

# Supporting Information

Release of microplastics from reusable kitchen plasticware and generation of thermal potential toxic degradation products in the oven

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## Supporting tables

**Table S1.** Components detected using ABS during pyrolysis at 200 °C.

Temperature	Main Components	Traces
200 °C	Styrene	acrylonitrile
	Acroleine	acetone
	2-Phenylpropenal	benzene
	Alkanals (acetaldehyd-n-nonanale	ethanol
	acetophenone	furan
	2-Phenylisopropanole	2-butanole
	Methylstyrene	Propane nitrile
	Ethylbenzene	aromatic hydrocarbons
	Toluene	phenole
	Cumene	alkanes
	2-methyl-1-propene	alkylaromatics
	1-Tridecene	-

**Table S2.** Components detected using ABS during pyrolysis at 250 °C.

Temperature	Main Components	Traces
250 °C	styrene	acrylonitrile
	Acroleine	acetone
	2-Phenylpropenal	benzene
	Alkanals (acetaldehyd-n-nonanale	ethanol
	acetophenone	furan
	2-Phenylisopropanole	2-butanole
	Methylstyrene	Propane nitrile
	Ethylbenzene	aromatic hydrocarbons
	Toluene	phenole
	Cumene	alkanes
	2-methyl-1-propene	alkylaromatics
	1-Tridecene	-

**Table S3.** Components detected using LDPE during pyrolysis at 200 °C.

Temperature	Main Components	Traces
200 °C	Acetaldehyde	Ethanol
	Acetic acid	Acrolein
	Formic acid	acetone
	n-butane	Propane
	n-alkanales (proplanale-nonanale	n-alkanes (pentane-dodecane)
	-	Methanol
	-	n-propanol
	-	n-butanol
	-	Butyrolacton
	-	2-alkanone
	-	3-alkanone

**Table S4.** Components detected using LDPE during pyrolysis at 250 °C.

Temperature	Main Components	Traces
250 °C	Acetaldehyde	Ethanol
	n-butane	Acrolein
	n-alkanales (proplanale-nonanale	acetone
	-	Propane
	-	n-alkanes (pentane-dodecane)
	-	Methanol
	-	n-propanol
	-	n-butanol
	-	Butyrolacton
	-	2-alkanone
	-	3-alkanone

**Table S5.** Components detected using PP during pyrolysis at 200 °C.

Temperature	Main Components	Traces
200 °C	Acetone	Higher branched alcohols
	Acetic acid	Saturated hydrocarbons
	Formic acid	Unsaturated hydrocarbons
	methacrolein	Saturated aldehydes
	acetaldehyde	Unsaturated aldehydes
	2,4-dimethyl-1-heptene	Saturated ketons
	2-methyl-1-pentene	Unsaturated ketones
	2-methyl-1-propene	-
	n-pentane	-
	2,4-pentandion	-
	2-pentanone	-
	4-methyl-2-heptanone	-
	Methylisobutylketone	-
	methanol	-

**Table S6.** Components detected using PP during pyrolysis at 250 °C.

Temperature	Main Components	Traces
250 °C	Acetone	Higher branched alcohols
	methacrolein	Saturated hydrocarbons
	acetaldehyde	Unsaturated hydrocarbons
	2,4-dimethyl-1-heptene	Saturated aldehydes
	2-methyl-1-pentene	Unsaturated aldehydes
	2-methyl-1-propene	Saturated ketons
	n-pentane	Unsaturated ketones
	2,4-pentandion	Acetic acid
	2-pentanone	-
	4-methyl-2-heptanone	-
	Methylisobutylketone	-
	methanol	-



**Table S7.** Components detected using SAN during pyrolysis at 200 °C.

Temperature	Main Components	Traces
200 °C	Styrene	Cyanide
	Ethylbenzene	Acrylonitrile
	-	Benzaldehyde
	-	Acetophenone
	-	Phenol
	-	Propylbenzene
	-	Cumene
	-	Xylene

**Table S8.** Components detected using SAN during pyrolysis at 250 °C.

Temperature	Main Components	Traces
250 °C	acetophenone	Cyanide
	Ethylbenzene	Acrylonitrile
	Benzaldehyde	Acetophenone
	-	Phenol
	-	Propylbenzene
	-	Cumene
	-	Xylene
	-	2-phenylpropenal
	-	benzene
	-	benzonitrile
	-	acetone
	-	Acetaldehyde
	-	methylstyrene

**Table S9.** Components detected using Melamine during pyrolysis at 200 °C.

Temperature	Main Components	Traces
200 °C	Formaldehyde	Furfural
	Methanol	Furfuryl alcohol
	Acetaldehyde	Acetic acid
	-	Hydroxy acetone
	-	Butyrolactone
	-	2(5H) furanon
	-	5-methylfurfural
	-	Acetone
	-	Benzaldehyde

**Table S10.** Components detected using Melamine during pyrolysis at 250 °C.

Temperature	Main Components	Traces
250 °C	Formaldehyde	Furfural
	Methanol	Furfuryl alcohol
	Acetaldehyde	Acetic acid
	Methyl formate	Hydroxy acetone
	2,3-butandion	Butyrolactone
	-	2(5H) furanon
	-	5-methylfurfural
	-	Acetone
	-	Benzaldehyde

**Table S11.** Components detected using PS during pyrolysis at 200 °C.

Temperature	Main Components	Traces
200 °C	styrene	Benzene
	Benzaldehyde	Formaldehyde
	2-Phenylpropenal	Acetaldehyde
	Ethylbenzene	Benzylalcohol
	Methylstyrene	n-alkanes
	Cumene	2-alkanones
	Propylbenzene	benzylmethylketone
	Phenolphenylacetaldehyde	aromatic hydrocarbons
	Phenyloxirane	-
	acetic acid	-

**Table S12.** Components detected using PS during pyrolysis at 250 °C.

Temperature	Main Components	Traces
250 °C	styrene	Benzene
	Benzaldehyde	Formaldehyde
	2-Phenylpropenal	Acetaldehyde
	Ethylbenzene	Benzylalcohol
	Ethylbenzene	-
	Methylstyrene	-
	Cumene	-
	Propylbenzene	-
	Phenolphenylacetaldehyde	-
	Phenyloxirane	-