Supporting information

The efficient chain transfer reaction of the trithiocarbonate unit as a tool to prepare functional polyolefin: A post-polymerization modification of ethylene-propylene-diene terpolymer for improved oil resistance

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**Table S1.** Elemental composition of pentadecane-\textit{graft}-benzyl TTC

<table>
<thead>
<tr>
<th>Elemental composition</th>
<th>C (wt.-%)</th>
<th>H (wt.-%)</th>
<th>S (wt.-%)</th>
<th>N (wt.-%)</th>
<th>O (wt.-%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Theoretical value (^a)</td>
<td>67.1</td>
<td>9.6</td>
<td>23.3</td>
<td>0.0</td>
<td>0.0</td>
</tr>
<tr>
<td>Experimental value</td>
<td>70.3</td>
<td>11.3</td>
<td>16.7</td>
<td>0.9</td>
<td>0.8</td>
</tr>
</tbody>
</table>

\(^a\) Calculated by using elemental mass values of pentadecane-\textit{graft}-benzyl TTC.
**Figure S1.** Schematic representation of the preparation of poly(nBA-co-Mah-co-ENB) through DBTTC mediated RAFT polymerization: Resulting poly(nBA-co-Mah-co-ENB) contains TTC unit at the middle of polymer chain.
Figure S2. $^1$H-NMR spectra of poly(nBA-co-Mah-co-ENB) prepared through conventional FRP (a) and DBTTC mediated RAFT polymerization (b).
Figure S3. Calibration curve for the determination of composition of modified EPDM products by FT-IR.
**Figure S4.** Effect of the reaction temperature on grafting efficiency: Preparation of pentadecane-*graft*-benzyl TTC: GE (pentadecane-*graft*-benzyl TTC, %) = [(amount of pentadecane-*graft*-benzyl TTC formed in mol) / (amount of DBTTC in initial mixture in mol)] × 100.
Figure S6. Photograph of EERR solution in toluene/THF: Clear solution represented a complete dissolution of EERR in toluene/THF and a negligible amount of crosslinked product.
Figure S7. FE-SEM images of EPDM and modified EPDMs before (a) and after (b) curing.
Figure S8. Contact angle values EPDM and modified EPDMs after mixing, curing and oil immersion.