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In reply please refer to: V2-447/DS/MT/1

Your reference: P-00164, PQC-VCP-2024-0005

Envu (Environmental Science U.S. LLC.)
Dr. Laurent Patty
5000 CentreGreen Way
Suite 400
Cary, NC 27513
les états-unis d'Amérique

23 April 2025

Dear Dr. Patty:

WHO Prequalification Team – Vector Control Product Assessment (PQT-VCP)
Post-Prequalification Change (PPQC)
WHO Product ID: P-00164
Case ID: PQC-VCP-2024-0005

Thank you for submitting your company's Post-Prequalification Change (PPQC) application on 24 January 2024 for the following product:

Fludora Co-Max – PQ Ref #: P-00164

Your submission of data supporting the increase of the free oil and cream content up-to 3ml at each time point for the emulsion stability and re-emulsification attribute in the product manufacturing release specifications has been reviewed and found acceptable.

Additionally, your submission of data supporting the change in the product manufacturing release specifications description from a "turbid milky white emulsion" to a "turbid milky white-beige to pink emulsion" has been reviewed and found acceptable.

Lastly, the data submitted on 36-month real time storage stability for Fludora Co-Max provides results, for the physical chemical parameters tested, within the product manufacturing release specifications limits. In the conditions of the study, no significant differences were recorded among the properties of the product at time point 0 and after 36 months storage at 30ºC.

Our files have been updated accordingly and the PQT Inspections group has been notified of the change.

Yours sincerely,

Pp. 

Dominic Schuler
Team Lead, Vector Control Products Assessment
Prequalification Unit
Regulation and Prequalification Department

World Health Organization

WHO Prequalification Programme / Vector Control Product Assessment

WHO Public Assessment Report: Change Assessment

Fludora Co-Max

(Environmental Science U.S. LLC.)

P-00164

PQC-VCP-2024-0005

Contents

1 Introduction

Fludora Co-Max is an emulsion in water (EW) formulation containing a combination of a pyrethroid (transfluthrin) and a butenolide (flupyradifurone) insecticide; intended for indoor and outdoor space spraying applications to control mosquitoes.

Evidence to support the request to a change in the product manufacturing release specification (emulsion stability and color) as well as evidence to support 3 years storage stability were submitted.

2 Chemical and physical data

2.1 Chemical and physical properties

Fludora Co-Max is an emulsion, oil in water (EW) formulation. Data on emulsion stability and color properties for the product Fludora Co-Max were provided. These data were obtained from studies conducted according to established standards and/or Good Laboratory Practices (GLP) and are considered complete. Several batches were used for testing physical/chemical properties (see Appendix 1). The results are presented in Table 1. These summary results are based on the analysis of batches: 2021-007765, PP0001/24, PP0002/24, PP0003/24, EML4L037071, EM4L036814, EM4L037100.

Table 1. Colour and Emulsion stability properties for Fludora Co-Max

Data requirement	Study number	Test method ID	Results
Colour	Accelerated storage stability of Fludora Co-Max (GLP study Mo7233)	Visual inspection	Results obtained for batch 2021-007765 Yellowish Same colour before and after accelerated storage stability test at 54 °C for 2 weeks. Same colour before and after 1 week at 0 °C stability test.
Emulsion stability and re-emulsification	Biogenius Study ID GLP24-065 (GLP study)*	MT 36.3, CIPAC Handbook K, p. 137, 2003	The results obtained with the 3 representative batches (PP0001/24, PP0002/24, PP0003/24) are presented below: 0.5 % v/v Water A or D 0 h and 0.5 h: uniform, white, turbid, translucent emulsion 2.0 h: <1ml flakes* on top 24 h: <1ml flakes* on top Re-emulsification complete 24.5 h: <1ml flakes* on top 2 % v/v Water A or D 0 h and 0.5 h: uniform, white, turbid, translucent emulsion 2.0 h: <1ml flakes* on top 24 h: about 1ml flakes* on top Re-emulsification complete 24.5 h: <1ml flakes* on top 5 % v/v Water A or D 0 h and 0.5 h: uniform, white, turbid, translucent emulsion

Table 1. Colour and Emulsion stability properties for Fludora Co-Max			
Data requirement	**Study number**	**Test method ID**	**Results**
			2.0 h: 1ml flakes* on top 24 h: about 1ml flakes* on top Re-emulsification complete 24.5 h: 1ml flakes* on top
Emulsion stability and re-emulsification	Storage stability of Fludora Co-Max - after storage for 36 months at 30 °C (GLP study Mo7259)	MT 36.3, CIPAC Handbook K, p. 137, 2003	Results obtained for batch 2021-007765 **3 Months at 30 °C**: 0.5 % v/v Water A: after 2 h: 2 mL oil at top after 24 h: 3 mL oil at top, re-emulsifiable 0.5 % v/v Water D: after 2 h & 24 h: 3 mL oil at top, re- emulsifiable **6 Months at 30 °C**: 0.5 % v/v Water A: after 24 h: < 1 mL white flakes* on the surface, re-emulsifiable 0.5 % v/v Water D: after 24 h < 1 mL white flakes* on the surface, re-emulsifiable **12 Months at 30 °C**: 0.5 % v/v Water A: after 24 h translucent emulsion 3mL becoming lighter at the top with visible particles, re-emulsifiable 0.5 % v/v Water D: after 24 h upper 6 mL becoming lighter with some particles, re-emulsifiable **24 Months at 30 °C**: 0.5 % v/v Water A: after 24 h 6 mL cream becoming lighter towards the top, re-emulsifiable 0.5 % v/v Water D after 24 h 2 mL cream becoming lighter towards the top; re-emulsifiable **36 Months at 30 °C**: 0.5 % v/v Water A: white, milky, slightly turbid, translucent emulsion without sediment, with few oil droplets and flakes at the surface After 30 min: few oil droplets at the surface and flakes throughout the emulsion. After 2 h: < 1 mL sediment. After 24 h : 1 mL sediment re-emulsifiable 0.5 % v/v Water D: white, milky, slightly turbid, translucent emulsion without sediment, with few oil droplets and flakes at the surface. No change up to 24 h

Table 1. Colour and Emulsion stability properties for Fludora Co-Max			
Data requirement	**Study number**	**Test method ID**	**Results**
Emulsion stability and re-emulsification	Accelerated storage stability of Fludora Co-Max (2 weeks at 54°C and 1 week at 0°C) (GLP study Mo7233)	MT 36.3, CIPAC Handbook K, p. 137, 2003	Results obtained for batch 2021-007765 0.5% v/v CIPAC Water A: 2 weeks at 54°C after 2 h: 0.5 mL oil at top; after 24 h: 1 mL oil at top, re-emulsifiable 1 week at 0°C after 2 h: 0.5 mL oil at top; after 24 h: 1 mL oil at top, re-emulsifiable 0.5% v/v CIPAC Water D: 2 weeks at 54°C after 2 h: 1 mL oil at top after 24 h: 1 mL oil at top, re-emulsifiable. 1 week at 0°C after 2 h: 0.5 mL oil at top after 24 h: 1 mL oil at top, re-emulsifiable.
Emulsion stability and re-emulsification	Currenta GmbH, EN ISO/IEC 17025 accredited)	MT 36.3, CIPAC Handbook K, p. 137, 2003	Three batches were tested: EM4L036814; EM4L037071; EM4L037100. Concentration levels: 0.1 and 5 % (v/v) Batch No. **EM4L036814** 0.1% (v/v) in CIPAC Water A Initial sample: initial 0 h: emulsion without sediment, cream or oil after 2 h: emulsion without sediment, cream or oil after 24 h: emulsion without sediment, cream or oil re-emulsifiable after 24.5 h: 1 mL,cream/<0.5 mL oil 0.1% (v/v) in CIPAC Water D Initial sample: initial 0 h: emulsion without sediment, cream or oil after 2 h: emulsion without sediment, cream or oil after 24 h: emulsion without sediment, cream or oil re-emulsifiable after 24.5 h: 1 mL,cream/<0.5 mL oil 5% (v/v) in CIPAC Water A Initial sample: initial 0 h: emulsion without sediment, cream or oil after 2 h: emulsion without sediment, cream or oil after 24 h: emulsion without sediment, cream or oil re-emulsifiable after 24.5 h: 2 mL,cream/<0.5 mL oil 5 % (v/v) in CIPAC Water D Initial sample: initial 0 h: emulsion without sediment, cream or oil after 2 h: emulsion without sediment, cream or oil after 24 h: emulsion without sediment, cream or oil re-emulsifiable after 24.5 h: 2 mL,cream/<0.5 mL oil Batch No. **EM4L037071** 0.1% (v/v) in CIPAC Water A

Table 1. Colour and Emulsion stability properties for Fludora Co-Max			
Data requirement	**Study number**	**Test method ID**	**Results**
			Initial sample: initial 0 h: emulsion without sediment, cream or oil after 2 h: emulsion without sediment, cream or oil after 24 h: emulsion without sediment, cream or oil re-emulsifiable after 24.5 h: 1 mL,cream/<0.5 mL oil 0.1% (v/v) in CIPAC Water D Initial sample: initial 0 h: emulsion without sediment, cream or oil after 2 h: emulsion without sediment, cream or oil after 24 h: emulsion without sediment, cream or oil re-emulsifiable after 24.5 h: 1 mL,cream/<0.5 mL oil 5% (v/v) in CIPAC Water A Initial sample: initial 0 h: emulsion without sediment, cream or oil after 2 h: emulsion without sediment, cream or oil after 24 h: emulsion without sediment, cream or oil re-emulsifiable after 24.5 h: 3 mL,cream/<0.5 mL oil 5 % (v/v) in CIPAC Water D Initial sample: initial 0 h: emulsion without sediment, cream or oil after 2 h: emulsion without sediment, cream or oil after 24 h: emulsion without sediment, cream or oil re-emulsifiable after 24.5 h: 3 mL,cream/<0.5 mL oil Batch No. **EM4L037100** 0.1% (v/v) in CIPAC Water A Initial sample: initial 0 h: emulsion without sediment, cream or oil after 2 h: emulsion without sediment, cream or oil after 24 h: emulsion without sediment, cream or oil re-emulsifiable after 24.5 h: 1 mL,cream/<0.5 mL oil 0.1% (v/v) in CIPAC Water D Initial sample: initial 0 h: emulsion without sediment, cream or oil after 2 h: emulsion without sediment, cream or oil after 24 h: emulsion without sediment, cream or oil re-emulsifiable after 24.5 h: 1 mL,cream/<0.5 mL oil 5% (v/v) in CIPAC Water A Initial sample: initial 0 h: emulsion without sediment, cream or oil after 2 h: emulsion without sediment, cream or oil after 24 h: emulsion without sediment, cream or oil re-emulsifiable after 24.5 h: 2 mL,cream/<0.5 mL oil

Table 1. Colour and Emulsion stability properties for Fludora Co-Max			
Data requirement	**Study number**	**Test method ID**	**Results**
			5 % (v/v) in CIPAC Water D Initial sample: initial 0 h: emulsion without sediment, cream or oil after 2 h: emulsion without sediment, cream or oil after 24 h: emulsion without sediment, cream or oil re-emulsifiable after 24.5 h: 2 mL,cream/<0.5 mL oil
Emulsion stability and re-emulsification	ASR Laboratorios, Brasil (GLP Studies: ASR0030.0002.23, ASR0030.0003.23, ASR0030.0004.23)	MT 36.3, CIPAC Handbook K, p. 137, 2003	The same three batches were tested as in the Currenta studies but on different concentration levels and with CIPAC water D. Concentration levels: 0.1; 5; 10; 20 % (v/v): Batch No. **EM4L036814** 0.1 % (v/v) in CIPAC Water D Initial sample: after 30 min: emulsion without sediment, cream or oil after 2 h: emulsion without sediment, cream or oil after 24 h: emulsion without cream or oil with some sediment at the bottom re-emulsifiable 5 % (v/v) in CIPAC Water D Initial sample: after 30 min: emulsion with 1 mL cream at the top after 2 h: emulsion with 2 mL cream at the top after 24 h: emulsion with 2 ml cream at the top and with some sediment at the bottom re-emulsifiable after 24.5 h: 1 mL cream at the top 10 % (v/v) in CIPAC Water D Initial sample: after 30 min: emulsion with 2 mL cream at the top after 2 h: emulsion with 2 mL cream at the top after 24 h: emulsion with 2 ml cream at the top and with some sediment at the bottom re-emulsifiable after 24.5 h: 1 mL cream at the top 20 % (v/v) in CIPAC Water D Initial sample: after 30 min: emulsion with 2 mL cream at the top after 2 h: emulsion with 3 mL cream at the top after 24 h: emulsion with 3 ml cream at the top and with some sediment at the bottom re-emulsifiable after 24.5 h: 2 mL cream at the top Batch No. **EM4L037071** Concentration levels tested: 0.1; 5; 10; 20 % (v/v) in CIPAC water D At all concentration levels an uniform emulsion was formed with no free oil or cream on the top or bottom of the emulsion after 30 minutes, 2 hours and 24 hours.

Table 1. Colour and Emulsion stability properties for Fludora Co-Max			
Data requirement	**Study number**	**Test method ID**	**Results**
			All samples were re-emulsifiable after standing for 24 hours. Batch No. **EM4L037100** 0.1 % (v/v) in CIPAC Water D Initial sample: after 30 min: emulsion without cream or oil at the top or bottom after 2 h: emulsion without cream or oil at the top or bottom after 24 h: emulsion without cream or oil at the top some sediment at the bottom re-emulsifiable 5 % (v/v) in CIPAC Water D Initial sample: after 30 min: emulsion with 1-2 mL cream at the top after 2 h: emulsion with 1-2 mL cream at the top after 24 h: emulsion with 2 ml cream at the top and with some sediment at the bottom re-emulsifiable after 24.5 h: 1-2 mL cream at the top 10 % (v/v) in CIPAC Water D Initial sample: after 30 min: emulsion with 2-3 mL cream at the top after 2 h: emulsion with 2 mL cream at the top after 24 h: emulsion with 3 ml cream at the top and with some sediment at the bottom re-emulsifiable after 24.5 h: 2 mL cream at the top 20 % (v/v) in CIPAC Water D Initial sample: after 30 min: emulsion with 3 mL cream at the top after 2 h: emulsion with 3-3.5 mL cream at the top after 24 h: emulsion with 3-3.5 ml cream at the top and with some sediment at the bottom re-emulsifiable after 24.5 h: 3 mL cream at the top

* In the different study reports from BioGenius, the terms free oil, cream and flakes have been used.
In these reports the term flakes was used when the amount of cream / free oil was only minimal < 1 ml, cream or free oil were used whenever higher amounts of the separated phase could be observed (up to 3 ml). The observed flakes as well as the cream represent the same gel-like particles. This can be described according to the CIPAC MT 36.3 as cream in both cases. These gel-like particles are seen as single entities (flakes) at low concentrations where when the amount increases, they accumulate to a single cream like phase. It was confirmed that both the low amount (flakes) and higher values (cream) could be re-emulsified after 24 hours standing.

2.2 Storage Stability

2.2.1 Accelerated storage stability

Stability at 0°C (MT 39.3, CIPAC Handbook J, p.126, 2000)

After storage at 0 ± 2°C for 7 days, a turbid milky white emulsion is visible after gentle agitation.

The properties tested (appearance, emulsion stability, persistent foam) after storage at 0°C show no significant change from initial values.

Stability at elevated temperature (MT 46.4, CIPAC Handbook P, p.232, 2021)

After storage at 54 ± 2°C for 14 days, the determined average active ingredient content is not lower than 95%, relative to the determined average content found before storage* and the formulation continues to comply with the emulsion stability and re-emulsification manufacturing release specifications attribute.

*Samples of the formulation taken before and after the storage stability test are analysed concurrently after the test in order to reduce the analytical error.

The properties tested (active ingredient content, appearance, pH value, relative density, pourability, emulsion stability, persistent foam) after storage at 54°C show no significant change from the initial values.

2.2.2 Real time storage stability

36-month real time storage stability data at 30 °C (0, 3, 6,12,14,36 months' time points) were generated for Fludora Co-Max (Study Mo7259). The results are presented in Tables 2 to 7. No significant differences were recorded among the properties of the product at time point 0 and after 36 months storage at 30°C.

Table 2: Emulsion Stability of a 0.5 % (v/v) Emulsion of the Test Item in Standard Water D				
Test time (storage conditions)	**Sample no.**	**Visual inspection after 30 sec standing**	**Visual inspection after 30 min standing**	**Visual inspection after 120 min standing**
Start (Mo7233)	28	Homogeneous, white, milky, slightly turbid, translucent emulsion	Homogeneous, white, milky, slightly turbid, translucent emulsion	White, milky, slightly turbid, translucent emulsion lighter at top, 5 ml oil at top
3 Months (30 °C)	15	Homogeneous, white, milky, slightly turbid, translucent emulsion	Homogeneous, white, milky, slightly turbid, translucent emulsion	White, milky, slightly turbid, translucent emulsion, lighter at top, approx. 3 ml oil
6 Months (30 °C)	17	Homogeneous, white, milky, slightly turbid, translucent emulsion	Homogeneous, white, milky, slightly turbid, translucent emulsion	Homogeneous, white, milky, slightly turbid, translucent emulsion
12 Months (30 °C)	18	Homogeneous, white, milky, turbid, translucent emulsion	Homogeneous, white, milky, turbid, translucent emulsion	Homogeneous, white, milky, turbid, translucent emulsion
24 Months (30 °C)	26	Homogeneous, white, milky, slightly turbid, translucent emulsion	Homogeneous, white, milky, slightly turbid, translucent emulsion	Homogeneous, white, milky, slightly turbid, translucent emulsion
36 Months (30 °C)	27	Homogeneous, white, milky, slightly turbid, translucent emulsion with few oil droplets and flakes at the surface	Homogeneous, white, milky, slightly turbid, translucent emulsion with few oil droplets and flakes at the surface	Homogeneous, white, milky, slightly turbid, translucent emulsion with few oil droplets and flakes at the surface

Table 2: Emulsion Stability of a 0.5 % (v/v) Emulsion of the Test Item in Standard Water D (continued)				
Test time (storage conditions)	**Sample no.**	**Visual inspection after 24 h standing**	**Re-emulsification**	**Final Emulsion stability**
Start (Mo7233)	28	White, milky, slightly turbid, translucent emulsion lighter at top, 5 ml oil at top	Homogeneous, white, milky, slightly turbid, translucent emulsion	Homogeneous, white, milky, slightly turbid, translucent emulsion
3 Months (30°C)	15	White, milky, slightly turbid, translucent emulsion, lighter at top, approx. 3 ml oil	Homogeneous, white, milky, slightly turbid, translucent emulsion	Homogeneous, white, milky, slightly turbid, translucent emulsion
6 Months (30°C)	17	Homogeneous, white, milky, slightly turbid, translucent emulsion, few white, flakes on the surface(< 1 ml)	Homogeneous, white, milky, slightly turbid, translucent emulsion	Homogeneous, white, milky, slightly turbid, translucent emulsion
12 Months (30°C)	18	White, milky, turbid, translucent emulsion, upper 6 ml becoming lighter with particles	Homogeneous, white, milky, turbid, translucent emulsion	Homogeneous, white, milky, turbid, translucent emulsion
24 Months (30°C)	26	Homogeneous, white, milky, slightly turbid, translucent emulsion; upper 2 ml cream, becoming brighter towards the top	Homogeneous, white, milky, slightly turbid, translucent emulsion	Homogeneous, white, milky, slightly turbid, translucent emulsion
36 Months (30 °C)	27	Homogeneous, white, milky, slightly turbid, translucent emulsion with few oil droplets and flakes at the surface	Homogeneous, white, milky, slightly turbid, translucent emulsion with few oil droplets and flakes at the surface	Homogeneous, white, milky, slightly turbid, translucent emulsion with few oil droplets and flakes at the surface

The tests were conducted at room temperature.

A volume of 0.5 ml was used.

Table 3: Emulsion Stability of a 5 % (v/v) Emulsion of the Test Item in Standard Water D				
Test time (storage conditions)	**Sample no.**	**Visual inspection after 30 sec standing**	**Visual inspection after 30 min standing**	**Visual inspection after 120 min standing**
24 Months (30°C)	26	Homogeneous, white, milky, turbid, slightly translucent emulsion	White, milky, turbid, slightly translucent emulsion, 1 ml cream	White, milky, turbid, slightly translucent emulsion, 1 ml cream
36 Months (30 °C)	27	Homogeneous, yellowish, milky, turbid, translucent emulsion with few oil droplets and flakes at the surface	Homogeneous, white, milky, turbid, translucent emulsion, 1 ml oil on top mixed with few flakes	Homogeneous, white, milky, turbid, translucent emulsion, 1 ml oil on top mixed with few flakes

Table 3: Emulsion Stability of a 5 % (v/v) Emulsion of the Test Item in Standard Water D (continued)				
Test time (storage conditions)	**Sample no.**	**Visual inspection after 24 h standing**	**Re-emulsification**	**Final Emulsion stability**
24 Months (30°C)	26	White, milky, turbid, slightly translucent emulsion, 2 ml cream	Homogeneous, white, milky, turbid, slightly translucent emulsion	White, milky, turbid, slightly translucent emulsion, 1.5 ml cream
36 Months (30 °C)	27	Homogeneous, white, milky, turbid, translucent emulsion, 2 ml oil on top mixed with few flakes, <1 ml sediment	Homogeneous, yellowish, milky, turbid, translucent emulsion with few oil droplets and flakes at the surface	Homogeneous, white, milky, turbid, translucent emulsion, 1 ml oil on top mixed with few flakes

The tests were conducted at room temperature.

A volume of 5.0 ml was used.

Table 4: Emulsion Stability of a 10 % (v/v) Emulsion of the Test Item in Standard Water D				
Test time (storage conditions)	**Sample no.**	**Visual inspection after 30 sec standing**	**Visual inspection after 30 min standing**	**Visual inspection after 120 min standing**
Start (Mo7233)	28	Homogeneous, white, very turbid, translucent emulsion	Homogeneous, white, milky, very turbid, translucent emulsion	White, milky, very turbid, translucent emulsion, 1 ml oil at top
3 Months (30°C)	15	Homogeneous, white, very turbid, translucent emulsion	White, very turbid, translucent emulsion, approx, 1 ml foam wreath at top, 1 ml oil at top	White, very turbid, translucent emulsion, approx, 1 ml foam wreath at top, 1 ml oil at top
6 Months (30°C)	17	Homogeneous, white, turbid, slightly translucent emulsion	White, turbid, slightly translucent emulsion, 1 ml oil at top	White, turbid, slightly translucent emulsion, 1 ml oil at top
12 Months (30°C)	18	Homogeneous, white, turbid, slightly translucent emulsion	White rim on top, otherwise homogeneous, white, slightly translucent emulsion, 2 ml cream	White rim on top, otherwise homogeneous, white, slightly translucent emulsion, 2 ml cream
24 Months (30°C)	26	Homogeneous, white, turbid, slightly translucent emulsion	White, turbid, slightly translucent emulsion, 4 ml cream	White, turbid, slightly translucent emulsion, 4 ml cream
36 Months (30 °C)	27	yellowish, turbid, translucent emulsion getting more yellowish from top to bottom with few oil droplets and flakes at the surface	Homogeneous, yellowish, turbid, translucent emulsion, 3 ml oil on top mixed with few flakes	Homogeneous, yellowish, turbid, translucent emulsion, 3 ml oil on top mixed with few flakes

Table 4: Emulsion Stability of a 10 % (v/v) Emulsion of the Test Item in Standard Water D (continued)				
Test time (storage conditions)	**Sample no.**	**Visual inspection after 24 h standing**	**Re-emulsification**	**Final Emulsion stability**
Start (Mo7233)	28	White, very turbid, not translucent emulsion, 2 ml at bottom	Homogeneous, white, very turbid, translucent emulsion	Homogeneous, white, very turbid, translucent emulsion
3 Months (30°C)	15	White, very turbid, translucent emulsion, 2 ml foam wreath at top, 2 ml oil at top, little sediment	Homogeneous, white, very turbid, translucent emulsion	Homogeneous, white, very turbid, translucent emulsion
6 Months (30°C)	17	White, turbid, slightly translucent emulsion, 1 ml white, flakes and 1 ml oil at top	Homogeneous, white, turbid, slightly translucent emulsion	Homogeneous, white, turbid, slightly translucent emulsion
12 Months (30°C)	18	White rim on top, otherwise homogeneous, white, slightly translucent emulsion, 2 ml cream	Homogeneous, white, turbid, slightly translucent emulsion	White, turbid, slightly translucent emulsion, 1 ml foam wreath at top, 1 ml cream
24 Months (30°C)	26	White, turbid, slightly translucent emulsion, 4 ml cream	Homogeneous, white, turbid, slightly translucent emulsion	White, turbid, slightly translucent emulsion, 3 ml cream
36 Months (30 °C)	27	Homogeneous, yellowish, turbid, translucent emulsion, 4 ml oil on top mixed with few flakes, <1 ml sediment	Homogeneous, yellowish, turbid, translucent emulsion with few oil droplets and flakes at the surface	Homogeneous, yellowish, turbid, translucent emulsion, 3 ml oil on top mixed with few flakes

The tests were conducted at room temperature.

A volume of 10.0 ml was used.

Table 5: Emulsion Stability of a 0.5 % (v/v) Emulsion of the Test Item in Standard Water A				
Test time (storage conditions)	**Sample no.**	**Visual inspection after 30 sec standing**	**Visual inspection after 30 min standing**	**Visual inspection after 120 min standing**
Start (Mo7233)	28	Homogeneous, white, milky, slightly turbid, translucent emulsion	Homogeneous, white, milky, slightly turbid, translucent emulsion	White, milky, slightly turbid, translucent emulsion lighter at top, 2 ml oil at top
3 Months (30°C)	15	Homogeneous, white, milky, slightly turbid, translucent emulsion	Homogeneous, white, milky, slightly turbid, translucent emulsion	White, milky, slightly turbid, translucent emulsion lighter at top, approx. 2 ml oil at top
6 Months (30°C)	17	Homogeneous, white, milky, slightly turbid, translucent emulsion	Homogeneous, white, milky, slightly turbid, translucent emulsion	Homogeneous, white, milky, slightly turbid, translucent emulsion
12 Months (30°C)	18	Homogeneous, white, milky, turbid, translucent emulsion	Homogeneous, white, milky, turbid, translucent emulsion	Homogeneous, white, milky, turbid, translucent emulsion
24 Months (30°C)	26	Homogeneous, white, milky, slightly turbid, translucent emulsion	Homogeneous, white, milky, slightly turbid, translucent emulsion	Homogeneous, white, milky, slightly turbid, translucent emulsion
36 Months (30 °C)	27	Homogeneous, white, milky, slightly turbid, translucent emulsion with few oil droplets and flakes at the surface	Homogeneous, white, milky, slightly turbid, translucent emulsion with few oil droplets at the surface and flakes throughout the emulsion	Homogeneous, white, milky, slightly turbid, translucent emulsion with few oil droplets at the surface and flakes throughout the emulsion, <1 ml sediment

Table 5: Emulsion Stability of a 0.5 % (v/v) Emulsion of the Test Item in Standard Water A (continued)				
Test time (storage conditions)	**Sample no.**	**Visual inspection after 24 h standing**	**Re-emulsification**	**Final Emulsion stability**
Start (Mo7233)	28	White, milky, slightly turbid, translucent emulsion lighter at top, 2 ml oil at top	Homogeneous, white, milky, slightly turbid, translucent emulsion	Homogeneous, white, milky, slightly turbid, translucent emulsion
3 Months (30°C)	15	White, milky, slightly turbid, translucent emulsion lighter at top, 3 ml oil at top	Homogeneous, white, milky, slightly turbid, translucent emulsion	Homogeneous, white, milky, slightly turbid, translucent emulsion
6 Months (30°C)	17	Homogeneous, white, milky, slightly turbid, translucent emulsion, few white, flakes on the surface(< 1 ml)	Homogeneous, white, milky, slightly turbid, translucent emulsion	Homogeneous, white, milky, slightly turbid, translucent emulsion
12 Months (30°C)	18	Homogeneous, white, milky, turbid, translucent emulsion, 3 ml becoming lighter at the top with visible particles	Homogeneous, white, milky, turbid, translucent emulsion	Homogeneous, white, milky, turbid, translucent emulsion
24 Months (30°C)	26	White, milky, slightly turbid, translucent emulsion, upper 6 ml cream, becoming brighter towards the top	Homogeneous, white, milky, slightly turbid, translucent emulsion	Homogeneous, white, milky, slightly turbid, translucent emulsion
36 Months (30 °C)	27	Homogeneous, white, milky, slightly turbid, translucent emulsion with few oil droplets at the surface and flakes throughout the emulsion, 1 ml sediment	Homogeneous, white, milky, slightly turbid, translucent emulsion with few oil droplets and flakes at the surface	Homogeneous, white, milky, slightly turbid, translucent emulsion with few oil droplets and flakes at the surface

The tests were conducted at room temperature.

A volume of 0.5 ml was used.

Table 6: Emulsion Stability of a 5 % (v/v) Emulsion of the Test Item in Standard Water A				
Test time (storage conditions)	**Sample no.**	**Visual inspection after 30 sec standing**	**Visual inspection after 30 min standing**	**Visual inspection after 120 min standing**
24 Months (30°C)	26	Homogeneous, white, milky, turbid, slightly translucent emulsion	Homogeneous, white, milky, turbid, slightly translucent emulsion	White, milky, turbid, slightly translucent emulsion, 2 ml cream
36 Months (30 °C)	27	Homogeneous, white, milky, turbid, translucent emulsion with few oil droplets and flakes at the surface	Homogeneous, white, milky, turbid, translucent emulsion, 2 ml oil on top mixed with few flakes	Homogeneous, white, milky, turbid, translucent emulsion, 2 ml oil on top mixed with few flakes

Table 6: Emulsion Stability of a 5 % (v/v) Emulsion of the Test Item in Standard Water A (continued)				
Test time (storage conditions)	**Sample no.**	**Visual inspection after 24 h standing**	**Re-emulsification**	**Final Emulsion stability**
24 Months (30°C)	26	White, milky, turbid, slightly translucent emulsion, 2 ml cream	Homogeneous, white, milky, turbid, slightly translucent emulsion	White, milky, turbid, slightly translucent emulsion, 1 ml cream
36 Months (30 °C)	27	Homogeneous, white, milky, turbid, translucent emulsion, 2 ml oil on top mixed with few flakes	Homogeneous, white, milky, turbid, translucent emulsion with few oil droplets and flakes at the surface	Homogeneous, white, milky, turbid, translucent emulsion with few oil droplets and flakes at the surface

The tests were conducted at room temperature.

A volume of 5.0 ml was used.

Table 7: Emulsion Stability of a 10 % (v/v) Emulsion of the Test Item in Standard Water A				
Test time (storage conditions)	**Sample no.**	**Visual inspection after 30 sec standing**	**Visual inspection after 30 min standing**	**Visual inspection after 120 min standing**
Start (Mo7233)	28	Homogeneous, white, very turbid, translucent emulsion	Homogeneous, white, very turbid, translucent emulsion	White, very turbid, translucent emulsion, 1 ml oil at top
3 Months (30°C)	15	Homogeneous, white, very turbid, translucent emulsion	White, very turbid, translucent emulsion, approx. 1 ml foam wreath at top, approx. 1 ml oil at top	White, very turbid, translucent emulsion, approx. 2 ml foam wreath at top, approx. 2 ml oil at top
6 Months (30°C)	17	Homogeneous, white, turbid, slightly translucent emulsion	Homogeneous, white, turbid, slightly translucent emulsion, 1 ml oil at top	Homogeneous, white, turbid, slightly translucent emulsion, 1 ml oil at top
12 Months (30°C)	18	Homogeneous, white, turbid, slightly translucent emulsion	White rim on top, otherwise homogeneous, white, turbid, translucent emulsion, 3 ml cream	White rim on top, otherwise homogeneous, white, turbid, translucent emulsion, 3 ml cream
24 Months (30°C)	26	Homogeneous, white, turbid, slightly translucent emulsion	White, turbid, slightly translucent emulsion, 0.5 ml cream	White, turbid, slightly translucent emulsion, 4 ml cream
36 Months (30 °C)	27	yellowish, turbid, translucent emulsion getting more yellowish from top to bottom with few oil droplets and flakes at the surface	Homogeneous, yellowish, turbid, translucent emulsion, 4 ml oil on top mixed with few flakes	Homogeneous, yellowish, turbid, translucent emulsion, 4 ml oil on top mixed with few flakes

Table 7: Emulsion Stability of a 10 % (v/v) Emulsion of the Test Item in Standard Water A (continued)				
Test time (storage conditions)	**Sample no.**	**Visual inspection after 24 h standing**	**Re-emulsification**	**Final Emulsion stability**
Start (Mo7233)	28	White, very turbid, not translucent emulsion, 2 ml at bottom	Homogeneous, white, very turbid, translucent emulsion	Homogeneous, white, very turbid, translucent emulsion
3 Months (30°C)	15	White, very turbid, translucent emulsion, approx. 2 ml foam wreath at top, approx. 2 ml oil at top	Homogeneous, white, very turbid, translucent emulsion	White, very turbid, translucent emulsion, 1 ml foam wreath at top, 1 ml oil at top
6 Months (30°C)	17	White, turbid, slightly translucent emulsion, 1 ml white, flakes and 1 ml oil at top	Homogeneous, white, turbid, slightly translucent emulsion	Homogeneous, white, turbid, slightly translucent emulsion
12 Months (30°C)	18	White rim on top, otherwise homogeneous, white, turbid, translucent emulsion, 3 ml cream	Homogeneous, white, turbid, slightly translucent emulsion	Homogeneous, white, turbid, slightly translucent emulsion, 1 ml foam wreath at top, 1 ml cream
24 Months (30°C)	26	White, turbid, slightly translucent emulsion, 4 ml cream	Homogeneous, white, turbid, slightly translucent emulsion	White, turbid, slightly translucent emulsion, 2 ml cream
36 Months (30 °C)	27	Homogeneous, yellowish, turbid, translucent emulsion, 5 ml oil on top mixed with few flakes, 1 ml sediment	Homogeneous, yellowish, turbid, translucent emulsion with few oil droplets and flakes at the surface	Homogeneous, yellowish, turbid, translucent emulsion, 4 ml oil on top mixed with few flakes

The tests were conducted at room temperature.

A volume of 10.0 ml was used.

3 Change assessment conclusions

The data submitted support the increase of the free oil and cream content up-to 3ml at each time point for the emulsion stability and re-emulsification attribute in the product manufacturing release specifications.

The data submitted supports the change in the product manufacturing release specifications description from a “turbid milky white emulsion” to a “turbid milky white-beige to pink emulsion”. This color change is not related to change of emulsion stability.

The data submitted on 36-month real time storage stability for Fludora Co-Max provides results for the physical chemical parameters tested within the specification limits. No significant differences were recorded among the properties of the product at time point 0 and after 36 months storage at 30°C.

The methods for assessing the physical properties of the product were appropriate CIPAC methods and/or validated methods.

Table 8. List of studies submitted to WHO as part of the post-prequalification change application dossier

Studies that were relied upon for decision making	
Study number	**Study title**
Mo7233	Czornik K., (2022) Accelerated storage stability of Flupyradifurone + Transfluthrin EW 78.8 (26.3+52.5 g/L)
ASR0030.0002.23	Emulsion stability test with Fludora Co-Max batch EML4L037071, (2023) ASR Analytical & Scientific Research, Rua Santa Cecilia, 225, Centro, CEP 13.515-000, Charqueada - Brazil; GLP; BES-074321
ASR0030.0003.23	Emulsion stability test with Fludora Co-Max batch EM4L036814, (2023) ASR Analytical & Scientific Research, Rua Santa Cecilia, 225, Centro, CEP 13.515-000, Charqueada - Brazil; GLP; BES-074322
ASR0030.0004.23	Emulsion stability test with Fludora Co-Max batch EM4L037100, (2023) ASR Analytical & Scientific Research, Rua Santa Cecilia, 225, Centro, CEP 13.515-000, Charqueada - Brazil; GLP; BES-074323
GLP24-065	Voigt S., (2025) Determination of the emulsion stability of “Flupyradifurone + Transfluthrin EW 78.8 (26.3+52.5 g/L)”. Biogenius; GLP; BES-078019
Mo7259	Voigt S., (2025) Storage Stability of Flupyradifurone + Transfluthrin EW 78.8 (26.3+52.5 g/L) in packaging material HDPE Final report 36m - Biogenius Study; BES-078247
Studies that were not used to inform decision making	
Study number	**Study title**
Certificate of Analysis 2023-12-04	Emulsion stability test with Fludora Co-Max, (2023) – Certificate of Analysis 2023-12-04, Currenta GmbH & Co. OHG, Chempark, DE-41538 Dormagen, Germany; non GLP

4 Manufacturing release specifications

4.1 Summary of manufacturing release specifications

For the purposes of product prequalification, the product manufacturing release specifications have been adopted from the FLUPYRADIFURONE + TRANSFLUTHRIN EMULSION, OIL IN WATER WHO specification 987+741/EW (September 2023), as the quality data for this product was initially submitted for JMPS.

Table 9: Summary of manufacturing release specifications

Description: The formulation shall consist of an emulsion of technical flupyradifurone, complying with the requirements of WHO specification 987/TC (current) and transfluthrin, complying with the requirements of WHO specification 741/TC (current) in the form of a turbid milky white-beige to pink emulsion in an aqueous phase together with suitable formulants. After gentle agitation, the formulation shall be homogeneous and suitable for dilution in water.			
ID	Property	Method	Declared value
1*	Flupyradifurone and transfluthrin identity	987/EW/M/2 for flupyradifurone and 741/VL/M/2, CIPAC Handbook L, p.130, 2006 for transfluthrin	
2*	Flupyradifurone and transfluthrin content	987/EW/M/3 for flupyradifurone and 741/VL/M/3, CIPAC Handbook L, p.130, 2006 for transfluthrin	Flupyradifurone: 26.3 g/L ± 10 % of the declared value (23.7 g/L–28.9 g/L) Transfluthrin: 52.5 g/L ± 10 % of the declared value (47.3 g/L–57.8 g/L)
3	Pourability	CIPAC MT 148.1, CIPAC Handbook J, p.133. 2000	Maximum residue: 5%
4*	Persistent foam (10 % (v/v) in CIPAC Water D)	CIPAC MT 47.3 CIPAC Handbook O, p 177, 2017	Maximum: 30 mL after 1 min
5*	Emulsion stability and re-emulsification	MT 36.3, CIPAC Handbook K, p. 137, 2003	0 h initial emulsification complete 0.5 h "cream" maximum 3 mL 2 h "cream" maximum 3 mL "free oil" maximum 3 mL 24 h re-emulsification complete 24.5 h "cream" maximum 3 mL "free oil" maximum 3 mL Note: tests after 24 h are required only where the results at 2 h are in doubt.

*Indicates that additional information is available in Appendix 2.

Manufacturers are expected to rely on the information above as part of a QC management plan and for validation of product quality when released. To the extent required, Certificates of Analysis to support the release of products should present results for the attributes identified in the above table.

4.2 Storage

Accelerated storage stability data were generated for Fludora Co-Max as per CIPAC MT 39.3 (stability at 0°C, properties tested: appearance, emulsion stability, persistent foam) and CIPAC 46.4 (stability at elevated temperature, properties tested: active ingredient content, appearance, pH value, relative density, pourability, emulsion stability, persistent foam). Test samples were stored for 1 week at 0°C and 2 weeks at 54°C, respectively. No significant differences were recorded among the tested

properties of the product kept at ambient temperature and after accelerated storage stability test conditions.

36-month real time storage stability data at 30 °C (0, 3, 6,12,14,36 months' time points) were generated for Fludora Co-Max. No significant differences were recorded among the properties of the product at time point 0 and after 36 months storage at 30°C.

Products should be stored and transported in appropriate conditions in accordance with the recommendations of the manufacturer.

Where products have been subjected to prolonged storage, adverse conditions, or in opened/damaged packaging/containers, analysis and testing are recommended to assess changes in characteristics and their suitability for use.

Appendix 1. Summary of available data considered

Batches used to generate the physical chemical data

Batch number	Date of production	Description
2021-007765	October 2021	Yellowish turbid, translucent emulsion with oil bubbles on the surface
PP0001/24	April 2024	White/beige to pink emulsion
PP0002/24	April 2024	White/beige to pink emulsion
PP0003/24	April 2024	White/beige to pink emulsion
EML4L037071	January 2023	White/beige emulsion
EM4L036814	Dec 2022	White/beige emulsion
EM4L037100	January 2023	White/beige emulsion

Appendix 2. Manufacturing release specifications: Methods and notes

Description

All physical and chemical tests listed in this specification are to be performed with a laboratory sample taken after the recommended homogenization procedure.

Before sampling to verify the formulation quality, the commercial container must be inspected carefully. On standing, emulsions may develop a concentration gradient which could even result in the appearance of a clear liquid on the top (sedimentation of the emulsion) or on the bottom (creaming up of the emulsion). Therefore, before sampling, the formulation must be homogenized according to the

instructions given by the manufacturer or, in the absence of such instructions, by gentle shaking of the commercial container (for example, by inverting the closed container several times). Large containers must be opened and stirred adequately.

Attribute 1: Transfluthrin and flupyradifurone identity

The reversed phase HPLC method (CIPAC/5094) for the determination of flupyradifurone in TC, AL, EC, EW, FS, SL and WG formulations was accepted as full CIPAC method in 2018.

The published method for determination of transfluthrin in TC and VL published in CIPAC Handbook L is considered to be applicable to the EW containing transfluthrin and flupyradifurone as well. A sample of the formulation is dissolved in iso-propanol and determined by capillary gas chromatography.

Attribute 2: Transfluthrin and flupyradifurone content

The reversed phase HPLC method (CIPAC/5094) for the determination of flupyradifurone in TC, AL, EC, EW, FS, SL and WG formulations was accepted as full CIPAC method in 2018.

If the buyer requires both g/kg and g/l at 20°C, then in case of dispute, the analytical results shall be calculated as g/kg.

Attribute 4: Persistent foam

The mass of sample to be used in the test should correspond to 10% (v/v), the highest rate of use recommended. The test is to be conducted in CIPAC standard water D.

Attribute 5: Emulsion stability and re-emulsification

As outlined in CIPAC MT 36.3, the highest and lowest concentrations recommended and within the scope of the method i.e. 0.5% (v/v) and 5% (v/v) should be used.