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Supplementary Materials

Influence of the Presence of Disulphide Bonds in Aromatic or Aliphatic Dicarboxylic Acid Hardeners Used to Produce Reprocessable Epoxidized Thermosets

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Index of Figure and Table

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Table S1. Structures and characteristics of the selected reagents.

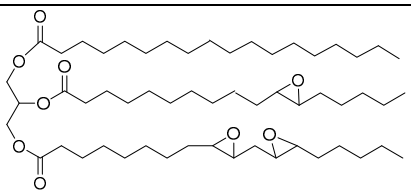
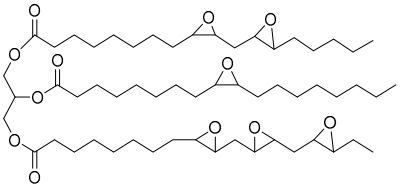
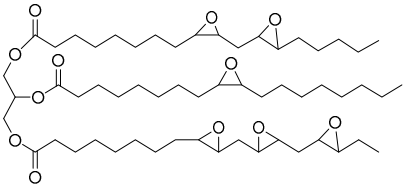
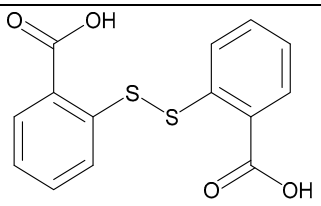
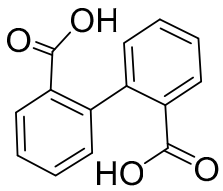
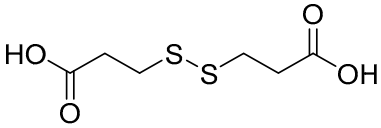
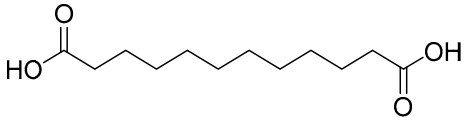
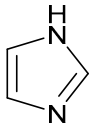
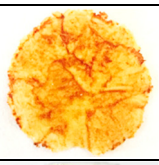
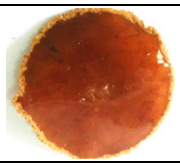
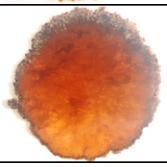
EVOs	Structure	Epoxy Content (meq/g)	Mw (g/mol)
ESFO	 **Epoxidized Safflower Oil**	5.06	960.2
ELO	 **Epoxidized Linseed Oil**	5.61	980
EPLO	 **Epoxidized Perilla Oil**	6.50	986.4
		Melting temperature (°C)	**Mw (g/mol)**
DTBA	 **2,2′-Dithiodibenzoic acid**	287–290	306.35
DPA	 **Diphenic acid**	227–229	242.23
DTDA	 **3,3′-Dithiodipropionic acid**	155–158	210.27
DDA	 **Dodecanedioic acid**	127–129	230.30
IM	 **Imidazole**	89–91	68.07

Table S2. Curing and reprocessing conditions for the EVOs combined with the different crosslinkers.

EVOs	*Hardener*	*Curing*	*Post-Curing*	*Recycling Conditions*
ESFO	**DTBA**	140 °C–60 min	170 °C–30 min	170 °C–10 min-2 tons
	DPA	140 °C–60 min	180 °C–60 min	170 °C–90 mins-2 tons
	DTDA	140 °C–60 min	180 °C–60 min	170 °C–10 min-2 tons
	DDA	140 °C–60 min	180 °C–60 min	170 °C–40 min-2 tons
ELO	**DTBA**	130 °C–60 min	170 °C–30 min	170 °C–10 min-2 tons
	DPA	130 °C–60 min	170 °C–30 min	170 °C–150 min-2 tons
	DTDA	140 °C–60 min	180 °C–30 min	170 °C–10 min-2 tons
	DDA	140 °C–60 min	18 0°C–30 min	170 °C–40 min-2 tons
EPLO	**DTBA**	130 °C–60 min	180 °C–30 min	170 °C–10 min-2 tons
	DPA	140 °C–60 min	170 °C–30 mins	170 °C–150 min-2 tons
	DTDA	140 °C–60 min	170 °C–30 min	170 °C–10 min-2 tons
	DDA	140 °C–60 min	170 °C–30 min	170 °C–40 min-2 tons

Table S3.–Aspect of recycled resins in function of formulation.

EVOs	*Crosslinkers*			
	DTBA	**DPA**	**DTDA**	**DDA**
ESFO				
ELO				
EPLO				

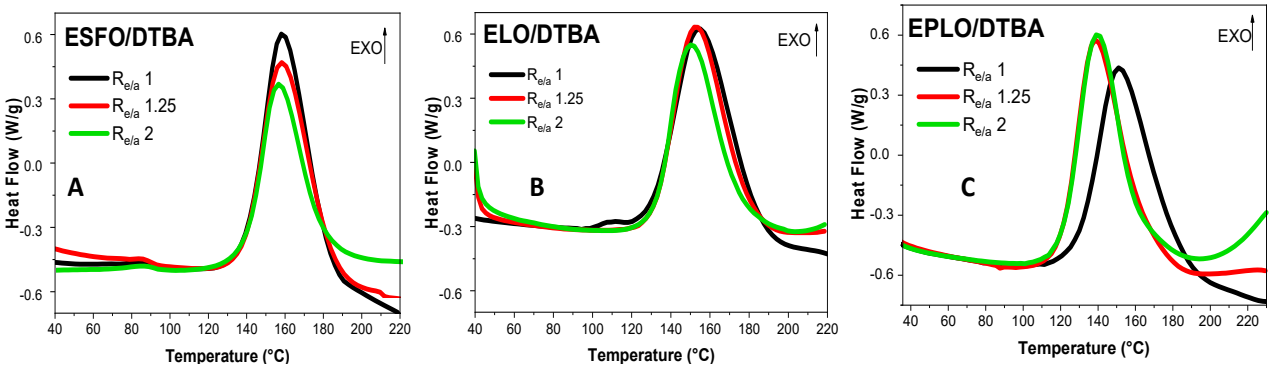


Figure S1.DSC thermograms during EVOs curing with DTBA at different ratios. Heating at 10 °C.min^{-1}.

Table S4.DSC results for EVOs/ DTBA curing reaction, in function of the ratio $\mathbf{R_{e/a}}$.

	Ratio ($R_{e/a}$)	T_{peak} (°C)	Reaction Interval (°C)	ΔH (J/g)
ESFO/DTBA	1	159	125–195	158
	1.25	158	125–200	169
	2	156	125–190	128
ELO/DTBA	1	155	118–197	197
	1.25	154	118–195	190
	2	151	117–193	166
EPLO/DTBA	1	151	118–197	217
	1.25	150	104–190	200
	2	150	100–191	191

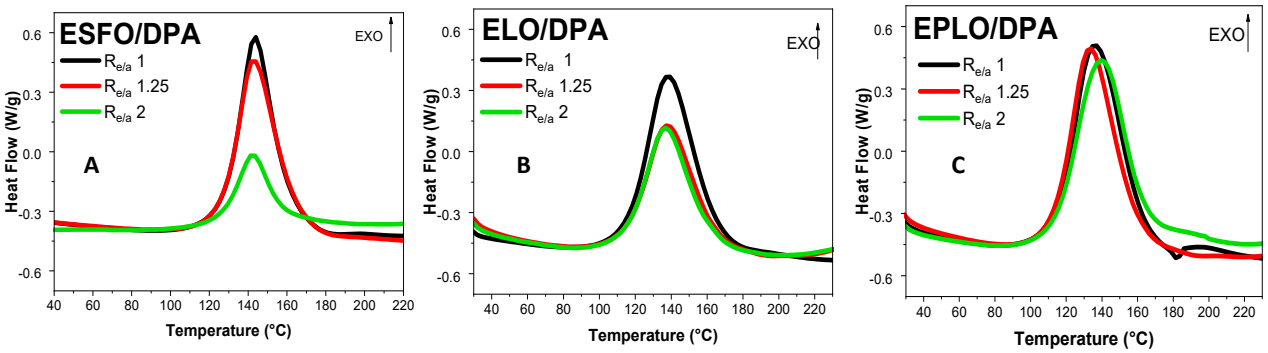


Figure S2.DSC thermograms of EVOs/ DPA curing reaction, at different ratios, during heating at 10 °C.min^{-1}.

Table S5.DSC results for EVOs/ DPA curing reaction, in function of the ratio $\mathbf{R_{e/a}}$.

	Ratio	T_{peak} (°C)	Reaction Interval (°C)	ΔH (J/g)
ESFO/DPA	1	144	110–180	147
	1.25	143	110–178	140
	2	143	112–165	64
ELO/DPA	1	138	105–181	157
	1.25	138	104–185	119
	2	137	105–178	104
EPLO/DPA	1	134	100–180	173
	1.25	134	101–190	170
	2	140	101–185	160

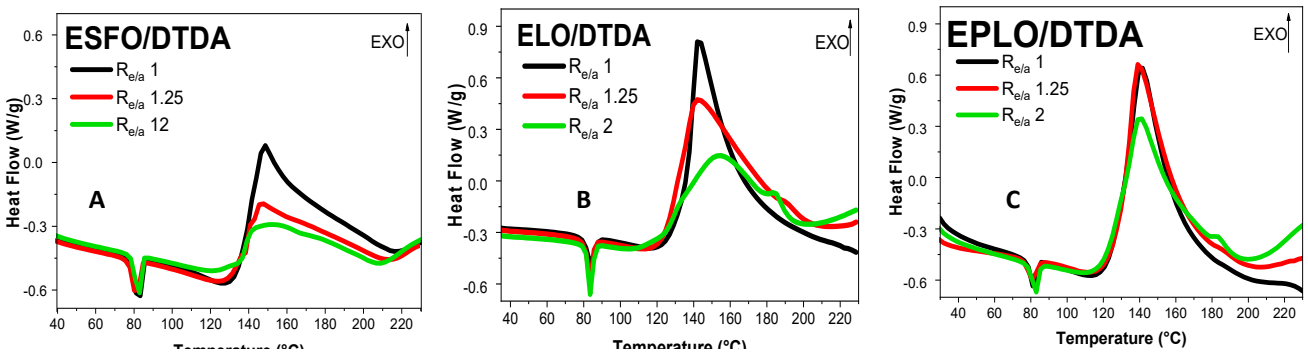


Figure S3.DSC thermograms of EVOs/ DTDA curing reaction, at different ratios, during heating at 10 °C.min^{-1}.

Table S6.DSC results for EVOs/ DTDA curing reaction, in function of the ratio $\mathbf{R_{e/a}}$.

	Ratio	T_{peak} (°C)	Reaction Interval (°C)	ΔH (J/g)
ESFO/DTDA	1	148	132–220	125
	1.25	147	130–215	121
	2	155	118–208	105
ELO/DTDA	1	143	120–218	162
	1.25	142	117–213	155
	2	153	111–195	110
EPLO/DTDA	1	141	118–205	172
	1.25	140	115–208	157
	2	140	115–193	135

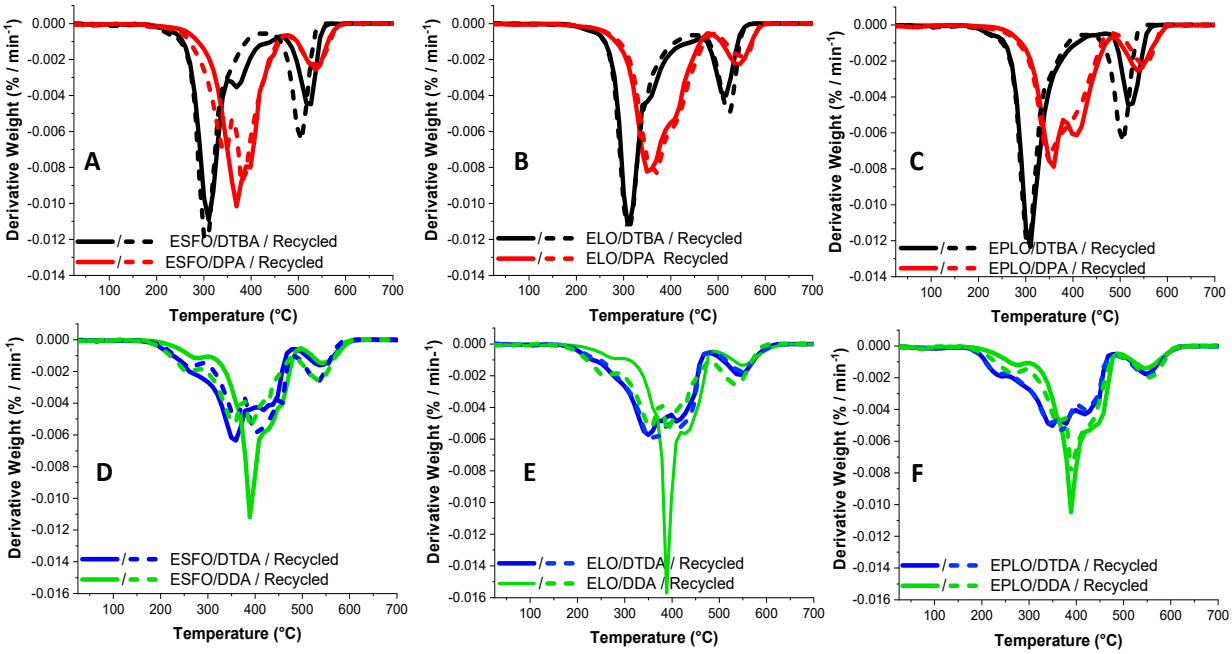


Figure S4.DTG of the virgin and recycled resins with EVOs combined with the four crosslinkers.

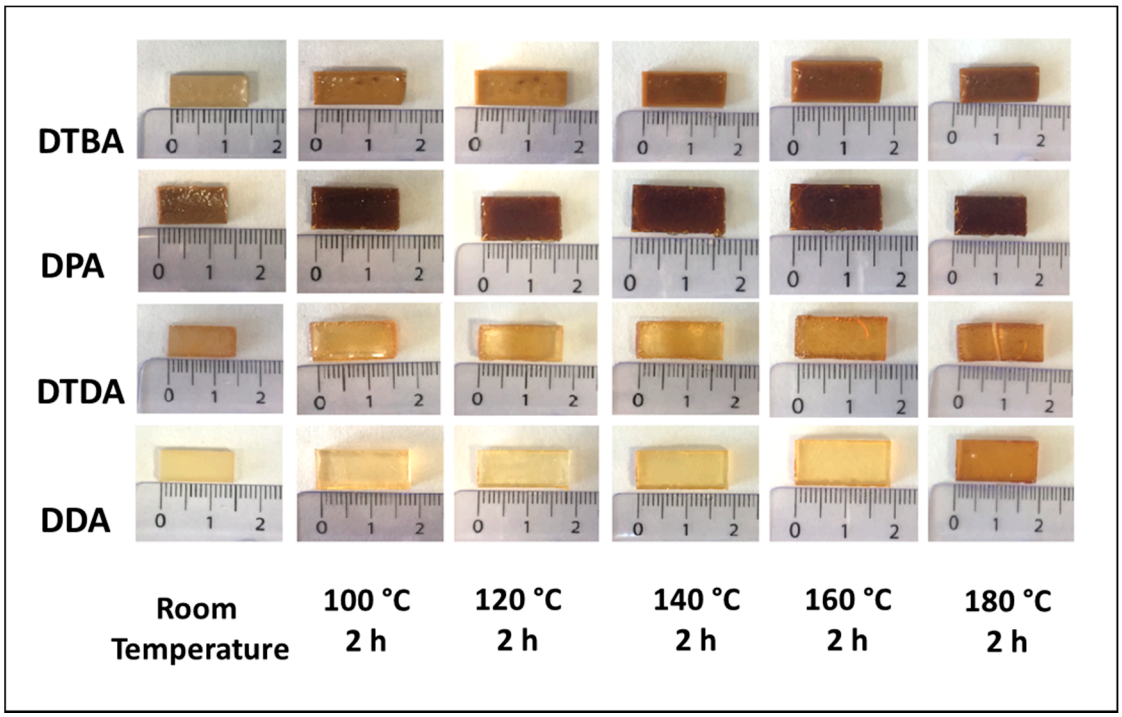


Figure S5. Aspect of the EPLO resins at room temperature and after the swelling experiment from 100 to 180 °C.