

Brief Toxicological Assessment for Microtracer Particles

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1. Objective

The objective of this brief assessment is a toxicological evaluation of the constituent materials used in microtracer particles F, FS, FSS and RF.

These particles are used in the preparation of animal feed mixtures, spice mixtures, and in “powdered mixtures” in general, in order to provide proof of the homogeneity of the individual batches after mixing. At the same time, the carry-over rate of the relevant mixing unit will be determined as an equipment parameter with these external tracers. The special feature of this technique relates to the use of a particle count in lieu of a concentration measurement. The microtracers are added to the mixing line either in the form of a premix/concentrate or via an automatic micro-dosing system. The quantity of tracer in premixes is 1:100,000 and in finished feeds it is 1:10,000, i.e. 10 and 100 mg per kg of powder mixture, respectively.

2. Qualitative and quantitative composition of the microtracer particles

Microtracer F	Microtracer FS / FSS	Microtracer RF
Elemental iron (> 98% “iron grit”)	Elemental iron ($\geq 80\%$ stainless steel) and elemental chromium ($\leq 20\%$)	Hydrogen-reduced iron
Particles per gram: 25000	Particles per gram: 150000	Particles per gram: > 2000000
Particle size: 150 – 300 μm	Particle size: 75 – 300 μm	Particle size: 75 – 150 μm
Coating: Colours for use in foodstuffs ¹ approved for use within the EU according to FD&C. Maximum content: 3%	Coating: Colours for use in foodstuffs ² approved for use within the EU according to FD&C. Maximum content: 3%	Coating: Colours for use in foodstuffs ² approved for use within the EU according to FD&C. Maximum content: 3%
Trace contents (< 0.1%) of sodium carbonate	Trace contents (< 0.1%) of sodium carbonate	Trace contents (< 0.1%) of sodium carbonate

¹ Regulation (EC) No 1831/2003 of the European Parliament and of the Council of 22 September 2003 laying down requirements for feed hygiene

² Commission Directive 95/45/EC of 26 July 1995 laying down specific purity criteria concerning colours for use in foodstuffs

3. Evaluation of possible health risks due to oral intake of the microtracers

The bioavailability for elemental iron after oral intake is only about 10 – 15%, i.e. for the most part it is not resorbed. In complete feedingstuffs for animals, the expected quantity ingested as a share of the feed ranges from 10 to 100 mg/kg, which is considerably less than the permissible highest content (up to 1250 mg/kg). The different dyes used to coat the particles are approved for use as food colorants within the EU, so no risk is to be expected here either.

And there is also no health risk to be expected due to the use of microtracers in food applications, as their use does not result in significantly increased iron intake.

Based on the findings presented here, the use of microtracers is considered safe.

¹ Commission Regulation (EC) no. 1334/2003 of 25 July 2003 on amending the conditions for authorisation of a number of additives in feedingstuffs belonging to the group of trace elements