



PharmaKeep™ Information for PACKET KD-20 (Edition-0, 2017)

1. Out-gases

PharmaKeep generates a little amount of out-gases. It is difficult for us to confirm every effect of out-gases to each customer's products. We would like to ask our customers to confirm effects of PharmaKeep by tests with actual products at actual conditions.

Table 1: Out-gases from PharmaKeep PACKET KD-20 after oxygen absorption ^{*1}

Out gases	Gas concentration (per 1 piece/500 ml air)	Out gases	Gas concentration (per 1 piece/500ml air)
Carbon dioxide	0.44 % ^{*2}	Acetaldehyde	1 ppm ^{*3}
Carbon monoxide	N.D. ^{*2}	Methane	13 ppm ^{*4}
Hydrogen	0.05 % ^{*2}	Ethane	10 ppm ^{*4}
Formaldehyde	1.5 ppm ^{*3}	Propane	1 ppm ^{*4}

^{*1}) Typical analytical data of PharmaKeep packet KD-20 (Lot. No.3121ES). This data is not guaranteed value.

^{*2}) Analyzed by GC-TCD / One piece of KD-20 with 500 ml of air for 14 days at 25 °C.

^{*3}) Analyzed by gas detector tube system(GASTEC) / Three pieces of KD-20 with 1,500 ml of air for 14 days at 25 °C.

^{*4}) Analyzed by GC-FID / One piece of KD-20 with 500 ml of air for 14 days at 25 °C.

2. Smell

PharmaKeep products may generate smell by oxygen absorption. We recommend that customers confirm effects of PharmaKeep by tests with their products.

3. Adhesion of granules

Small amount of PharmaKeep granules may adhere to surface of PharmaKeep sachets and canisters. We recommend that customers confirm effects of PharmaKeep by tests with their products.

4. Test of final packaging of products with PharmaKeep

During customers tests with PharmaKeep should be considered packaging headspace, packaging permeation, possible leakages at the packaging closure, but also possible presence of defects in the drug packaging itself. In case of none estimated leakages, and / or undetected packaging defects, preserved medicine might be oxidized despite of PharmaKeep presence.



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