA | Anaerobic | 55 | pH=8.0~8.3 | Conversion to biogas | 75 | 75 | H. Yagi et al., 2009 |
| PLA | Anaerobic | 55 | pH=8.0 | Conversion to biogas | 80 | 83 | H. Yagi et al., 2009 |
| PLA | Anaerobic | 52 |  | Conversion to biogas | 80 | 88 | T. Narancic et al., 2018 |
| PLA/PCL (80/20) | Anaerobic | 52 |  | Conversion to biogas | 121 | 90 | T. Narancic et al., 2018 |
| PLA/PBS (80/20) | Anaerobic | 52 |  | Conversion to biogas | 121 | 85 | T. Narancic et al., 2018 |
| PLA/PHB (80/20) | Anaerobic | 52 |  | Conversion to biogas | 80 | 100 | T. Narancic et al., 2018 |

2. PHA-based bioplastics

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Bioplastic** | **Environment** | **Condition** | | **Indicator** | **Period**  **(day)** | **Biodegradability (%)** | **Reference** |
| **Temp.(℃)** | **Etc** |
| PHB | Composting | 55 |  | CO2 produced | 28 | 78~80 | R.Y. Tabasi, A. Ajji., 2015 |
| PHB/PBAT (50/50) | Composting | 55 |  | CO2 produced | 28 | 47~48 | R.Y. Tabasi, A. Ajji., 2015 |
| PHB | Composting | 58 |  | CO2 produced | 110 | 90 | Y.-X. Weng et al., 2011 |
| PHB | Composting | 58 |  | CO2 produced | 45 | 100 | T. Narancic et al., 2018 |
| PHB/PCL (60/40) | Composting | 58 |  | CO2 produced | 46 | 100 | T. Narancic et al., 2018 |
| PHB/PBS (50/50) | Composting | 58 |  | CO2 produced | 88 | 100 | T. Narancic et al., 2018 |
| PHB | Soil |  |  | Weight loss | 180 | 64.3 | Jain and Tiwari, 2015 |
| PHB/CAB (50/50) | Soil |  |  | Weight loss | 180 | 31.5 | Jain and Tiwari, 2015 |
| PHB (film) | Soil | 26~31 | Humidity=70~82% | Weight loss | 303 | 98 | Boyandin et al., 2013 |
| PHB (pellet) | Soil | 26~31 | Humidity=70~82% | Weight loss | 303 | 55 | Boyandin et al., 2013 |
| PHBV (film) | Soil | 26~31 | Humidity=70~82% | Weight loss | 303 | 61 | Boyandin et al., 2013 |
| PHBV (pellet) | Soil | 26~31 | Humidity=70~82% | Weight loss | 303 | 35 | Boyandin et al., 2013 |
| PHB (film) | Soil | 27~30 | Humidity=78~84% | Weight loss | 385 | 47 | Boyandin et al., 2013 |
| PHB (pellet) | Soil | 27~30 | Humidity=78~84% | Weight loss | 385 | 28 | Boyandin et al., 2013 |
| PHBV (film) | Soil | 27~30 | Humidity=78~84% | Weight loss | 385 | 14 | Boyandin et al., 2013 |
| PHBV (pellet) | Soil | 27~30 | Humidity=78~84% | Weight loss | 385 | 8 | Boyandin et al., 2013 |
| PHA | Soil |  | Humidity=35% | Weight loss | 60 | 35 | Wu, 2014 |
| PHA/Rice husk (60/40) | Soil |  | Humidity=35% | Weight loss | 60 | 90 | Wu, 2014 |
| PHA | Soil | 20 | Humidity=50% | CO2 produced | 660 | 69.2 | E.F. Gomez, F.C. Michel Jr., 2013 |
| PHB | Soil | 25 | pH=6.5,  water content=16% | Weight loss | 9 | 40 | CA Woolnough et al., 2008 |
| P(HB-co-8HV) | Soil | 25 | pH=6.5,  water content=16% | Weight loss | 9 | 50 | CA Woolnough et al., 2008 |
| PHB | Soil | 25 | pH=6.5,  water content=16% | Weight loss | 9 | 18 | CA Woolnough et al., 2008 |
| P(HB-co-8HV) | Soil | 25 | pH=6.5,  water content=16% | Weight loss | 9 | 10 | CA Woolnough et al., 2008 |
| PHBV (HV 12 mol%) | Soil | 25 | Relative humidity = 65% | CO2 produced | 180 | 75 | M.V. Acros-Hernandez et al., 2012 |
| PHBV (HV 43 mol%) | Soil | 25 | Relative humidity = 65% | CO2 produced | 180 | 70 | M.V. Acros-Hernandez et al., 2012 |
| PHBV (HV 47 mol%) | Soil | 25 | Relative humidity = 65% | CO2 produced | 180 | 59 | M.V. Acros-Hernandez et al., 2012 |
| PHBV (HV 52 mol%) | Soil | 25 | Relative humidity = 65% | CO2 produced | 180 | 74 | M.V. Acros-Hernandez et al., 2012 |
| PHBV (HV 64 mol%) | Soil | 25 | Relative humidity = 65% | CO2 produced | 180 | 60 | M.V. Acros-Hernandez et al., 2012 |
| PHBV (HV 72 mol%) | Soil | 25 | Relative humidity = 65% | CO2 produced | 180 | 62 | M.V. Acros-Hernandez et al., 2012 |
| PHB | Soil | 25 |  | CO2 produced | 136 | 100 | T. Narancic et al., 2018 |
| PHB/PCL (60/40) | Soil | 25 |  | CO2 produced | 256 | 100 | T. Narancic et al., 2018 |
| PHB | Sea Water | 21 |  | O2 consumed | 100 | 80 | Thellen et al., 2008 |
| PHB | Sea Water | 12~22 | **Nature**, pH=7.9~8.1 | Weight loss | 90 | 30 | Thellen et al., 2008 |
| PHBV (HV 12wt%) | Sea Water | 21 |  | O2 consumed | 70 | 90 | Thellen et al., 2008 |
| PHBV (HV 12wt%) | Sea Water | 12~22 | **Nature**, pH=7.9~8.1 | Weight loss | 90 | 33 | Thellen et al., 2008 |
| PHB | River Water | 32 | pH=7,  **Nature (on the sediment)** | Weight loss | 56 | 70 | N. Sridewi et al., 2006 |
| PHB | River Water | 32 | pH=7,  **Nature (buried)** | Weight loss | 56 | >90 | N. Sridewi et al., 2006 |
| PHB | Fresh water | 25 | 16h light and 8h dark | Weight loss | 365 | 8.5 | A.R.Bagheri et al., 2017 |
| PHB | Sea Water | 25 | 16h light and 8h dark | Weight loss | 365 | 8.5 | A.R.Bagheri et al., 2017 |
| PHB | River Water |  | **Nature**, in 1999 | Weight loss | 42 | 43.5 | T.G. Volova et al., 2007 |
| PHB | River Water |  | **Nature**, in 2000 | Weight loss | 31 | 34.6 | T.G. Volova et al., 2007 |
| 3-PHB (film) | Sea Water | 28.75 | **Nature**, pH=7~7.5 | Weight loss | 160 | 42 | T.G. Volova et al., 2010 |
| 3-PHB/PHV (film) | Sea Water | 28.75 | **Nature**, pH=7~7.5 | Weight loss | 160 | 46 | T.G. Volova et al., 2010 |
| 3-PHB (pellet) | Sea Water | 28.75 | **Nature**, pH=7~7.5 | Weight loss | 160 | 38 | T.G. Volova et al., 2010 |
| 3-PHB/PHV (pellet) | Sea Water | 28.75 | **Nature**, pH=7~7.5 | Weight loss | 160 | 13 | T.G. Volova et al., 2010 |
| PHB | Fresh water | 21 |  | CO2 produced | 56 | 90 | T. Narancic et al., 2018 |
| PHB | Sea Water | 30 |  | CO2 produced | 43 | 90 | T. Narancic et al., 2018 |
| PHB/PCL (60/40) | Sea Water | 30 |  | CO2 produced | 56 | 86 | T. Narancic et al., 2018 |
| PHB | Anaerobic | 37 | Sludge | Conversion to biogas | 26 | 93 | H.Yagi et al., 2014 |
| PHB | Anaerobic | 37 | Sludge | Conversion to biogas | 26 | 92 | H.Yagi et al., 2014 |
| PHB (pretreated) | Anaerobic | 35 | Sludge | Conversion to biogas | 40 | 91 | Benn and Zitomer, 2018 |
| PHB | Anaerobic | 35 | Sludge | Conversion to biogas | 40 | 67 | Benn and Zitomer, 2018 |
| PHB | Anaerobic | 55 | pH=8.0~8.3 | Conversion to biogas | 14 | 90 | H. Yagi et al., 2013 |
| PHB | Anaerobic | 37 | pH=7.2 | Conversion to biogas | 9 | 100 | D.-M. Abou-Zeid et al., (2001) |
| PHB | Anaerobic | 37 | pH=7.2 | Weight loss | 9 | 100 | D.-M. Abou-Zeid et al., (2001) |
| PHBV (11.6mol%) | Anaerobic | 37 | pH=7.2 | Conversion to biogas | 42 | 30 | D.-M. Abou-Zeid et al., (2001) |
| PHBV (11.6mol%) | Anaerobic | 37 | pH=7.2 | Weight loss | 42 | 60 | D.-M. Abou-Zeid et al., (2001) |
| PHB | Anaerobic | 52 |  | Conversion to biogas | 127 | 92 | T. Narancic et al., 2018 |
| PHB/PCL (60/40) | Anaerobic | 52 |  | Conversion to biogas | 80 | 100 | T. Narancic et al., 2018 |
| PHB/PBS (50/50) | Anaerobic | 52 |  | Conversion to biogas | 121 | 80 | T. Narancic et al., 2018 |

3. Starch-based bioplastics

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Bioplastic** | **Environment** | **Condition** | | **Indicator** | **Period**  **(day)** | **Biodegradability (%)** | **Reference** |
| **Temp.(℃)** | **etc** |
| Plastarch | Composting | 55 | Humidity=60% | CO2 produced | 85 | 50 | E.F. Gómez, F.C. Michel Jr., 2013 |
| Mater-Bi | Composting | 25 |  | Weight loss | 90 | 43 | C. Accinelli et al., 2012 |
| Mater-Bi | Composting | 30 | Humidity=55% | Weight loss | 72 | 26.9 | R. Mohee et al., 2008 |
| Cassava starch/glycerol (3/1) | Composting | Room Temp. | *Aspergillus niger* isolate | Weight loss | 10 | 29.89 | R.C. Nissa et al., 2018 |
| Plastarch | Soil | 20 | Humidity=50% | CO2 produced | 660 | 31.3 | E.F. Gomez, F.C. Michel Jr. |
| Mater-Bi | Soil | 25 |  | Weight loss | 90 | 37 | C. Accinelli et al., 2012 |
| Mater-Bi | Soil |  | **Nature** | Weight loss | 90 | 3.4 | C. Accinelli et al., 2012 |
| Starch/PBS (50/50, film) | Soil | 25 | Humidity=35~40% | Weight loss | 28 | 7.2 | D. Adhikari et al., 2016 |
| Starch/PBS (50/50, powder) | Soil | 25 | Humidity=35~40% | Decrease in soil TC | 28 | 24.4 | D. Adhikari et al., 2016 |
| Cassava starch/glycerol (3/1) | Soil | Room Temp. | *Aspergillus niger* isolate | Weight loss | 10 | 29.89 | R.C. Nissa et al., 2018 |
| Mater-bi | Fresh water | 30 | pH=7 | O2 consumed | 28 | 42.8 | V. Massardier-Nageotte et al., 2006 |
| Mater-bi | Sea water | Room Temp. | Seawater+sediments | O2 consumed | 236 | 68.9 | Tosin et al., 2012 |
| Mater-bi | Fresh water | 25 |  | Weight loss | 90 | 1.6 | C. Accinelli et al., 2012 |
| Mater-bi | Fresh water |  | **Nature (littoral marsh)** | Weight loss | 90 | 1.5 | C. Accinelli et al., 2012 |
| Mater-bi | Sea water | 25 |  | Weight loss | 90 | 1.7 | C. Accinelli et al., 2012 |
| Mater-bi | Sea water |  | **Nature** | Weight loss | 90 | 4.5 | C. Accinelli et al., 2012 |
| Cassava starch/glycerol (3/1) | Fresh water | 30 | *Aspergillus niger* isolate | Weight loss | 10 | 20.18 | R.C. Nissa et al., 2018 |
| Cassava starch/glycerol (3/1) | Fresh water | 30 | *Aspergillus niger* isolate | Weight loss | 10 | 11.46 | R.C. Nissa et al., 2018 |
| Mater-bi | Anaerobic | 35 | pH=7, sludge | Conversion to biogas | 28 | 23 | Massardier-Nageotte et al., 2006 |
| Mater-bi | Anaerobic | 35 | Liquid digestate | Weight loss | 30 | 24.1 | P.S. Calabro et al., 2020 |
| Mater-bi | Anaerobic | 55 | Liquid digestate | Weight loss | 30 | 37 | P.S. Calabro et al., 2020 |
| Mater-bi (pretreated) | Anaerobic | 35 | Liquid digestate, | Weight loss | 15 | 78.2 | P.S. Calabro et al., 2020 |
| Plastarch | Anaerobic | 37 | Sludge | Conversion to biogas | 50 | 26.4 | Gómez and Michel, 2013 |

4. Petroleum-based bioplastics

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Bioplastic** | **Environment** | **Condition** | | **Indicator** | **Period**  **(day)** | **Biodegradability (%)** | **Reference** |
| **Temp.(℃)** | **Etc** |
| PBAT | Composting | 55 |  | CO2 produced | 28 | 34~35 | R.Y. Tabasi, A. Ajji., 2015 |
| PBS | Composting | 58 | pH=7.5, humidity=50~55% | CO2 produced | 160 | 90 | A. Anstey et al., 2014 |
| PBS/soy meal (75/25) | Composting | 58 | pH=7.5, humidity=50~55% | CO2 produced | 140 | 90 | A. Anstey et al., 2014 |
| PBS/canola meal (75/25) | Composting | 58 | pH=7.5, humidity=50~55% | CO2 produced | 160 | 90 | A. Anstey et al., 2014 |
| PBS/corn gluten meal (75/25) | Composting | 58 | pH=7.5, humidity=50~55% | CO2 produced | 160 | 90 | A. Anstey et al., 2014 |
| PBS/switch grass (75/25) | Composting | 58 | pH=7.5, humidity=50~55% | CO2 produced | 170 | 90 | A. Anstey et al., 2014 |
| PCL | Composting | 50 | pH=7~8.5 | CO2 produced | 6 | 38 | K. Nakasaki et al., 2006 |
| PCL | Composting | 58 |  | CO2 produced | 45 | 100 | T. Narancic et al., 2018 |
| PBS | Composting | 58 |  | CO2 produced | 207 | 92 | T. Narancic et al., 2018 |
| PCL/starch/additives (75/16/9) | Soil | 20 | Humidity=40% | Weight loss | 540 | 39 | Di Franco et al., 2004 |
| PBS (film) | Soil | 25 | Humidity=35~40% | Weight loss | 28 | 1.2 | D. Adhikari et al., 2016 |
| PBS (powder) | Soil | 25 | Humidity=35~40% | Decrease in soil TC | 28 | 16.8 | D. Adhikari et al., 2016 |
| PVC | Soil | 28 | Soil only | Weight loss | 120 | 1 | A. Campos et al, 2012 |
| PVC | Soil | 28 | Soil + leachate | Weight loss | 120 | 1.3 | A. Campos et al, 2012 |
| PCL | Soil | 28 | Soil only | Weight loss | 60 | 89.7 | A. Campos et al, 2012 |
| PCL | Soil | 28 | Soil + leachate | Weight loss | 60 | 22 | A. Campos et al, 2012 |
| PVC/PCL (1/1) | Soil | 28 | Soil only | Weight loss | 120 | 1.9 | A. Campos et al, 2012 |
| PVC/PCL (1/1) | Soil | 28 | Soil + leachate | Weight loss | 120 | 1.6 | A. Campos et al, 2012 |
| PCL | Soil |  | Humidity=20% | Weight loss | 70 | <5 | C.-S. Wu, 2005 |
| PCL/chitosan (90/10) | Soil |  | Humidity=20% | Weight loss | 70 | 10 | C.-S. Wu, 2005 |
| PCL/chitosan (80/20) | Soil |  | Humidity=20% | Weight loss | 70 | 20 | C.-S. Wu, 2005 |
| PCL-g-AA | Soil |  | Humidity=20% | Weight loss | 70 | <5 | C.-S. Wu, 2005 |
| PCL-g-AA/chitosan (90/10) | Soil |  | Humidity=20% | Weight loss | 70 | <10 | C.-S. Wu, 2005 |
| PCL-g-AA/chitosan (80/20) | Soil |  | Humidity=20% | Weight loss | 70 | 15 | C.-S. Wu, 2005 |
| Nylon-4 | Soil | 25 | pH=7.5~7.6, humidity = 80% | Weight loss | 120 | 100 | K. Hashimoto et al, 2002 |
| PCL | Soil | 25 |  | CO2 produced | 136 | 92 | T. Narancic et al., 2018 |
| PCL | Fresh Water | 30 | pH=7, sludge | O2 consumed | 28 | 34.8 | V. Massardier-Nageotte et al., 2006 |
| PCL | Fresh Water | 30 | pH=7, sludge | O2 consumed | 28 | 37.7 | V. Massardier-Nageotte et al., 2006 |
| PBAT | Fresh Water | 30 | pH=7, sludge | O2 consumed | 28 | 15.1 | V. Massardier-Nageotte et al., 2006 |
| PBS | Fresh Water | 25 | Sludge | O2 consumed | 44 | 88 | H.S. Cho et al., 2011 |
| PCL/starch/aliphatic polyesters (55/30/15) | Fresh Water | 25 | Sludge | O2 consumed | 80 | 31 | H.S. Cho et al., 2011 |
| Nylon-4 | Sea Water | 25 | pH=8 | O2 consumed | 25 | 80 | K. Tachibana et al., 2013 |
| Nylon-4 | Fresh Water | 25 | pH=6.9, sludge | CO2 produced | 28 | 49 | K. Hashimoto et al., 2002 |
| PCL | Fresh Water | 25 | 16h light and 8h dark | Weight loss | 365 | <2 | A.R.Bagheri et al., 2017 |
| PCL | Sea Water | 25 | 16h light and 8h dark | Weight loss | 365 | <2 | A.R.Bagheri et al., 2017 |
| PCL | Sea Water | 30 |  | CO2 produced | 56 | 80 | T. Narancic et al., 2018 |
| PCL | Anaerobic | 37 | Sludge | Conversion to biogas | 277 | 22 | H.Yagi et al., 2014 |
| PCL | Anaerobic | 37 | Sludge | Conversion to biogas | 277 | 3 | H.Yagi et al., 2014 |
| PBS | Anaerobic | 35 | Sludge | Conversion to biogas | 139 | 83 | H.S. Cho et al., 2011 |
| PCL/starch (55/35) | Anaerobic | 35 | Sludge | Conversion to biogas | 100 | 2 | H.S. Cho et al., 2011 |
| PCL | Anaerobic | 55 | pH=8.0~8.3 | Conversion to biogas | 50 | 80 | H. Yagi et al., 2013 |
| PCL | Anaerobic | 37 | pH=7.2 | Conversion to biogas | 42 | 30 | D.-M. Abou-Zeid et al., 2001 |
| PCL | Anaerobic | 37 | pH=7.2 | Weight loss | 70 | 8 | D.-M. Abou-Zeid et al., 2001 |
| PCL | Anaerobic | 52 |  | Conversion to biogas | 127 | 95 | T. Narancic et al., 2018 |