

Declaration of conformity of DIN V 18035-7 and ESSM 105d

ESSM 105d is the Swiss guideline for the assessment of the environmental compatibility of flexible plastic pavement on outdoor installations issued by the Swiss federal sport school Magglingen. **The guideline is roughly equivalent to DIN V 18035-7.** Below the common and different aspects of the two standards are discussed:

- According to both standards ESSM and DIN the content of halogens is determined in the **solid pavement material**. According to ESSM the total content of chlorine and bromine is analyzed, according to DIN the EOX (extractable organic halogens). Because of the different analytical methods applied, the requirements are different (ESSM: for chlorine <7000 mg/kg, for bromine <200 mg/kg, DIN: for EOX <100 mg/kg). According to ESSM the solid material is additionally analyzed for the heavy metals lead, cadmium, chromium, zinc und mercury (after extraction with aqua regia in a microwave pressure container).
- Additional requirements focus on the leachate of the pavement material: For both standards a 1:10 leachate is made (1 part pavement material, 10 parts deionised water, 24 and 48 hours shaken over head). For the determination of the leachability of heavy metals in both standards a leachate with CO₂-saturated water is used. **Hence, the leachates according to ESSM and DIN are equivalent.** The requirements for the leachates are compared in the following table:

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Akkreditiert nach
ISO 17025/STS
Nr.064

Parameter	ESSM 48h leachate (mg/L)	DIN 48 h leachate (mg/L)
DOC	15 (3 for groundwater protection zone) (30 in 24-h-leachate)	20
Surface tension	55 dyn/cm	No requirements
Lead	0.5 (0.05)*	0.04
Cadmium	0.1 (0.005)*	0.005
Chromium	0.1 (0.05)*	0.05
Chromium VI	No requirements	0.008
Mercury	No requirements	0.001
Zinc	2 (0.2)*	0.5 (supporting layer 3)
Tin	2 (0.5)*	0.05
Toxicity (as inhibition of nitrification)	50%	50%

* in brackets: in case of infiltration into groundwater

The testing methods of the parameters determined in the leachate are based on the same procedure for ESSM and DIN.

For the testing according to DIN, zinc is analyzed in the acid and neural leachate, according to ESSM only in the acid leachate.

According to ESSM, semivolatile and volatile organic compounds are additionally analyzed in the leachate (additional requirements from the authorities of the cantons of Switzerland).