

Appendix 1 to the Basic Award Criteria RAL-UZ 148

The following conditions for use (limit value I) apply to preservatives used in leather for transportation and storage protection:

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| • <i>4-chloro-3-methylphenol</i> | < 300 mg/kg |
| • <i>n-octyl isothiazolinone</i> | < 100 mg/kg |
| • <i>o-phenylphenol</i> | < 500 mg/kg |
| • <i>2-(thiocyanomethylthio)benzothiazole</i> | < 500 mg/kg |

If limit value I is exceeded an emission test will be additionally required. The following limit values (limit value II) shall apply if the emission test shows that the test cell concentrations¹ indicated won't be reached:

	<u>Limit Value II</u>	<u>Test Chamber concentration</u>
• <i>4-chloro-3-methylphenol</i>	< 600 mg/kg	< 12 µg/m ³
• <i>n-octyl isothiazolinone</i>	< 250 mg/kg	< 1 µg/m ³
• <i>o-phenylphenol</i>	< 1000 mg/kg	< 23 µg/m ³

The preservatives may not contain any of the following substances. Starting out from the analysis method and the detection limit of these substances this requirement shall be considered met if the following limit values are not exceeded in the leather:

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|---|-----------|
| • <i>chlorophenols (including salts and esters)</i> | < 1 mg/kg |
| • <i>bromophenols (including salts and esters)</i> | < 1 mg/kg |
| • <i>methylene bis(thiocyanate) (MBT)</i> | < 5 mg/kg |

Additional limit values may be adopted into Appendix 1 by the Umweltbundesamt (Federal Environmental Agency) in consultation with LGA Bayern (Regional Trade Institute - Bavaria) and the specialized leather institutes „Lederinstitut Gerberschule Reutlingen e.V.“ (LGR Reutlingen) (*Leather Institute German Tanners School, Reutlingen*) and Forschungsinstitut für Leder- und Kunstledertechnologie (FILK Freiberg) (*Institute of the Leather Industry, Material Testing and Research Institute*). In the same way, the above-mentioned conditions for use may be adapted to the state-of-the-art.

¹⁾ The same test parameters as described under para. 3.3.1 of the Basic Award Criteria shall apply. Notwithstanding this, the test shall not be abandoned (emissions shall be measured on the 28th day of testing).

Analysis Methods:

The following test methods may be used to determine chlorophenols, bromophenols, 4-chloro-3-methylphenol and o-phenylphenol:

- A defined quantity of a comminuted leather sample is heated with 1 m of KOH in a drying chamber. An aliquot of the extract is derivatized with acetic anhydride. The derivative is extracted with n-hexane and analyzed on a capillary gas chromatograph by means of MSD. Alternatively, the halogenated phenols can also be analysed by means of ECD.
- LFGB test method (Section 64) or similar test methods. (LFGB - Lebensmittel-, Bedarfsgegenstände- und Futtermittelgesetzbuch - Food, Consumer Goods and Feed Act).
- An accelerated extraction process followed by silylation (e.g. with N,O-bis(trimethylsilyl)trifluoroacetamide (BSTFA) and subsequent analysis by use of a capillary GC/MS.

N-octyl isothiazolinone and 2-(thiocyanomethylthio)benzothiazole (TCMTB) are determined using high-performance liquid chromatography (HPLC) and a UV detector. For the purpose of sample preparation, a defined quantity of the comminuted leather sample is extracted with methanol in a Soxhlet apparatus (or by means of an accelerated extraction process). After filtration through a membrane it is chromatographed using, for example, methanol/water/acetic acid 75/25/0.4. Alternatively, other suited eluents shall also be permissible.