



Center for Marine
Debris Research

Polymer Kit 1.0

to harmonize plastic pollution research

Center for Marine Debris Research
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POLYMER KIT 1.0

to harmonize plastic pollution research

Easily and affordably obtain 22 diverse polymers for your laboratory

- Build your in-house spectral library
- Test the functionality, accuracy and precision of your instruments
- Compare data across laboratories
- Grind the plastics to smaller particle sizes for testing biological impacts
- Use the diversity of materials in polymer degradation, transport and fate experiments

Spark collaborations among a network of labs that are using the same lot of plastic materials

Be the first to know when Polymer Kit 2.0 is released

All proceeds support the Center for Marine Debris Research



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The production and testing of this kit was supported by the American Chemistry Council, National Institute of Standards and Technology, and Thermo Fisher Scientific

22 plastic materials typically found in the environment

Pellets, fibers, beads, and powder forms in microplastic sizes

ATR FTIR and DSC data

Connections to a network of researchers using the same materials

\$375 including shipping

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Abbreviation	Material	Form	Notes	Particle size (Longest dimension) mean (SD) in mm	Particle mass mean (SD) in mg	Min. particle quantity per kit	Min. material mass per kit (g)
ULDPE	Ultra low density polyethylene	pellet		5.1 (0.1)	35.2 (1.4)	96	3.30215
LDPE.1	Low-density polyethylene	pellet		4.5 (0.3)	33.2 (3.8)	88	3.08627
LDPE.2	Low-density polyethylene	pellet		4.7 (0.3)	29.9 (8.0)	86	2.82197
LLDPE.1	Linear low-density polyethylene	pellet	secondary antioxidant detected	5.0 (0.1)	24.4 (3.8)	120	2.99537
LLDPE.2	Linear low-density polyethylene made with metallocene catalyst	pellet		5.1 (0.1)	33.6 (0.8)	84	2.92802
MDPE	Medium-density polyethylene	pellet		4.8 (0.2)	31.5 (5.5)	108	2.81191
HDPE.1	High-density polyethylene	pellet		4.8 (0.1)	33.9 (6.0)	100	3.00265
HDPE.2	High-density polyethylene	pellet		4.6 (0.2)	22.0 (1.9)	150	3.13558
PP	Polypropylene	pellet		4.2 (0.3)	21.8 (5.7)	193	3.53357
PEST	Polyester poplin fabric	fabric coupon	polyethylene terephthalate	77.6 (3.6)	N/A	1	0.83743
PET.1	Polyethylene terephthalate	pellet		3.3 (0.4)	19.3 (0.5)	256	4.87881
PET.2	Recycled polyethylene terephthalate	pellet		4.9 (0.2)	24.8 (14.8)	75	1.02944
EVA	20% Ethylene-vinyl acetate	pellet		4.9 (0.4)	37.5 (18.8)	76	2.86933
ABS	Acrylonitrile-butadiene-styrene	pellet		3.2 (0.1)	19.1 (2.2)	220	4.00512
EPS	Expanded polystyrene foam	foam bead		2.6 (0.8)	0.7 (0.6)	164	0.10576
PS	Polystyrene	pellet		3.5 (0.2)	19.7 (2.6)	173	3.43491
PA6	Nylon 6	pellet		3.3 (0.1)	12.5 (3.6)	297	3.94682
PA66	Nylon 6,6	pellet	FTIR variability	2.8 (0.2)	12.4 (0.4)	324	3.92827
PVC.1	Polyvinyl chloride	pellet		4.2 (0.2)	33.5 (4.8)	133	4.52273
PVC.2	Polyvinyl chloride with phthalates	pellet (flexible)	phthalate detected	4.1 (0.3)	34.3 (5.2)	130	3.86196
CR	Crumb rubber from used tires	crumbed particle	FTIR variability	3.7 (1.4)	28.3 (31.3)	(5 mL)	2.44135
CA*	Cellulose acetate	powder*	*Caution when opening vial; powder makes a mess	0.387 (0.293)	N/A	(5 mL)	1.4588

And a USB thumb drive containing...

- Written report of preliminary analysis of each polymer
- Spreadsheet containing
 - Particle size
 - Particle weight
 - Peak melt temperature
- ATR FTIR spectra in three file types
 - .spa
 - .csv
 - .png screenshots
- DSC melt curves in two file types
 - .tri (Trios software)
 - .png screenshots
- Instructions on how to connect with the network of users of the same kit.

