

## RISK ASSESSMENT

### for *Immunetec Antimicrobial Hand and Skin Protection Cream* product

**Active substance:** 0.3% reaction mass of titanium dioxide and silver chloride in proportions 80:20 (TiO<sub>2</sub>: AgCl).

The active substance is on the list of Reg. (EU) No 1062/2014 on the work programme for the systematic examination of all existing active substances contained in biocidal products referred to in Reg. (EU) No 528/2012.

#### Risk assessment for silver chloride:

##### *Exposure assessment*

The hand sanitizer is a leave-on product. It should be spread evenly on the skin of the hands and it exerts its effect until the next hand wash.

In the exposure assessment the following data were considered:

- The concentration of silver chloride in the product is **0.06%**
- The applied amount of the product is **2 ml**
- The relative density of the product is **0.99**
- Dermal absorption of silver ions: **0.1%** (based on the opinion of the European Commission's Scientific Committee on Consumer Safety's opinion on a product containing silver ions)<sup>1</sup>
- Default body weight: **60 kg**.

Based on these values the applied amount of the product for one application is 1980 mg product/person.

Dermal load of silver chloride: 1.188 mg /person,

Systemic exposure: 0.001188 mg silver chloride/person

Systemic dose of silver chloride: **1.98x10<sup>-5</sup> mg/kg bw/application**.

##### *Risk characterisation*

###### *Reference values*

Toxicological assessment of silver chloride as a biocide in the EU is not yet available (as of 2021). According to the REACH dossier of the silver chloride, the no-observed-adverse-effect level (NOAEL) in repeated exposure: NOAEL = 30 mg/kg bw/day

Using the default assessment factor of 100 (10 for interspecies, 10 for intraspecies variability) the acceptable exposure level (AEL) - overall systemic limit value for the human population:

**AEL = 0.3 mg/kg bw/day**

###### *Risk for general public*

As the product is effective for 4 hours, three application is expected per day:  $3 \times 1.98 \times 10^{-5} = 0.0000594$  mg/kg bw/day

Scenario	Systemic NOAEL mg/kg bw/d	AEL mg/kg bw/d	Estimated uptake mg/kg bw/d	Estimated uptake / AEL (%)	Acceptable (yes/no)
Hand sanitation	30	0.3	0.0000594	0.0198	yes

**Conclusion:** the application of the product under the given circumstances is safe.

Based on the data above, the highest acceptable daily number of applications also can be deducted:  $AEL/\text{systemic dose per application} = 0.3/1.98 \times 10^{-5} = 15151$

**The daily number of uses is practically not limited in the approach.**

<sup>1</sup> [https://ec.europa.eu/health/sites/default/files/scientific\\_committees/consumer\\_safety/docs/sccs\\_o\\_198.pdf](https://ec.europa.eu/health/sites/default/files/scientific_committees/consumer_safety/docs/sccs_o_198.pdf)

## Another approach

The above value (0.1%) of dermal absorption is estimated and not based on studies, although it has been suggested by an official body of the European Commission (Scientific Committee on Consumer Safety) in 2016. Strictly speaking, a **70%** default value of dermal absorption should be used based on the European Food Safety Authority's guidance on dermal absorption (EFSA Journal 2017; 15(6): 4873).

Applied amount: 1980 mg product/person

Dermal load of silver chloride: 1.188 mg/person

Systemic exposure: 0.8316 mg silver chloride/person

Systemic dose: 0.01386 mg silver chloride/kg bw/application

Three applications are reasonable per day:  $3 \times 0.01386 = 0.04158$  silver chloride mg/kg bw/day

### Risk for general public

Scenario	Systemic NOAEL mg/kg bw/d	AEL mg/kg bw/d	Estimated uptake mg/kg bw/d	Estimated uptake / AEL (%)	Acceptable (yes/no)
Hand sanitation	30	0.3	0.04158	13.86	yes

**Conclusion:** the application of the product under the given circumstances is still safe.

Based on the data above, the highest acceptable daily number of applications also can be deducted:  $\text{AEL}/\text{systemic dose per application} = 0.3/0.04158 = 7.215$

The number of safe daily uses is 7, which is above expectations.

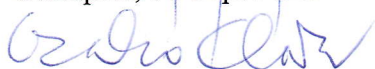
### Risk assessment for titanium dioxide:

Titanium dioxide has got a harmonised hazard classification in the European Union, which is Carcinogen Category 2 (suspected carcinogen). However, this classification is only valid when titanium dioxide is inhaled chronically in a powder form, in this case its microcrystals may injure the lung's epithelium and the constant irritation provokes tissue healing, cell division, and in some cases eventually tumorous transformation. Liquid mixtures, creams containing titanium dioxide are safe and do not require classification as Carc. 2 (H351)<sup>2</sup>.

Titanium dioxide is insoluble in water or organic solvents under normal circumstances therefore, it is absorbed neither through the gastrointestinal tract nor the skin (see the REACH Registration Dossier of TiO<sub>2</sub>)<sup>3</sup>. Therefore, systemic exposure is not expected while applying the product. Titanium dioxide does not irritate the skin and it is non-sensitizing substance. Local effects after exposure are not expected.

Under normal and reasonably foreseeable conditions of use of *Immunetec Antimicrobial Hand and Skin Protection Cream* the active substance (reaction mass of titanium dioxide and silver chloride in proportions 80:20 (TiO<sub>2</sub>: AgCl)) does not cause safety concern to human health.

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<sup>2</sup> [https://echa.europa.eu/documents/10162/17240/guide\\_cn1\\_titanium\\_dioxide\\_en.pdf/d00695e4-e341-0a33-b0ac-bee35cb13867?t=1630666801979](https://echa.europa.eu/documents/10162/17240/guide_cn1_titanium_dioxide_en.pdf/d00695e4-e341-0a33-b0ac-bee35cb13867?t=1630666801979)

<sup>3</sup> <https://echa.europa.eu/hu/registration-dossier/-/registered-dossier/15560/7/2/3>