**Supplementary material**

**Polyurethane synthesized with mixtures of polycarbonate pol-yols of different molecular weights showing intrinsic self-healing at 20 °C and relevant adhesion properties**

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**Figure S1.** Curve fitting of the carbonyl stretching region of the ATR-IR spectra of some PUs.



**Figure S2.** DSC curves of PUs made with CD1000+CD2000 mixtures. Second heating run.

**Table S1.** Temperatures at which 50 % (T50%) mass is lost and temperatures of maximum decomposition (Tmax) in PUs made with CD1000+CD2000 mixtures. TGA experiments.

|  |  |  |  |
| --- | --- | --- | --- |
| PU | T50% (°C) | Tmax (°C) |  |
| C1000 | 311 | 311 |  |
| 80C1000-20C2000 | 330 | 334 |  |
| 60C1000-40C2000 | 324 | 337 |  |
| 40C1000-60C2000 | 329 | 335 |  |
| 20C1000-80C2000 | 329 | 336 |  |
| C2000 | 318 | 317 |  |

**Table S2.** Temperatures and weight losses of the thermal degradations of PUs made with CD1000+CD2000 mixtures. DTGA experiments.

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| PU | 1st degradation | | 2nd degradation | | 3rd degradation | | 4th degradation | |
|  | T1 (°C) | Weight loss1 (%) | T2 (°C) | Weight loss2 (%) | T3 (°C) | Weight loss3 (%) | T4 (°C) | Weight loss4 (%) |
| C1000 | 292 | 30 | 311 | 60 | - | - | 412 | 10 |
| 80C1000-20C2000 | 282 | 9 | 323 | 42 | 335 | 45 | 398 | 4 |
| 60C1000-40C2000 | 282 | 11 | 318 | 42 | 335 | 43 | 410 | 4 |
| 40C1000-60C2000 | 289 | 14 | 320 | 33 | 332 | 50 | 392 | 3 |
| 20C1000-80C2000 | 291 | 9 | 316 | 46 | 337 | 42 | 409 | 3 |
| C2000 | 293 | 26 | 320 | 66 | - | - | 421 | 8 |

**Table S3.** Parameters obtained from the stress-strain curves of PUs made with CD1000+CD2000 mixtures.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| PU | Young modulus (kPa) | Yield point | | Break point | |
| σy (kPa) | εy (%) | σb (kPa) | εb (%) |
| C1000 | 60 | - | - | 590 | ˃1119 |
| 80C1000-20C2000 | 70 | - | - | 490 | > 870 |
| 60C1000-40C2000 | 730 | 3730 | 12 | 1960 | 201 |
| 40C1000-60C2000 | 820 | 3790 | 16 | 4340 | 892 |
| 20C1000-80C2000 | 790 | 4380 | 18 | 2740 | 138 |
| C2000 | 1800 | 8000 | 12 | 5000 | 119 |