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iis memo 2203: Reproducibility of AP and APEO in Textiles in iis PTs

Proficiency tests (PTs) for the determination of AP and APEO in textiles have been organized by the Institute for Interlaboratory Studies (iis) since 2016. For the determination of AP and APEO in textile test method ISO18254-1 is considered to be the official test method. Regretfully, only one general precision statement is given for APEO at one concentration and it is not mentioned which APEO is used. In Table A.2 of ISO18254-1 the reproducibility is 262 mg/kg at 954 mg/kg APEO. This concentration is much higher than the APEO or AP found in the iis PT's. Furthermore, the concentration is also far above the rejection limit of known environmental standards (e.g. OekoTex-100). As alternative for the evaluation of the quality of the AP and APEO test results iis had used an estimated target reproducibility calculated with the Horwitz equation based on 5 components.

In 2022 iis decided to use the iis PT data gathered from 2016 to 2021 to estimate a more realistic target reproducibility for the evaluation of the quality of the test results for the determination of AP and APEO in Textile. Furthermore, it was decided to use the same target reproducibility for all individual AP and APEO.

The average relative standard deviations over all iis PTs of APEO and AP in Textile is 17%. The relative standard deviations over the iis PTs are given in Table 1 below. The estimated target reproducibilities can be calculated as follows: mean of the PT * iis target variation (RSD) * 2.8. For future PTs on the determination of AP and APEO in textile, starting from 2022 PT iis22T01, iis will use the estimated target reproducibility as mentioned in this memo (iis memo 2203).

year	component	RSD (%)
2016	OPEO	16
	NPEO	27
2017	OPEO	15
	NPEO	18
2018	OPEO	16
	NPEO	28
2019	OPEO	10
	NPEO	13
2020	OPEO	17
	NPEO	27
2021	OP	12
	OPEO	12
	NPEO	15
average		17

Table 1: Relative standard deviation (RSD_R) in % from 2016-2021 iis PTs of AP and APEO in textile