**Supplemental Table 1** Weight experiment. To estimate the total weight of K1 crystals formed from April 2013 till February 2016, the weight of new formed crystals was measured in an empty test showcase with peroxide-cured silicone gasket. After clearing all previously formed K1 crystals, and after replacing the old peroxide-cured silicone gasket for a new one, the case was left closed for six months from August 2015 till February 2016. At the end of this period K1 crystals were sampled from one tenth of the gasket and weighed on a microbalance. The weight was 1.45 mg. DCBA from the silicone gasket was the only acidic source in the showcase. For the building of this showcase in 2013, one cartridge of Terostat-9220 was used. If assuming DCBA was unlimited (new gasket), K1 crystals were distributed homogenously over the gasket, the amount of crystals formed over time was constant, interpolation resulted in a weight of 82 mg over a time period of 34 months, from April 2013 till February 2016.

|  |  |  |  |
| --- | --- | --- | --- |
| *Description* | *Weight (mg)* | *Months* | *Speed (mg year -1)* |
| Measured weight of K1 crystals taken from one-tenth of new placed peroxide-cured silicone gasket, after exposure of six months (August 2015 – February 2016) | 1.45 | 6 | 2.9 |
| Interpolated weight of K1 crystals that could have formed in 34 months (April 2013 – February 2016), in same showcases, assuming constant speed of crystal formation | 82 | 34 | 2.9 |

**Supplemental Table 2** Weight calculations using four different assumptions, to estimate how long crystal formation would last until exhaustion of TMP-ol from Terostat-9220 would occur. Assumption 1: TMP-ol was present at 0.03 weight percentage (wt.%) in Ciba reference compound Tinuvin-770 Ciba 99.8 wt.% (measured value, Table 3), and Tinuvin-770 was present at 0.5 wt.% in Terostat-9220 (manufacturer value). Assumption 2: TMP-ol was present at 0.2 wt.% as impurity of Tinuvin-770 and Tinuvin-770 was present at 0.5 wt.% in Terostat-9220 (manufacturer values). Assumption 3: TMP-ol was present as left over from a failed in-situ synthesis or partial degradation of Tinuvin-770, at 41.3 wt.% relative to sebacic acid and monoester (measured value, Table 3), while 0.5 wt.% of Tinuvin-770 was meant to be synthesised or originally present. Assumption 4: All TMP-ol derived from 100% degradation of 0.5 wt.% Tinuvin-770. One Terostat-9220 cartridge was regarded in this theoretical experiment, similar to the number used in the test showcase from Supplemental Table 1. Volume of the cartridge was 310 ml, weight 425 g and density of the adhesive 1.37 g cm-1. Estimated weights were calculated on the principle of mass conservation. Calculations are given in Supplemental Data (values in blue). DCBA = 2,4-dichlorobenozic acid, TMP-ol = 2,2,6,6-tetramethyl-4-piperidinol. Molar masses of DCBA, K1, sebacic acid, Tinuvin-770 diester, Tinuvin-770 monoester, and TMP-ol are respectively 191, 348 (1 mol TMP-ol = 1 mol DCBA), 202, 481, 357 and 157 g mol-1.

|  |  |  |
| --- | --- | --- |
| *Description* | *Weight (mg)* | *Estimated time till TMP-ol exhaustion when regarding emission rate calculated from weight experiment* |
| K1 weight in 34 months (Supplemental Table 1) | 82 | - |
| Assumption 1: estimated K1 weight | 1 | 0.4 month |
| Assumption 2: estimated K1 weight | 9 | 3.7 month |
| Assumption 3: estimated K1 weight | 1939 | 66 year |
| Assumption 4: estimated K1 weight | 3069 | 106 year |

**Supplemental Table 3** Vapour pressure of compounds involved in the crystal formations and their molecular weights. Decreasing values from top to bottom. TMP-ol = 2,2,6,6-tetramethyl-4-piperidinol, DCBA = 2,4-dichlorobenozic acid, \* = predicted.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| *Compound* | *Molecular*  *Weight*  *(mol g-1)* | *Vapour pressure*  *(Pa at 250C)* | *Reference* | *Crystals and location* |
| Formic acid | 60 | 5680 \* | [PubChem](https://pubchem) | K2 on base reagent |
| Methacrylic acid | 86 | 130 | [PubChem](https://pubchem.ncbi.nlm.nih.gov/compound/methacrylic_acid) | K3 on base reagent |
| TMP-ol | 157 | 2.6·10-1 | InChem | **-** |
| DCBA | 191 | 9.0·10-3 | [ChemSpider](http://www.chemspider.com/) | K1 on acidic reagent |
| Unknown acid | - | - | - | K5 on acidic reagent |
| Stearic acid | 284 | 9.6·10-5 | PubChem | - |
| Palmitic acid | 256 | 5.1·10-5 | [PubChem](https://pubchem/) | K4 on acidic reagent |

**Supplemental Table 4** List of experiments performed to find the best method to reduce or block the release of TMP-ol from Terostat-9220. The effect of each method was controlled by monitoring crystal growth on a new piece of peroxide-cured silicone gasket or DCBA in petri dishes, using microscopy and Raman spectroscopy.

