Biocidal Products Committee (BPC)

Opinion on the application for approval of the active substance:

Reaction mass of 5-chloro-2-methyl-2h-isothiazol-3-one and 2-methyl-2h-isothiazol-3-one (3:1)

Product type: 6

ECHA/BPC/46/2015

Adopted

5 February 2015

Opinion of the Biocidal Products Committee

on the application for approval of the active substance, reaction mass of 5-chloro-2-methyl-2h-isothiazol-3-one and 2-methyl-2h-isothiazol-3-one (3:1) for product type 6

In accordance with Article 89(1) of Regulation (EU) No 528/2012 of the European Parliament and of the Council 22 May 2012 concerning the making available on the market and use of biocidal products (BPR), the Biocidal Products Committee (BPC) has adopted this opinion on the approval in product type 6 of the following active substance:

Common name:	**C(M)IT/MIT (3:1)**
Chemical name(s):	**Reaction mass of 5-chloro-2-methyl-2h-isothiazol-3-one and 2-methyl-2h-isothiazol-3-one (3:1)**
EC No.:	**not available**
CAS No.:	**55965-84-9**

Existing active substance

This document presents the opinion adopted by the BPC, having regard to the conclusions of the evaluating Competent Authority. The assessment report, as a supporting document to the opinion, contains the detailed grounds for the opinion.

Process for the adoption of BPC opinions

Following the submission of two applications by Rohm and Haas Europe Trading ApS, now a subsidiary of The Dow Chemical Company (hereafter referenced as "Dow") on 15 June 2007 and Thor GmbH (hereafter reffered to as "Thor") on 31 July 2007, the evaluating Competent Authority France submitted a combined assessment report and the conclusions of its evaluation to the Commission on 27 November 2012. In order to review the assessment report and the conclusions of the evaluating Competent Authority, the Agency organised consultations via the BPC and its Working Groups. Revisions agreed upon were presented and the assessment report and the conclusions were amended accordingly.

Adoption of the BPC opinion

Rapporteur: BPC member for France

The BPC opinion on the approval of the active substance reaction mass of 5-chloro-2-methyl-2h-isothiazol-3-one and 2-methyl-2h-isothiazol-3-one (3:1) (hereafter C(M)IT/MIT) in product type 6 was adopted on 5 February 2015.

The BPC opinion was adopted by simple majority of the members present having the right to vote. The minority position including its grounds is published on ECHA webpage:

http://echa.europa.eu/regulations/biocidal-products-regulation/approval-of-active-substances/bpc-opinions-on-active-substance-approval

Detailed BPC opinion and background

1. Overall conclusion

The overall conclusion of the BPC is that C(M)IT/MIT in product type 6 may be approved. The detailed grounds for the overall conclusion are described in the assessment report.

2. BPC Opinion

2.1. BPC Conclusions of the evaluation

a) Presentation of the active substance including the classification and labelling of the active substance

This evaluation covers the use of C(M)IT/MIT in product type 6, for the preservation of manufactured products, other than food stuffs or feeding stuffs, in containers by controlling the microbial deterioration and ensuring their shelf life during storage.

C(M)IT/MIT acts by a two-step antimicrobial mechanism, involving rapid binding (association) to cells and inhibition of growth and metabolism (within minutes), followed by irreversible cell damage resulting in loss of viability (hours). Growth inhibition is the result of rapid disruption of essential metabolic pathways of the cell by inhibition of specific (thiol-containing) deshydrogenase enzymes involved in the Krebs (tricarboxylic acid) cycle and electron transport (NADH).

The active substance as manufactured is a reaction mass of 5-chloro-2-methylisothiazol-3(2H)-one (C(M)IT) and 2-methylisothiazol-3(2H)-one (MIT) in ratio (3:1).

The active substance is manufactured as a technical concentrate (TK) with different solvents and stabilizers.

C(M)IT/MIT (3:1) is very reactive with some substances and should be stabilized in the product. For this reason, the active substance is manufactured continuous directly to its product form. The product mostly on the market is a solution of 14% or higher in water with stabilizers salts.

Specifications for the reference source are established.

The physico-chemical properties of the active substance and biocidal product have been evaluated and are deemed acceptable for the appropriate use, storage and transportation of the active substance and biocidal product.

Analytical methods are available for the active substance as manufactured, for the stabilizers and for the relevant and significant impurities and the relevant matrices soil, water and air.

The current classification and labelling for C(M)IT/MIT according to Regulation (EC) No 1272/2008 (CLP Regulation) is:

Classification according to the CLP Regulation	
Hazard Class and Category Codes	Acute Tox. 3/H331 Acute Tox. 3/H311 Acute Tox. 3/H301 Skin Corr. 1B/H314 Skin Sens. 1/H317 Aquatic Acute 1/H400 Aquatic chronic 1/H410
Labelling	
Pictograms	SGH05 SGH06 SGH07 SGH09

Signal Word	Danger Warning
Hazard Statement Codes	H331: Toxic if inhaled H311: Toxic in contact with skin H301: Toxic if swallowed H314: Causes severe skin burns and eye damage H317: May cause an allergic skin reaction H410: Very toxic to aquatic life with long lasting effects.
Specific Concentration limits, M-Factors	Skin Corr. 1B; H314: Causes severe skin burns and eye damage C ≥ 0.6% Eye Irrit. 2; H319: Causes serious eye irritation Skin Irrit. 2; H315: Causes skin irritation 0.06% ≤ C < 0.6% Skin Sens. 1;H317: May cause an allergic skin reaction C ≥ 0.0015%

However, a new proposal for the classification and labelling for C(M)IT/MIT according to Regulation (EC) No 1272/2008 (CLP Regulation) is proposed as follows:

Classification according to the CLP Regulation	
Hazard Class and Category Codes	Acute Tox. 3 for acute oral hazard/H301 Acute Tox 2 for acute dermal hazard/H310 Acute Tox 2 for acute inhalation hazard/H330 Skin Corr. 1B; H314 Skin Sens. 1A; H317 Aquatic acute 1; H400 Aquatic Chronic 1; H410
Labelling	
Pictograms	SGH05 SGH06 SGH07 SGH09
Signal Word	Danger Warning
Hazard Statement Codes	H 330: Fatal if inhaled H 310: Fatal in contact with skin H 301: Toxic if swallowed H 314: Causes severe skin burns and eye damage H 317: May cause an allergic skin reaction H410: Very toxic to aquatic life with long lasting effects.
Specific Concentration limits, M-Factors	Skin Corr. 1B; H314: Causes severe skin burns and eye damage C ≥ 0.6% Eye Irrit. 2; H319: Causes serious eye irritation Skin Irrit. 2; H315: Causes skin irritation 0.06% ≤ C < 0.6% Skin Sens. 1A;H317: May cause an allergic skin reaction C ≥ 0.0015% Acute M-factor: 100 Chronic M-factor: 100

The CHL report was sent to ECHA 17 October 2014. The accordance check is pending.

b) Intended use, target species and effectiveness

C(M)IT/MIT is an isothiazolone substance, which is used as a broad spectrum antimicrobial agent for preventing the growth of microorganisms (bacteria, fungi) in manufactured products, other than food stuffs or feeding stuffs, in containers. C(M)IT/MIT biocidal products for product type 6 are used by professionals or industrial users.

C(M)IT/MIT was shown to be an effective antimicrobial agent when tested in standard biocide efficacy tests. Minimum Inhibitory Concentration (MIC) studies were conducted to demonstrate the lowest level of biocide which inhibits the growth of common spoilage microorganisms (bacteria and fungi). Additional studies showed cidal effects of C(M)IT/MIT against mixed pools of bacteria and fungi.
Typical use concentrations for in-can preservation are dependent upon the type of product to be preserved and the time required for preservation.

Application	Target organisms	Use Level (mg/kg active ingredient)
Detergents	Bacteria and Fungi	15
Other in-can preservatives	Fungi	15
Paint and Coatings	Bacteria and Fungi	7.5 to 30
Liquid Detergents	Bacteria and Fungi	6 to 15
Fuel preservation	Bacteria and Fungi	1.5 to 6
Textile, Leathers treatment solutions and Inks	Bacteria and Fungi	6 to 30
Polymer Latex Preservation	Bacteria and Fungi	7.5 to 50
Adhesives and sealants	Bacteria and Fungi	7.5 to 30
Mineral Slurries	Bacteria and Fungi	10 to 30
Electrodeposition Coatings	Bacteria and Fungi	6 to 50
Household (HH) and Industrial and Institutional (I&I) products	Bacteria and Fungi	6 to 25
Functional Fluids[1]	Bacteria and Fungi	6 to 30
Preservation of building products in can/containers before use	Bacteria and Fungi	30
Functional chemicals[2]	Bacteria and Fungi	30
Electronic chemicals	Bacteria and Fungi	30
Agricultural chemicals (fertilizers)	Bacteria and Fungi	30
Diagnostic reagents	Bacteria	15

[1] Includes brake and hydraulic fluids, antifreeze, corrosion inhibitors, fuel additives, spinning fluids, fountain solutions.
[2] Includes starch, cellulosics, polysaccharides paper additives, organic pigments, thickeners, protein solutions, off-shore chemicals.

C(M)IT/MIT has been used as a commercial antimicrobial agent since 1980. During this period of use, situations where resistance to C(M)IT/MIT have occurred. In commercial use, C(M)IT/MIT is often used in combination or rotation with other biocides in various applications, which helps to avoid the potential risk of developing resistance.

Microbial resistance to C(M)IT/MIT has been described in the literature; thus, special attention should be given at the product authorisation stage.

c) Overall conclusion of the evaluation including need for risk management measures

Human health

C(M)IT/MIT induces a local irritation observed by oral, dermal and inhalation routes. No systemic effects were observed in the absence of local effects in any available study, except on body weight gain and food consumption.

According to MOTA and decision from TMII 2007, in the dossier, exposure during formulation of C(M)IT/MIT into product to be preserved (paints, liquid detergents) and the use of these products by a professional or a non professional is considered primary exposure.

Secondary exposure takes place when consumers are exposed to products preserved with C(M)IT/MIT (paints, detergents) by an indirect path, i.e people eating into dishes cleaned with liquid detergents containing C(M)IT/MIT or people wearing clothes cleaned with detergents containing C(M)IT/MIT, people resting in a room painted with paint containing C(M)IT/MIT.

Concerning systemic effects, PPE are presented in the table below and concerning local effects, PPE are presented with other RMMs in the local effects section.

The table below summarises the exposure scenarios assessed.

Summary table: human health scenarios		
Scenario	**Primary or secondary exposure and description of scenario**	**Exposed group**
Formulation of product to be preserved	Primary exposure through use of the biocidal product: - Mixing/loading - Filling, packing - Combined exposure PPE: With gloves (10% penetration) and impermeable coveralls (5% penetration) for loading phase and no PPE for filling phase	Industrials

Paint and Coatings	Primary exposure through use of treated paint: Paint sprayer application and brush and roller application - Mixing/loading - Paint application - Cleaning equipment - Combined exposure PPE: none Secondary exposure to treated paint: - Adult and child staying in a painted room - Child in contact with painted surface - Child ingesting paint chips - Combined exposure	Professionals and non professional General public
Liquid Detergents	Primary exposure through use of treated detergents: Hand washed laundry Pre-trearment of clothes (spot remover) Hand dishwashing - Mixing/loading - Product application - Combined exposure PPE: none Secondary exposure to treated detergents: Contact from wearing clothes Uptake of residues remaining on eating utensils, dishes and surfaces cleaned with treated detergent (contamination of food)	Professionals and non professional General public
Fuel preservation	Primary exposure through use of treated fuel preservation: Exposure via repeated contact with treatead fuel (ex: aircraft tank or car tank) PPE: none	Professionals and non professional
Textile, Leathers treatment solutions and Inks, polymer Latex Preservation	Primary exposure through use of products treated with the active substance Exposure via repeated contact with treatead textile fluids, polymer latex PPE: none Secondary exposure to products treated with the active substance Contact from wearing clothes Uptake of residues remaining on food packaging	Professionals and non professional General public

Household (HH) and Industrial and Institutional (I&I) products	Primary exposure through use of treated HH and I&I products: - Mixing/loading - Product application by wipping or moping the surfaces PPE: none Secondary exposure to treated HH and I&I products: Child crawling on surface cleaned with treated detergent	Professionals and non professional General public

Local effects

According to the criteria of the Regulation 1272/2008 C(M)IT/MIT is proposed to be classified as corossive and a skin sensitizer category 1A. The most critical local effect is skin sensitization, with a proposed specific concentration limit (SCL) of maximum 0.0015% (15 ppm).
Manual mixing and loading of C(M)IT/MIT based products and application phases of the different uses except the fuel preservation use, present an unacceptable risk for local effects, because of the foreseen efficacy dose in the products.

However, for professional uses other than manual use of liquid detergents, the risk has been considered acceptable taking into account that appropriate risk mitigation measures are applied during the different phase of use of the products in order to prevent any spillage on skin.

Possible measures (not exhaustive list) are:
- The containers of the products are designed to prevent spillages during pouring,
- Automated systems preventing contacts with the product are used,
- Procedures are implemented to prevent contacts and spillages,
- Chemical-resistant coveralls, gloves, shoes and face-mask are worn,
- Use is restricted to operators informed of the hazards and safe handling of the products.

Labels, SDS and use instructions of the products shall inform the users of the hazards and of the protective measures. Written procedures and protective equipments shall be available at the places where the products are handled.

For liquid detergents, skin exposure to the detergent itself cannot be excluded due to the nature of the task during manual washing of dishes or clothes. In this situation of manual handling, controlling the exposure of operator is difficult due to splashes/spilling occuring during the task. The wearing of PPE will not have the same efficiency as usual. Furthermore this population of operators is not used to handle chemicals and can not be considered as trained workers for this kind of task. Considering the high sensitization potential of the substance the limitation of the concentration of C(M)IT/MIT in the liquid detergent is the most appropriate RMM to avoid skin sensitization of operators. So, concerning professional manual uses of liquid detergents, the concentration of C(M)IT/MIT in the detergent must be reduced below the threshold value of 15 ppm a.i., in order to take into account the sensitizing properties of C(M)IT/MIT.

Concerning non professional uses and secondary exposure consecutively to professional uses, the end-use concentration in the preserved product (paints and coatings, liquid detergents, adhesives and sealants and household products) must be reduced below the

threshold value of 15 ppm a.i., in order to take into account the sensitizing properties of C(M)IT/MIT.

Unlike dermal exposure, no unacceptable risk was identified for the respiratory tract, for any of the scenarios considered.

Systemic effects

Exposure of professionals to C(M)IT/MIT was evaluated for the scenarios summarised in the table above.
The mixing and loading, application and post-application tasks could potentially occur on the same day. Therefore combined exposure was considered for all daily tasks. The critical step is the loading of the product in the system where skin can be exposed to the product, leading to sensitization. No unacceptable risk was identified for all the primary exposure scenarios if wearing of appropriate personal protective equipment (PPE), including impermeable coverall and gloves.

No unacceptable risk has been identified for the non professional users.

No unacceptable risk was identified for the secondary exposure scenarios except for the use of C(M)IT/MIT in liquid detergents for surface cleaning, when considering exposure via food having been in contact with the cleaned surface. However, for this scenario, a worst case was used in the absence of real exposure data. Consequently, the risk is still considered acceptable.

Environment

The table below summarises the exposure scenarios assessed.

Summary table: environment scenarios	
Scenario	**Description of scenario including environmental compartments**
Paint and Coatings	- Formulation of products - paint application - service life of treated article Direct emission to soil, direct emission to surface water Emission to wastewater via sewage treatment plant (STP), surface water, sediment, soil, groundwater.
Liquid Detergents	- Formulation of products - Use of preserved product Emission to wastewater via sewage treatment plant (STP), surface water, sediment, soil, groundwater
Textile, Leathers treatment solutions and Inks	- Formulation of products - Use of preserved product Emission to wastewater via sewage treatment plant (STP), surface water, sediment, soil, groundwater

Pulp and paper processing fluids	- Formulation of products - Use of preserved product Emission to wastewater via sewage treatment plant (STP), surface water, sediment, soil, groundwater
Fuel preservation	- Formulation of products - Use of preserved product Emission to wastewater via sewage treatment plant (STP), surface water, sediment, soil, groundwater
Adhesives and sealants	- Formulation of products - Use of preserved product Emission to wastewater via sewage treatment plant (STP), surface water, sediment, soil, groundwater
Electronic chemicals	- Formulation of products - Use of preserved product Emission to wastewater via sewage treatment plant (STP), surface water, sediment, soil, groundwater
Photographic processing fluids	- Formulation of products - Use of preserved product Emission to wastewater via sewage treatment plant (STP), surface water, sediment, soil, groundwater

No unacceptable risk can be identified for aquatic, sewage treatment plant and terrestrial compartments taking into account the simulation study in the STP showing that only MIT is released at the outlet of the STP, for the formulation stage of the preserved products.

Safe use(s) can be identified for all the environmental compartments for the use phase of the preserved products, except for uses in paints and coatings if direct release to surface water occurs. It shall be noted that, in the performed risks assessment for pulp and paper processing fluids, no unacceptable risks are shown only if the watercourse after the release of the STP has a sufficient flow rate. Communication of this specific risk mitigation measure to the end user will be difficult, therefore other measures should be considered, e.g. by providing further data, for example monitoring data showing that there are no risks for the environment.

Exposure of the environment via the atmosphere is considered to be negligible. The sediment compartment is deemed not relevant considering the low Koc value. In addition secondary poisoning is not assessed due to the low bioaccumulative properties of the substance.

2.2. Exclusion and substitution criteria

2.2.1. Exclusion and substitution criteria

The table below summarises the relevant information with respect to the assessment of exclusion and substitution criteria:

Property		Conclusions
CMR properties	Carcinogenicity (C)	no classification required
	Mutagenicity (M)	no classification required
	Toxic for reproduction (R)	no classification required
Respiratory sensitisation properties	No classification required	
PBT and vPvB properties	Persistent (P) or very Persistent (vP)	not P or vP
	Bioaccumulative (B) or very Bioaccumulative (vB)	not B or vB
	Toxic (T)	T
Endocrine disrupting properties	The active substance is not considered to have endocrine disrupting properties	

Consequently, the following is concluded:

C(M)IT/MIT does not meet the exclusion criteria laid down in Article 5 of Regulation (EU) No 528/2012.

The criterion (f) laid down in Article 10 of Regulation (EU) No 528/2012 should be applied on the active substance as manufactured. For C(M)IT/MIT, stabilizer salts and solvents present in the active substance as manufactured are intentionally added. In that case, they can not be considered either as non-active isomers or as impurity. In consequence, in the active substance as manufactured, the total impurities content is lower than 20% and there is no non-active isomer. C(M)IT/MIT does not meet the conditions of the criteria (f) laid down in Article 10 of Regulation (EU) No 528/2012, and is therefore not considered as a candidate for substitution.

C(M)IT/MIT is proposed to be classified as a skin sensitizer category 1A. This critical effect can be managed with very restrictive risk mitigation measures to avoid any skin contact during use of biocidal products by professionals and by limiting the concentration of C(M)IT/MIT in treated articles used by professionals and non professional below the threshold value set for sensitizing properties, when skin contact cannot be avoided by other measures. With the application of these conditions, it can be considered that criterion (e) of Article 10(1) of the Biocidal Products Regulation is not fulfilled.

The exclusion and substitution criteria were assessed in line with the "Note on the principles for taking decisions on the approval of active substances under the BPR"[3] and in line with "Further guidance on the application of the substitution criteria set out under article 10(1) of the BPR"[4] agreed at the 54th and 58th meeting respectively, of the representatives of Member States Competent Authorities for the implementation of Regulation 528/2012 concerning the making available on the market and use of biocidal products. This implies that the assessment of the exclusion criteria is based on Article 5(1) and the assessment of substitution criteria is based on Article 10(1)(a, b, d, e and f).

2.2.2. POP criteria

C(M)IT/MIT does not fulfil criteria for being a persistant organic pollutant (POP) and does not have potential for long-range transboundary atmospheric transport.

[3] See document: Note on the principles for taking decisions on the approval of active substances under the BPR (available from https://circabc.europa.eu/d/a/workspace/SpacesStore/c41b4ad4-356c-4852-9512-62e72cc919df/CA-March14-Doc.4.1%20-%20Final%20-%20Principles%20for%20substance%20approval.doc)
[4] See document: Further guidance on the application of the substitution criteria set out under article 10(1) of the BPR (available from https://circabc.europa.eu/d/a/workspace/SpacesStore/dbac71e3-cd70-4ed7-bd40-fc1cb92cfe1c/CA-Nov14-Doc.4.4%20-%20Final%20-%20Further%20guidance%20on%20Art10(1).doc)

2.3. BPC opinion on the application for approval of the active substance C(M)IT/MIT in product type 6

In view of the conclusions of the evaluation, it is proposed that C(M)IT/MIT shall be approved and be included in the Union list of approved active substances, subject to the following specific conditions:

1. Specification: minimum purity of the active substance C(M)IT/MIT (3:1) evaluated: the active substance is manufactured as a technical concentrate (TK) with different solvents and stabilizers. The theoretical (calculated) dry weight specification: minimum purity of C(M)IT/MIT (3:1): 579 g/kg.
2. The product assessment shall pay particular attention to the exposures, the risks and the efficacy linked to any uses covered by an application for authorisation, but not addressed in the Union level risk assessment of the active substance.
3. For industrial and professional users, safe operational procedures, appropriate organisational and technical risk mitigation measures shall be established. Where exposure cannot be reduced to an acceptable level by other means, products shall be used with appropriate personal protective equipment.
4. For non-professional users, the concentration of C(M)IT/MIT in treated articles shall not exceed the threshold value set for sensitizing properties.
5. For professional users, the concentration of C(M)IT/MIT in liquid detergents shall not exceed the threshold value set for sensitizing properties unless exposure can be avoided by other means than PPE. However, for other treated articles, this provision shall also apply if risk mitigation measures including wearing of PPE are not sufficient to avoid exposure during the use of the treated articles.
6. Biocidal products containing C(M)IT/MIT shall not be used to preserve pulp and paper processing fluids, unless it can be demonstrated at product authorisation that risks to the environment can be reduced to an acceptable level.
7. Where a treated article has been treated with or intentionally incorporates one or more biocidal products containing C(M)IT/MIT, and where necessary due to the possibility of skin contact as well as the release of C(M)IT/MIT under normal conditions of use of the article, the person responsible for placing the article on the market shall ensure that the label provides information on the risk of skin sensitisation, as well as the information referred to in the second subparagraph of Article 58(3) of Regulation (EU) No 528/2012.

The active substance does not fulfil the criteria according to Article 28(2)(a) to enable inclusion in Annex I of Regulation (EU) 528/2012.

2.4. Elements to be taken into account when authorising products

1. Some situations of resistance with C(M)IT/MIT have been described in the literature and therefore before authorizing products, Member States should pay attention to possible occurrence of resistance.
2. For biocidal products that trigger classification as skin sensitisers the Member States' Competent Authorities note for guidance (CA-Sept13-Doc.6.2.a – Final.Rev1) should be used to decide whether they could be authorised for non-professional uses.
3. A refined dietary risk assessment is required at product authorisation for the preservation of dishwashing detergents.
4. An unacceptable risk for the environment is identified following the use of preserved paints and coatings resulting in direct release of C(M)IT/MIT to surface water applying a tier 1 assessment. A refined assessment will need to be carried out at product authorisation.

5. For treated articles intended to be used as food contact materials the EFSA Scientific Opinion on the safety evaluation of the substance, as a biocide for processing coatings and paper and boards (EFSA Journal 2010;8(3):1541) should be considered.

2.5. Requirement for further information

Sufficient data have been provided to verify the conclusions on the active substance, permitting the proposal for the approval of C(M)IT/MIT. However, the following data have to be submitted to the Competent Authority (FR) no later than six months before the date of approval of the active substance:

1. Some sources could not be validated. Therefore further data will need to be submitted as specified in the confidential annex of the evaluation.

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