SURROUND® WP CROP PROTECTANT

DOCUMENT M-CP, Section 2

PHYSICAL AND CHEMICAL PROPERTIES OF THE PLANT PROTECTION PRODUCT

Version history[1]

Date	Data points containing amendments or additions and brief description	Document identifier and version number
February 2018	Data already evaluated in presented in grey.	M-CP S2 V1
September 2018	Modifications are highlighted in yellow	M-CP S2 V2

[1] It is suggested that applicants adopt a similar approach to showing revisions and version history as outlined in SANCO/10180/2013 Chapter 4 How to revise an Assessment Report

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CP 2 PHYSICAL AND CHEMICAL PROPERTIES OF THE PLANT PROTECTION PRODUCT

All tests provided herewith have been performed in GLP-certified laboratories. Test results that were included in the dossier submitted for initial inclusion are presented in grey. All new data is presented in black.

The technical properties of Surround® WP Crop Protectant, containing 95% kaolin active ingredient, indicate that no particular problems are to be expected when it is used according to recommended use instructions. It is a wettable powder and is not corrosive, explosive, oxidizing or flammable. Storage under normal warehouse conditions in the original packaging is recommended – experience with similar products indicates a minimum shelf life of 3 years.

Treatment dilution: from 10 kg/ 1000 L to 50 kg/1000 L depending on the crop. Do not spray at concentration > 50 g/L

Test or study & Data point	Guideline and method	Test material purity and specification	Findings	GLP Y/N	Reference
CP 2.1 Appearance					
Appearance	Visual inspection	SURROUND® WP CROP PROTECTANT Lot n° AL060727	White powder No odour	Y	Norris D, 2006 Report number DNA0080
	Visual inspection	SURROUND® WP CROP PROTECTANT batch n°AL101025	White powder	Y	Miller R, 2012
CP 2.2 Explosive and oxidising properties					

Test or study & Data point	Guideline and method	Test material purity and specification	Findings	GLP Y/N	Reference
Explosive properties	EEC A14	SURROUND® WP CROP PROTECTANT	SURROUND® WP CROP PROTECTANT contains 95% kaolin powder. Kaolin powder is inert and therefore not explosive	N	Bosc-Guillosson L Report number SWP002
Oxidizing properties	EEC A17	SURROUND® WP CROP PROTECTANT	SURROUND® WP CROP PROTECTANT contains 95% kaolin powder. Kaolin powder is inert and therefore not oxidizing	N	Bosc-Guillosson L Report number SWP004
Explosive properties	Appendix 6 UN RTDG MTC	SURROUND® WP CROP PROTECTANT	SURROUND® WP CROP PROTECTANT, containing 950 g/kg of calcined aluminium silicate (calcined kaolin) is a non-explosive compound. As such it will not represent a risk for explosion.	N	Guillosson 2019 Report n° TKIKAO-2019-7
Oxidizing properties	Appendix 6 UN RTDG MTC	SURROUND® WP CROP PROTECTANT	SURROUND® WP CROP PROTECTANT is a non-oxidising compound. As such it will not represent a risk for enhancing fire propagation.	N	Guillosson 2019 Report n° TKIKAO-2019-8
CP 2.3 Flammability and self-heating					
Flammability	Not available	SURROUND® WP CROP PROTECTANT	SURROUND® WP CROP PROTECTANT contains 95% kaolin powder. Kaolin powder is inert and has no flammability properties	N	SURROUND® WP CROP PROTECTANT MSDS
Self-Heating	Not available	SURROUND® WP CROP PROTECTANT	SURROUND® WP CROP PROTECTANT contains 95% kaolin powder. Kaolin powder is inert and has no auto-flammability properties	N	SURROUND® WP CROP PROTECTANT MSDS
Flammability	Appendix 6 UN RTDG MTC	SURROUND® WP CROP PROTECTANT	SURROUND® WP CROP PROTECTANT is not a flammable solid. As such it will not represent a risk of ignition by brief contact with an ignition source.	N	Guillosson 2019 Report n° TKIKAO-2019-5

Test or study & Data point	Guideline and method	Test material purity and specification	Findings	GLP Y/N	Reference
Self-Heating	Appendix 6 UN RTDG MTC	SURROUND® WP CROP PROTECTANT	SURROUND® WP CROP PROTECTANT is not a self-heating substance. As such calcined aluminium silicate (calcined kaolin), which represents 95% of the formulated product, is not liable to self-heat by reaction with air, with or without energy supply.	N	Guillosson 2019 Report n° TKIKAO-2019-6
CP 2.4 Acidity/alkalinity and pH value					
Acidity/alkalinity			Not applicable. The pH of product is between 4 and 10 and therefore acidity/alkalinity testing is not required..		
pH of a 1% dilution, emulsion or suspension	OCSPP Guideline 830.7000 CIPAC MT 75	SURROUND® WP CROP PROTECTANT batch n°AL101025	pH of a 1% dilution, emulsion or dispersion = 5.35	Y	Miller R, 2012 Report number ARC-EX-848-012-P-1
CP 2.5 Viscosity and surface tension					
Viscosity			Not applicable, product is not a liquid preparation or a liquid preparation for ULV use		
Surface tension			Not applicable, product is not a liquid preparation.		
CP 2.6 Relative density and bulk density					
Relative density			Not applicable, product is not a liquid preparation		

Test or study & Data point	Guideline and method	Test material purity and specification	Findings	GLP Y/N	Reference
Bulk density	OCSPP Guideline 830.7300 CIPAC Method MT 33	SURROUND® WP CROP PROTECTANT batch n°AL101025	The packed bulk density of kaolin is 0.32 g/cm^3.	Y	Miller R, 2012 Report number ARC-EX-848-012-P-1
CP 2.7 Storage Stability and shelf-life: effects of temperature on technical characteristics of the plant protection product					
Storage Stability after 14 days at 54ºC	CIPAC MT 46	SURROUND® WP CROP PROTECTANT Lot n° AL060727	Before storage White powder No odour Suspensibility: 62.16% at 3% suspension 84.83% at 6% suspension Wet sieve test: mean 0.215% Wettability: 3 seconds Persistent foaming (mean): Initial 5 ml 10 sec 5 ml 1 min 5 ml 3 min 4 ml 12 min 4 ml	After storage White powder No odour Suspensibility: 66.02% at 3% suspension 88.65% at 6% suspension Wet sieve test: mean 0.325% Wettability: 2 seconds Persistent foaming: Initial 5 ml 10 sec 5 ml 1 min 5 ml 3 min 4 ml 12 min 4 ml	Y	Norris D, 2006 Report number DNA0080

<table>
<tr><th>Test or study & Data point</th><th>Guideline and method</th><th>Test material purity and specification</th><th>Findings</th><th>GLP Y/N</th><th>Reference</th></tr>
<tr><td>Storage Stability after 14 days at 54ºC</td><td>CIPAC MT 46</td><td>SURROUND® WP CROP PROTECTANT batch n°AL161221</td><td>Suspensibility:
9.33% at 1% suspension
90.25% at 5% suspension
Wet sieve test: mean 0.100%</td><td>Y</td><td>Norris D, 2017
Report number DNA3876</td></tr>
<tr><td>Effect of low temperatures on stability</td><td></td><td></td><td>Not applicable. Product is not a liquid formulation.</td><td></td><td></td></tr>
<tr><td>Shelf life</td><td>GIFAP Monograph 17</td><td>SURROUND® WP CROP PROTECTANT batch n°AL101025</td><td>
<table>
<tr><th></th><th>Initial</th><th>24 months</th></tr>
<tr><td>Appearance</td><td>White powder</td><td>White powder</td></tr>
<tr><td>Odour</td><td>No odour</td><td>No odour</td></tr>
<tr><td>pH</td><td>5.35</td><td>5.64</td></tr>
<tr><td>Wettability (static)</td><td>12 sec</td><td>12 sec</td></tr>
<tr><td>Particle size distribution</td><td>0.765-8.48 µm</td><td>0.88-10.6 µm</td></tr>
<tr><td>Insolubles</td><td>99.52%</td><td>99.45%</td></tr>
<tr><td>Suspensibility (High concentration at 50 g/L = 5 kg fp/hL)</td><td>82.8 %</td><td>78.7 %</td></tr>
<tr><td>Suspensibility (High concentration at 20 g/L = 2 kg fp/hL)</td><td>39.9 %</td><td>46.3 %</td></tr>
<tr><td>Non-dispersible residue (Wet sieve test CIPAC MT 59.3)</td><td>0.006%</td><td>0.164%</td></tr>
<tr><td>Persistent foaming (2 g in 150 ml = 1.3 kg fp/hL)</td><td>8 ml</td><td>4 ml</td></tr>
</table>
</td><td>Y</td><td>Miller R, 2012
Report number ARC-EX-848-012-P-1</td></tr>
</table>

<table>
<tr><th>Test or study & Data point</th><th>Guideline and method</th><th>Test material purity and specification</th><th>Findings</th><th>GLP Y/N</th><th>Reference</th></tr>
<tr><td></td><td></td><td></td><td>All containers (white paper bags) remained in good conditions (no discoloration or loss of integrity) throughout the entire study.
SURROUND WP CROP PROTECTANT will not spontaneously suspend in water and agitation of the spraying tank is required throughout spraying.</td><td></td><td></td></tr>
<tr><td>Shelf life</td><td>GIFAP Monograph 17</td><td>SURROUND® WP CROP PROTECTANT batch n°AL161221</td><td><table><tr><th></th><th>Initial</th><th>24 months</th></tr><tr><td>Suspensibility
1% suspension
5% suspension</td><td>
9.33 %
90.25 %</td><td>
16.78 %
90.32 %</td></tr><tr><td>Wet sieve test</td><td>0.100%</td><td>0.109%</td></tr></table>SURROUND WP CROP PROTECTANT will not spontaneously suspend in water and agitation of the spraying tank is required throughout spraying.</td><td>Y</td><td>Norris D, 2019
Report number DNA3877</td></tr>
<tr><td colspan="6">CP 2.8 Technical characteristics of the plant protection product</td></tr>
<tr><td rowspan="2">CP 2.8.1 Wettability</td><td>CIPAC MT 53.3</td><td>SURROUND® WP CROP PROTECTANT Lot n° AL060727</td><td>3 seconds</td><td>Y</td><td>Norris D, 2006
Report number DNA0080</td></tr>
<tr><td>CIPAC MT 53.3</td><td>SURROUND® WP CROP PROTECTANT batch n°AL101025</td><td>12 seconds (with swirling)
12 seconds (without swirling)</td><td>Y</td><td>Miller R, 2012
Report number ARC-EX-848-012-P-1</td></tr>
</table>

Test or study & Data point	Guideline and method	Test material purity and specification	Findings	GLP Y/N	Reference
CP 2.8.2 Persistence of foaming	CIPAC MT 47.2	SURROUND® WP CROP PROTECTANT	Initial 5 ml 10 sec 5 ml 1 min 5 ml 3 min 3.5 ml 12 min 3.5 ml	Y	Norris D, 2006 Report number DNA0080
CP 2.8.3 Suspensibility, spontaneity and dispersion stability					
Suspensibility	CIPAC MT 15.1	SURROUND® WP CROP PROTECTANT	62.16% at 3% suspension (= 7.5g in 250 ml = 3 kg fp/hL, low concentration) 84.83% (±2.2%) at 6% suspension (= 15.0g in 250 ml = 6 kg fp/hL, high concentration)	Y	Norris D, 2006 Report number DNA0080
Suspensibility	CIPAC MT 15.1	SURROUND® WP CROP PROTECTANT batch n°AL101025	39.9 % at 20 g/L(= 2 kg fp/hL, low concentration) 82.8 % at 50 g/L (= 5 kg fp/hL, high concentration)	Y	Miller R, 2012 Report number ARC-EX-848-012-P-1
Suspensibility	CIPAC MT 184	SURROUND® WP CROP PROTECTANT batch n°AL161221	15.21% at 1% suspension (= 10 g in 1000 ml = 1 kg fp/hL, low concentration) 90.10% at 5% suspension (= 50.0g in 1000 ml = 5 kg fp/hL, high concentration)	Y	Norris D, 2017 Report number DNA3876
Spontaneity of dispersion	Not available	SURROUND® WP CROP PROTECTANT	SURROUND® WP CROP PROTECTANT will spontaneously disperse in water due both to the nature of kaolin and the presence of adjuvants	N	None available

<table>
<tr><th>Test or study & Data point</th><th>Guideline and method</th><th>Test material purity and specification</th><th>Findings</th><th>GLP Y/N</th><th>Reference</th></tr>
<tr><td>Dispersion stability</td><td></td><td></td><td>Not applicable. The product is not an aqueous suspo-emulsion (SE), oil-based suspension concentrates (OD) or emulsifiable granules (EG)</td><td></td><td></td></tr>
<tr><td>CP 2.8.4 Degree of dissolution and dilution stability</td><td></td><td></td><td>Not applicable. The product is not a soluble powder.</td><td></td><td></td></tr>
<tr><td rowspan="2">CP 2.8.5.1 Particle size distribution</td><td>Not available</td><td>SURROUND® WP CROP PROTECTANT batch n°AL101025</td><td>
<table>
<tr><th></th><th>Initial</th><th>24 months</th></tr>
<tr><td>10 percentile</td><td>0.765 µm</td><td>0.885 µm</td></tr>
<tr><td>20 percentile</td><td>1.183 µm</td><td>1.374 µm</td></tr>
<tr><td>30 percentile</td><td>1.588 µm</td><td>1.786 µm</td></tr>
<tr><td>40 percentile</td><td>1.977 µm</td><td>2.179 µm</td></tr>
<tr><td>50 percentile</td><td>2.396 µm</td><td>2.611 µm</td></tr>
<tr><td>60 percentile</td><td>2.902 µm</td><td>3.13 µm</td></tr>
<tr><td>70 percentile</td><td>3.56 µm</td><td>3.85 µm</td></tr>
<tr><td>80 percentile</td><td>4.53 µm</td><td>4.96 µm</td></tr>
<tr><td>90 percentile</td><td>6.34 µm</td><td>7.34 µm</td></tr>
<tr><td>95 percentile</td><td>8.48 µm</td><td>10.6 µm</td></tr>
</table>
</td><td>Y</td><td>Miller R, 2012
Report number ARC-EX-848-012-P-1</td></tr>
<tr><td>CIPAC MT 185</td><td>SURROUND® WP CROP PROTECTANT batch n°AL161221</td><td>Mean sieve residue of 0.1089% on a 75 µm sieve.
> 99.89 % of particles are < 75 µm in size.</td><td></td><td>Norris D, 2019
Report number DNA3877</td></tr>
</table>

Test or study & Data point	Guideline and method	Test material purity and specification	Findings	GLP Y/N	Reference
CP 2.8.5.2 Dust content			Not applicable. The product is not a granule.		
CP 2.8.5.3 Attrition			Not applicable. The product is not a granule.		
CP 2.8.5.4 Hardness and integrity			Not applicable. The product is not a tablet.		
CP 2.8.6 Emulsifiability, re-emulsifiability, emulsion stability			Not applicable. The product does not form an emulsion.		
CP 2.8.7 Flowability, pourability and dustability			Not applicable, product is not a granular preparation, a suspension or a dustable powder.		
CP 2.9 Physical and chemical compatibility with other products including other			Do not tank-mix with anti-foaming agents, other white mineral particulates and summer oils.		

Test or study & Data point	Guideline and method	Test material purity and specification	Findings	GLP Y/N	Reference
plant protection products with which its use is to be authorised					
CP 2.10 Adherence and distribution to seeds			Not applicable, product is not used for seed treatment.		
CP 2.11 Other studies			None		