

European Commission



**Draft Renewal Assessment Report prepared according to the Commission
Regulation (EU) N° 1107/2009**

INDOXACARB

Volume 3 – B.2 (AS)

Rapporteur Member State: France
Co-Rapporteur Member State: Spain

Version History

When	What
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B.2. PHYSICAL AND CHEMICAL PROPERTIES OF THE ACTIVE SUBSTANCE

For clarity, the following development codes are used in the renewal dossier for indoxacarb:

DPX-KN128: The pure insecticidally active isomer (S-isomer) with ISO name indoxacarb.

DPX-MP062: is the development code for the technical material containing approximately 75% DPX-KN128 and 25% IN-KN127 (insecticidally inactive enantiomer (R-isomer))

DPX-JW062: is the development code for a racemic mixture of DPX-KN128 and IN-KN127

Indoxacarb (DPX-KN128) technical material is the basis for this active substance renewal dossier whereas DPX-MP062 was the technical material in Indoxacarb monograph and review report (Indoxacarb SANCO/1408/2001 Rev.3) from 2005.

A few tests were performed with DPX-JW062 and DPX-MP062 and are reported (data should be regarded as supplementary).

Test or Study Annex Point	Guideline and method	Test material purity and specification	Used methods / Results	Comments (Acceptable / Non acceptable)	GLP	Reference
B.2.1. MELTING POINT AND BOILING POINT						
Melting, freezing or solidification point B.2.1/01	EEC A.1. OECD 102 (capillary method) OPPTS Series 830.7200	DPX-KN128-31 (99.7%)	Melting point: 88.1°C	Acceptable. The melting point study AMR 4141-96, originally submitted under EU Rev8 Point IIA 2.1.1 and conducted with test material indoxacarb (DPX-KN128) PAI (pure active ingredient), was conducted under guideline EU 94/37/EC (1994), U.S. EPA 830.7200 (1996). A review of this study indicates that it fully meets the current guideline and is relied upon	Y	(Study summarised in Indoxacarb DAR, V3, B2, 2000) AMR 4141 96
	EEC A.1. OECD 102 (capillary method) OPPTS Series 830.7200	DPX-JW062-33 (98.6%)	Melting point: 140-141 °C Study was originally submitted in the monograph 2000 V3, B2, 2000 and was conducted with test material DPX-MP062 technical	This data should be regarded as supplementary.	Y	(Study summarised in Indoxacarb DAR, V3, B2, 2000) AMR 3032-94 and DuPont-7557,

Test or Study Annex Point	Guideline and method	Test material purity and specification	Used methods / Results	Comments (Acceptable / Non acceptable)	GLP	Reference
						Revision No. 1
Boiling point B.2.1/02	EEC A.1. OECD 102 (capillary method) OPPTS Series 830.7200	DPX-JW062-33 (98.6%)	The boiling temperature of Indoxacarb technical could not be determined as the test substance decomposes before boiling.	Data requirement (see B.2.1/03 below) Test was conducted with the test material DPX MP062 technical. For the better traceability of the active ingredient tests (decomposition temperature and the boiling point) should be performed with the technical material DPX-KN128.	Y	-
	EEC A.2 OECD 103 OPPTS Series 830.7220	DPX-KN128-424 Batch OCT13WY003 99.06%	The boiling point of the test item was not determined as the test item underwent decomposition prior to boiling, which was indicated by color change from yellow to black at 295°C.	Acceptable		DuPont-4495 Smita D. Revankar M. Sc.
Decomposition Sublimation temperature B.2.1/03	EEC A.1 OECD 102	DPX-MP062-106 (98.6%)	The active substance starts to decompose at about 208 ± 7.0°C. The decomposition temperature study, DuPont-7557, Revision No. 1, was originally submitted in the monograph 2000 V3, B2, 2000 and was conducted with test material DPX-MP062 technical	Decomposition study was conducted with the test material DPX-MP062 technical. For the better traceability of the active ingredient tests (decomposition temperature and the boiling point) should be performed with the technical material DPX-KN128.	Y	(Study summarised in Indoxacarb DAR, V3, B2, 2000) DuPont-7557 Revision No. 1
	OECD 103	DPX-KN128-424 Batch OCT13WY003 99.06%	Decomposition of the test item occurred starting at 235-255°C by change in the color from reddish brown to brown and turns completely black at 295°C. During the experimental period the barometric pressure was 104.3 kPa.	Acceptable Study submitted to the EU for the first time in this submission	Y	DuPont-4495 Smita D. Revankar M. Sc.
B.2.2. VAPOUR PRESSURE, VOLATILITY						
Vapour pressure B.2.2/01	OECD 104 EEC A.4. OPPTS Series 830.7950	DPX-KN128-31 (99.7%)	at 20 °C: 9.8 x 10 ⁻⁹ Pa at 25 °C: 1.9 x 10 ⁻¹⁰ Pa	Acceptable The vapour pressure, volatility study was originally submitted under EU Rev8 Point IIA 2.3.1 and conducted with test material indoxacarb DPX-KN128,	Y	(Study summarised in Indoxacarb DAR, V3, B2, 2000) Study AMR 4169-96,
	OECD 104 EEC A.4.	DPX-JW 062 (98.6%)	at 20 °C: 1.3 x 10 ⁻¹⁰ Pa at 25 °C: 4.0 x 10 ⁻¹⁰ Pa	This data should be regarded as supplementary. Study summarised in Indoxacarb DAR, V3, B2, 2000	Y	(Study summarised in Indoxacarb DAR,

Test or Study Annex Point	Guideline and method	Test material purity and specification	Used methods / Results	Comments (Acceptable / Non acceptable)	GLP	Reference
	OPPTS Series 830.7950					V3, B2, 2000) Study AMR 4169-96,
Volatility (Henry's Law constant) B.2.2/02	Calculated using solubility and vapour pressure at 20°C	DPX-KN128-31 (99.7%)	Henry constant calculated for DPX-KN128 using solubility and vapour pressure was $< 6 \times 10^{-5} \text{ Pa.m}^3 \text{ mol}^{-1}$ at 25 °C	Acceptable =>Low volatilization from water to air	Y	(Study summarised in Indoxacarb DAR, V3, B2, 2000) AMR 4169-96
B.2.3. APPEARANCE (PHYSICAL STATE, COLOUR)						
Physical state and colour B.2.3/01	OPPTS Series 830.6302 Visual assessment ATSM D1535-89	DPX-KN128-146 (95%)	Technical grade DPX-KN128-146: Pale green solid 5GY/4/4 (16.4°C), Odour: Toluene	Acceptable Study submitted to the EU for the first time in this submission	Y	DuPont-14115
		DPX-KN128 (99.7%)	Technical grade DPX-KN128: white powdered solid at appr. 25 °C	Study summarised in Indoxacarb DAR, V3, B2, 2000	Y	AMR 4426-97
	OPPTS Series 830.6302 Visual assessment	DPX-JW062-119 (98.6%)	Appearance: white powdered solid with a no discernible odour at 25°C	Data should be regarded as supplementary. Study summarised in Indoxacarb DAR, V3, B2, 2000	Y	(Study summarised in Indoxacarb DAR, V3, B2, 2000) AMR 3032-94
	OPPTS Series 830.6302 Visual assessment	DPX-MP062-155 (99%)	Appearance: white powdered solid with a sharp/biting odour at 25°C	Data should be regarded as supplementary. Study summarised in Indoxacarb DAR, V3, B2, 2000	Y	(Study summarised in Indoxacarb DAR, V3, B2, 2000) AMR 4426-97
B.2.4. SPECTRA (UV/VIS, IR, NMR, MS), MOLAR EXTINCTION AT RELEVANT WAVELENGTHS, OPTICAL PURITY						
Ultraviolet/visible (UV/VIS) B.2.4/01	OECD 101 OPPTS	DPX-KN128-089 (99.9%, PAI)	UV Absorption of indoxacarb were recorded on a calibrated UV/VIS spectrophotometer at 20°C in acidic,	Acceptable. Study submitted to the EU for the first time in this submission	Y	DuPont-36503

Test or Study Annex Point	Guideline and method	Test material purity and specification	Used methods / Results	Comments (Acceptable / Non acceptable)	GLP	Reference																																
	Series 830.7050		<p>basic, and neutral methanol solutions (due to the low water solubility of the test substance):</p> <p>- The pH <2 samples showed absorbance maxima (λmax) at approximately 203, 230, 285, and 311 nm.</p> <p>-The pH 7 and pH >10 samples showed absorbance maxima (λ max) at 235, 285, and approximately 311 nm. The blank versus blank scans showed no absorbance readings varying more than ±0.05 from the nominal zero value.</p> <p>pH: 0.91</p> <table><tr><td><u>Wavelength</u></td><td><u>ε (L mol⁻¹ cm⁻¹)</u></td></tr><tr><td>203 nm</td><td>18075</td></tr><tr><td>230 nm</td><td>14342</td></tr><tr><td>285 nm</td><td>17871</td></tr><tr><td>290 nm</td><td>16507</td></tr><tr><td>311 nm</td><td>21106</td></tr></table> <p>pH: 7.05</p> <table><tr><td><u>Wavelength</u></td><td><u>ε (L mol⁻¹ cm⁻¹)</u></td></tr><tr><td>235 nm</td><td>9272</td></tr><tr><td>285 nm</td><td>16345</td></tr><tr><td>290 nm</td><td>15290</td></tr><tr><td>311 nm</td><td>20502</td></tr></table> <p>pH:12.67</p> <table><tr><td><u>Wavelength</u></td><td><u>ε (L mol⁻¹ cm⁻¹)</u></td></tr><tr><td>235 nm</td><td>17682</td></tr><tr><td>285 nm</td><td>16437</td></tr><tr><td>290 nm</td><td>15653</td></tr><tr><td>311 nm</td><td>20098</td></tr></table> <p>See Appendix 1: Erreur ! Source du renvoi introuvable., Erreur ! Source du renvoi introuvable., and Erreur ! Source du renvoi introuvable.</p>	<u>Wavelength</u>	<u>ε (L mol⁻¹ cm⁻¹)</u>	203 nm	18075	230 nm	14342	285 nm	17871	290 nm	16507	311 nm	21106	<u>Wavelength</u>	<u>ε (L mol⁻¹ cm⁻¹)</u>	235 nm	9272	285 nm	16345	290 nm	15290	311 nm	20502	<u>Wavelength</u>	<u>ε (L mol⁻¹ cm⁻¹)</u>	235 nm	17682	285 nm	16437	290 nm	15653	311 nm	20098			
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	U.S. EPA 830.7050 OECD 101	DPX-MP062-155 (99% purity), IN-JT333-17 (97.5% purity),	<p>UV spectra were determined at pH levels of about 1.7, 7 and pH 11(between 10.3 and 11.8). Because the UV spectra were only very limited influenced by pH effect, only results are reported for the neutral solutions</p> <p>DPX-MP062-155: 203 nm: log ε=4.48; 228nm: log ε=4.31; 275 nm log ε =</p>	<p>Data should be regarded as supplementary.</p> <p>εεε</p>	Y	Study summarised in addendum to the monograph B2, 2001 DuPont-2929																																

Test or Study Annex Point	Guideline and method	Test material purity and specification	Used methods / Results	Comments (Acceptable / Non acceptable)	GLP	Reference																																		
		IN-KG433-2 (98% purity), IN-KT413-3 (97% purity)	4.28; 291 nm: log ε = 4.36. IN-JT333-17 metabolite: 202 nm: log ε=4.48; 278nm: log ε=4.30; 291 nm log ε = 4.27; 314 nm: log ε = 4.41 IN-KG433-2 metabolite: 203 nm: log ε=4.52; 237nm: log ε=4.38; 289 nm log ε = 4.42; 307 nm: log ε = 4.42 and IN-KT413-3 metabolite : 203 nm: log ε =4.65; 228nm: log ε =4.36; 275 nm log ε = 4.17; 291 nm: log ε = 3.84																																					
Infrared (IR) B.2.4/02	OECD 101 OPPTS Series 830.7050	DPX-KN128-089 (99.9%, PAI)	<div>The infrared spectrum of indoxacarb (DPX-KN128) shows absorption bands consistent with the structure.</div> <table><tr><th>Functional Group</th><th>Bond</th><th>Range (cm-1)</th><th>Absorption (cm-1)</th></tr><tr><td rowspan="2">Sulfone</td><td>SO2</td><td>SO2</td><td>1165.6</td></tr><tr><td>SO2</td><td>1360-1290</td><td>1339.2</td></tr><tr><td>CF3</td><td>C-F</td><td>1400-1100</td><td>1069.8 1039.8</td></tr><tr><td>Carbonyl</td><td>C=O</td><td>1870-1650</td><td>1700.9</td></tr><tr><td rowspan="2">Ester</td><td>C-O-C</td><td>C-O-C</td><td>1259.2</td></tr><tr><td>C=O</td><td>1765-1720</td><td>1743.4</td></tr><tr><td>Ether</td><td>C-O-C</td><td>1280-1220</td><td>1259.2</td></tr><tr><td>Aliphatic</td><td>-CH2-</td><td>1470-1450</td><td>1441.1</td></tr></table>	Functional Group	Bond	Range (cm-1)	Absorption (cm-1)	Sulfone	SO2	SO2	1165.6	SO2	1360-1290	1339.2	CF3	C-F	1400-1100	1069.8 1039.8	Carbonyl	C=O	1870-1650	1700.9	Ester	C-O-C	C-O-C	1259.2	C=O	1765-1720	1743.4	Ether	C-O-C	1280-1220	1259.2	Aliphatic	-CH2-	1470-1450	1441.1	Acceptable Study submitted to the EU for the first time in this submission	Y	DuPont-36503
Functional Group	Bond	Range (cm-1)	Absorption (cm-1)																																					
Sulfone	SO2	SO2	1165.6																																					
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			Aromatic	Ring	1515-1485	1509.5																																		
	U.S. EPA 830.7050 OECD 101	DPX-KN128-31 (99.7%) IN-KN127-3 (99.8%) DPX-MP062-155 (99%), IN-JT333-17 (97.5%), IN-KG433-2 (98%)	The IR spectrum for IN-KN127 showed key bands consistent with the assignment. The IR spectra for DPX-KN128 and IN-KN127 are identical. IR of DPX-JW062 and of metabolites IN-JT333 and IN-KG433 spectrums showed key bands consistent with the assignment. Absorption bands and assignments are given below Appendix 2					Data should be regarded as supplementary.	Y	Study originally submitted under EU DuPont-2929																														
Nuclear magnetic resonance (NMR) B.2.4/03	OECD 101 OPPTS Series 830.7050	DPX-KN128-089 (99.9%, PAI) (Document J)	The NMR confirmed the structure of indoxacarb (DPX-KN128). Chemical shift assignments for ¹ H NMR analysis of indoxacarb (DPX-KN128) <table><tr><th>Proton Label</th><th>PPM/Multiplicity</th><th>Integration (protons)</th></tr><tr><td>(a)</td><td>7.524/ doublet</td><td>1</td></tr><tr><td>(a)</td><td>7.393-7.314/ multiplet</td><td>4</td></tr><tr><td>(a)</td><td>7.222/ doublet of doublets</td><td>2</td></tr><tr><td>(b)</td><td>5.708/ doublet</td><td>1</td></tr><tr><td>(b)</td><td>5.222/ doublet</td><td>1</td></tr><tr><td>(c)</td><td>3.730/ singlet</td><td>3</td></tr><tr><td>(c)</td><td>3.715/ singlet</td><td>3</td></tr><tr><td>(d)</td><td>3.497/ doublet</td><td>1</td></tr><tr><td>(d)</td><td>3.266/ doublet</td><td>1</td></tr></table>					Proton Label	PPM/Multiplicity	Integration (protons)	(a)	7.524/ doublet	1	(a)	7.393-7.314/ multiplet	4	(a)	7.222/ doublet of doublets	2	(b)	5.708/ doublet	1	(b)	5.222/ doublet	1	(c)	3.730/ singlet	3	(c)	3.715/ singlet	3	(d)	3.497/ doublet	1	(d)	3.266/ doublet	1	Acceptable Study submitted to the EU for the first time in this submission	Y	DuPont-36503
	Proton Label	PPM/Multiplicity	Integration (protons)																																					
(a)	7.524/ doublet	1																																						
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(c)	3.715/ singlet	3																																						
(d)	3.497/ doublet	1																																						
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	U.S. EPA 830.7050 OECD 101	DPX-KN128-31 (99.7%) IN-KN127-3 (99.8%) DPX-MP062-155 (99%),	The spectrums of DPX-KN128, IN-KN127, DPX-MP062 and metabolites IN-JT333 and IN-KG433 are consistent with the structures					Data should be regarded as supplementary.	Y	Study originally submitted under EU DuPont-2929																														

Test or Study Annex Point	Guideline and method	Test material purity and specification	Used methods / Results	Comments (Acceptable / Non acceptable)	GLP	Reference
		IN-JT333-17 (97.5%), IN-KG433-2 (98%)				
Mass spectra (MS) B.2.4/04	OECD 101 OPPTS Series 830.7050	DPX-KN128-089 (99.9%, PAI)	The molecular ions at m/z 528/530 detected by positive Q1 scan agreed with the molecular mass of 527.8 of the test substance indoxacarb (DPX-KN128). The fragmentation patterns of the molecular ions detected by LC/MS/MS analysis supported the structure of the test compound indoxacarb (DPX-KN128)	Acceptable Study submitted to the EU for the first time in this submission	Y	DuPont-36503
		DPX-KN128-31 (99.7%) IN-KN127-3 (99.8%) DPX-MP062-155 (99%), IN-JT333-17 (97.5%), IN-KG433-2 (98%),	DPX-KN128: Mass spectrometry utilized desorption chemical ionization (DCI) probe with CH4 reagent gas. The results showed the [M+H] ⁺ ion at m/z 528. IN-KN127: Mass spectrometry utilized desorption chemical ionization (DCI) probe with CH4 reagent gas. The results showed the [M+H] ⁺ ion at m/z 528. DPX-MP062: Mass spectrometry utilized desorption chemical ionization (DCI) probe with CH4 reagent gas. The results showed the [M+H] ⁺ ion at m/z 528. IN-JT333: Mass spectrometry utilized electrospray ionization (ESI). The results showed the [M+H] ⁺ ion at m/z 470. IN-KG433: Mass spectrometry utilized desorption chemical ionization (DCI) probe with CH4 reagent gas. The results showed the [M+H] ⁺ ion at m/z 516.	Data should be regarded as supplementary.	Y	Study originally submitted under EU DuPont-2929
Molar extinction coefficient	OECD 101 OPPTS Series 830.7050	DPX-KN128-089 (99.9%, PAI)	The molar absorption coefficient was calculated for all absorbance maxima of the test substance and the solar cut-off wavelength (290 nm) using the following equation: $\epsilon_l = A_l / (C \times d)$ where: A _l = sample (minus baseline) absorbance at wavelength l ϵ_l = the molar absorption coefficient at wavelength l C = the molar concentration of the test chemical solution d = the solution cell path length (1 cm) pH <2, ϵ_l = 17841 to 18310 L mol ⁻¹ cm ⁻¹ at 203 nm 14334 to 14351 L mol ⁻¹ cm ⁻¹ at 230 nm 17870 to 17872 L mol ⁻¹ cm ⁻¹ at 285 nm 16505 to 16509 L mol ⁻¹ cm ⁻¹ at 290 nm	Acceptable Study submitted to the EU for the first time in this submission	Y	DuPont-36503

Test or Study Annex Point	Guideline and method	Test material purity and specification	Used methods / Results	Comments (Acceptable / Non acceptable)	GLP	Reference
			<p>21103 to 21109 L mol⁻¹cm⁻¹ at 311nm</p> <p>pH 7 ϵl = 9271 to 9273 L mol⁻¹cm⁻¹ at 235 nm 16341 to 16349 L mol⁻¹cm⁻¹ at 285 nm 15287 to 15292 L mol⁻¹cm⁻¹ at 290 nm 20484 to 20519 L mol⁻¹cm⁻¹ at 311 nm</p> <p>pH >10 ϵl = 17678 to 17686 L mol⁻¹cm⁻¹ at 235 nm 16434 to 16440 L mol⁻¹cm⁻¹ at 285 nm 15650 to 15655 L mol⁻¹cm⁻¹ at 290 nm 20094 to 20103 L mol⁻¹cm⁻¹ at 310 nm</p>			
Spectra for impurities B.2.4/05	-	-	<p><u>IN-C0800:</u></p> <p>Samples showed absorbance maxima (λ.max) at 204, 247, and approximately 370 nm.</p> <p>The molecular ion (MH⁺) at m/z 325 detected by positive APCI masse spectrum of CAN solution of IN-C0800 (direct infusion) (MS full scan).</p> <p>The ¹H NMR spectrum involves signals of all proton containing groups present in the structure of IN-C0800-100: Signals resonating at 7.57 ppm (4H, m), and 7.69 ppm (4H, m), eight protons of 1,4-dibenzene ring and 3.68 ppm (8H, q, OCH₂) and 3.68 ppm (12H, t, CH₃). Signal resonating at 6.85 and 3.69 ppm belong to 1,4-dimethoxybenzene and signals at 3.37 and 2.55 ppm are due to the presence of water and non-deuterated solvent.</p> <p><u>IN-06439:</u></p> <p>Samples showed absorbance maxima (λ.max) at 202 and approximately 260 nm.</p> <p>The molecular ion (MH⁺) at m/z 311.1 detected by positive APCI masse spectrum of CAN solution of IN-06439 (direct infusion) (MS full scan).</p> <p>The ¹H NMR spectrum involves signals of all proton containing groups present in the structure of IN-06439.</p> <p><u>IN-R1T94:</u></p> <p>Samples showed absorbance maxima (λ.max) at 202 and approximately 271.5 nm.</p> <p>The ¹H NMR spectrum involves signals of all proton containing groups present in the structure of IN-R1T94: ¹H NMR spectrum consists of signal resonating at 7.13 ppm</p>		Y	<p>DuPont-41789</p> <p>DuPont-45315</p> <p>Dupont-45314</p>

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			<p>(4H, m), 6.61 ppm (4H, m), eight protons of two 1,4-disubstituted benzene rings, 5.46 ppm (1H, d, OH), 5.31 ppm (1H, d, CH), 3.32 ppm (8H,q), 11.1 ppm (12H) twenty protons four N-ethyl groups.</p> <p>The molecular ion (MH⁺) at m/z 309.1 detected by positive APCI mass spectrum of CAN solution of IN-R1T94 (direct infusion) (MS full scan).</p> <p><u>INJ1063:</u></p> <p>Samples showed no absorbance in UV/DAD.</p> <p>The molecular ion (MH⁺) at m/z 456.2 detected by HPLC/MS.</p> <p>Samples showed absorbance maxima (λ_{max}) at 202 and approximately 310 nm.</p>			
B.2.5. SOLUBILITY IN WATER						
Solubility in water B.2.5/01	EEC A.6. (flask method) OECD 105 (flask method) OPPTS Series 830.7840 or 830.7860 CIPAC MT157	DPX-KN128-31 (99.7%, PAI) DPX-JW 062 (98.6%)	<p>For DPX-KN128: 0.2 mg/l at 25 °C</p> <p>For DPX-JW062: 15 mg/l at 25°C</p>	<p>Acceptable</p> <p>The solubility in water study originally submitted under EU Rev8 Point IIA 2.6.</p> <p>Solubility not determined at a pH range because molecule does not dissociate.</p>		(Study summarised in Indoxacarb DAR, V3, B2, 2000) AMR 4141-96
B.2.6. SOLUBILITY IN ORGANIC SOLVENTS						
Solubility in organic solvents B.2.6/01	OECD 105 (flask method) OPPTS Series 830.1000	DPX-KN128-089 (99.9%, PAI)	<p>The solubility of indoxacarb at 20°C in a range of organic solvents was determined using a shake flask method.</p> <p>The solubility in various solvents is reported below:</p>	<p>Acceptable</p> <p>Study submitted to the EU for the first time in this submission</p>	Y	DuPont12940, revision N°1

Test or Study Annex Point	Guideline and method	Test material purity and specification	Used methods / Results	Comments (Acceptable / Non acceptable)	GLP	Reference																	
	830.7840 830.7860 CIPAC MT157 CIPAC 3457		<p><i>Solubility of indoxacarb (DPX-KN128) in various organic solvents at 20 °C</i></p> <table><tr><td rowspan="2">Solvent</td><td colspan="2">Solubility (mg/mL)</td></tr><tr><td>Mean</td><td>Coefficient of variation (%)</td></tr><tr><td>n-Octanol</td><td>11.31</td><td>1.6</td></tr><tr><td>Methanol</td><td>110.9</td><td>Not applicable</td></tr><tr><td>Methanol</td><td>109.9</td><td>2.7</td></tr><tr><td>n-Hexane</td><td>1.307</td><td>4</td></tr></table> <p>In a separate test the solubility of indoxacarb at 20°C in acetone, acetonitrile, ethyl acetate, dichloromethane, dimethylformamide, and o-xylene was determined to be >250 mg/mL (g/L), respectively.</p>	Solvent	Solubility (mg/mL)		Mean	Coefficient of variation (%)	n-Octanol	11.31	1.6	Methanol	110.9	Not applicable	Methanol	109.9	2.7	n-Hexane	1.307	4			
	Solvent	Solubility (mg/mL)																					
Mean		Coefficient of variation (%)																					
n-Octanol	11.31	1.6																					
Methanol	110.9	Not applicable																					
Methanol	109.9	2.7																					
n-Hexane	1.307	4																					
	EEC A.6	DPX-MP 062: 99%	<p>aliphatic hydrocarbon: n-heptane 1.72 g/l at 25 °C aromatic hydrocarbon: o-xylene 117g/l at 25 °C halogenated hydrocarbon: dichloromethane > 250 g/l at 25 °C alcohol: methanol 103 g/l at 25 °C: n-octanol 145 g/l at 25 °C ketone: acetone > 250 g/l at 25 °C ester: ethyl acetate 160 g/l at 25 °C</p> <p>Acetonitril: 139 g/l at 25 °C</p>	Data should be regarded as supplementary.	Y	(Study summarised in Indoxacarb DAR, B2, 2000) AMR 4426-97																	

B.2.7. PARTITION COEFFICIENT N-OCTANOL/WATER

Test or Study Annex Point	Guideline and method	Test material purity and specification	Used methods / Results	Comments (Acceptable / Non acceptable)	GLP	Reference
Partition coefficient n-octanol/water B.2.7/01	EEC A.8./ OECD 107 (shake flask method) OPPTS	DPX-KN128-31 (99.7%, PAI) DPX-JW062-33 (98.6%)	DPX-KN128 : log K _{ow} = 4.65 at 25°C DPX-JW062: log K _{ow} = 4.60 at 25°C	Acceptable The partition coefficient n-octanol/water study was originally submitted under EU Rev8 Point IIA 2.8	Y	(Study summarised in Indoxacarb DAR, B2, 2000) AMR 4141-96,
B.2.8. DISSOCIATION IN WATER						
Dissociation constant B.2.8/01	OECD 112	DPX-KN128 (99.7%)	Statement: Chemical structure indicates that a.s. does not dissociate. This was confirmed by UV spectra. Spectra measurements at increasing pH indicate that a.s. does not ionise. This was confirmed by titration; the titration absorbance data collected at 284 and 310 nm showed no evidence of pK _a between pH 2.42 and pH 11.36.	Acceptable The dissociation in water study was originally submitted under EU Rev8 Point IIA 2.9.4	Y	(Study summarised in Indoxacarb DAR, B2, 2000) AMR 4141-96
B.2.9. FLAMABILITY AND SHELF-HEATING						
Flammability B.2.9/01	EEC A.10. OPPTS Series 830.6315	DPX-KN128-215 (98.4%)	In the preliminary screening test the sample was observed to melt and discolour to black on contact with the ignition source. No flame or embers were observed and no propagation along the sample train was noted. The test material melted but did not ignite, did not support combustion, and is classified as not flammable.	Study submitted to the EU for the first time in this submission. DuPont-36505 includes the results for the four properties of DPX-KN128; flammability, auto-flammability, explosive and oxidizing. Active substance is not flammable. However, test should be performed according to CLP criteria (manual UN RTDG).	Y	DuPont-36505
	EEC A.10. OPPTS Series	DPX-JW062-105	Test results indicated that a.s is not highly flammable. No spontaneous ignition with the UN-Bowes-Cameron-	Data should be regarded as supplementary.	Y	(Study summarised in Indoxacarb DAR, B2, 2000)

Test or Study Annex Point	Guideline and method	Test material purity and specification	Used methods / Results	Comments (Acceptable / Non acceptable)	GLP	Reference
	830.6315		Cage test			AMR 3339-95
Self heating B.2.9/02	EEC A.16. OPPTS Series 830.6315	DPX-KN128-215 (98.4%)	No self-ignition (auto-flammability). A known volume of test substance was placed in an oven at room temperature and the oven temperature increased at 0.5°C/min to 110°C (30°C above the mp). Both the temperatures of the oven and the sample were recorded. The temperature/time curve relating to conditions in the center of the sample showed no exotherm of sufficient magnitude to constitute a self-ignition temperature. After heating, a clear, colourless melted residue was present.	Acceptable. However, test should be performed according to CLP criteria (manual UN RTDG). Study submitted to the EU for the first time in this submission.	Y	DuPont-36505
B.2.10. FLASH POINT						
Flash point B.2.10/01			Not determined since indoxacarb is not a liquid at temperatures <40°C			
B.2.11. EXPLOSIVE PROPERTIES						
Explosive properties B.2.11/01	EEC A.14. OPPTS Series 830.6316	DPX-KN128-215 (98.4%)	The test substance DPX-KN128 did not give a positive result in tests used to determine its sensitivity to friction, shock or heating under confinement, and is therefore not classified as an explosive in accordance with the criteria of EEC Test A14.	Acceptable Study submitted to the EU for the first time in this submission. Active substance is not explosive according to DSD system. However, test should be performed according to CLP criteria (Part I Test series Section 11 of manual UN RTDG).	Y	DuPont-36505
B.2.12. SURFACE TENSION						
Surface tension B.2.12/01	EEC A.5. OECD 115	DPX-KN128-215 (98.4%)	Triplicate samples of test item were accurately weighed (0.0103, 0.0107 and 0.0102 g) and transferred into separate 1000 mL Volumetric flask. An aliquot of 1000 mL of double distilled water was added to each volumetric flask	Acceptable Study submitted to the EU for the first time in this	Y	DuPont-36502

Test or Study Annex Point	Guideline and method	Test material purity and specification	Used methods / Results	Comments (Acceptable / Non acceptable)	GLP	Reference
			and shaken well ensuring saturation. Solutions were then filtered. The resulting filtered samples were 100% saturated test item solutions. A 90 mL of the 100% saturated test item solution were transferred to 100 mL volumetric flasks and brought to volume with water to obtain a 90% saturated test item solution. The surface tension of each replicate was measured. ⇒ Surface tension of 90% saturated solution was 76.8 dyne/cm (mean of triplicate) at 20°C.	submission		
			Statement: aqueous solutions were not obtained due to the low solubility and hydrophobicity of this chemical structure.	Statement submitted to the EU in the Indoxacarb DAR. B2, 2000)		DAR. B2 2000
B.2.13. OXIDISING PROPERTIES						
Oxidizing properties B.2.13/01	EEC A.17.	DPX-KN128-215 (98.4%)	The highest burning rate for the sample mixtures was found to be 1.3 mm/s. This is lower than the highest burning rate for the reference mixture (1.7 mm/s). The sample is therefore not an oxidizing solid The test substance did not give a positive result and is therefore not classified as an oxidizing solid in accordance with the criteria of EC Test A17.	Acceptable Study submitted to the EU for the first time in this submission Active substance has no oxidizing properties according to the criteria of EC Test A17. However test should be performed according to CLP criteria (method O.2 of manual UN RTDG)	Y	DuPont-36505
B.2.14. OTHER STUDIES						
	-	-	-	-	-	-

The pure active substance of indoxacarb (DPX-KN128) is a white crystalline powdered solid that melts at 88.1°C. Indoxacarb has no evident pKa, and it would not be expected to dissociate at relevant environmental pHs. The aqueous solubility of indoxacarb (DPX-KN128) is approximately 0.20 ppm at 25°C. The vapour pressure (2.5×10^{-8} Pa at 25°C) and the Henry's Law Constant ($< 6 \times 10^{-5}$ Pa.m³ mol⁻¹ at 25 °C) indicate that volatilisation is not a significant route of dissipation for indoxacarb. There should be no safety concerns regarding explosivity, flammability, self-ignition, or oxidising properties based on the tests. However tests should be performed according to CLP criteria (manual UN RTDG) since the CLP tests became effective for substances and there was no correspondence between tests.

B.2.15. REFERENCES RELIED ON

Data Requirement No., Reference No.	Author(s)	Year	Title Source Company Report No. GLP or GEP Status (where relevant) Published or not	Vertebrate study Y/N	Data Protection Y/N	Justification if data protection is claimed	Owner	Previous Evaluation
CA, 2.1	Schmuckler, M.E., Cooke, L.A.	1997	Physical and chemical characteristics of DPX-KN128 DuPont Experimental Station AMR 4141-96. Published: No	N	N		DuPont	Study previously reviewed for EU approval in the 2000 DAR
CA, 2.1	Dobbin, J.	2002	DPX-MP062: Determination of the melting point/melting range and decomposition temperature ABC Laboratories Europe Ltd. DuPont-7557, Revision No. 1 Published: No	N	N		DuPont	Study previously reviewed for EU approval in the 2005 DAR.

Data Requirement No., Reference No.	Author(s)	Year	Title Source Company Report No. GLP or GEP Status (where relevant) Published or not	Vertebrate study Y/N	Data Protection Y/N	Justification if data protection is claimed	Owner	Previous Evaluation
CA, 2.1/01	Revankar, S.D.	2015	DPX-KN128: Laboratory study of boiling point Advinus Therapeutics Limited DuPont-44495 GLP: Yes Published: No	N	Y	The study is necessary for the regulatory decision, conducted according to GLP and has not previously been protected or if previously protected the period of data protection has not expired at the time of submission of this dossier.	DuPont	N.A. ^a
CA, 2.2	Cobranchi, D.P., Schmuckler, M.E.	1997	Vapor pressure of DPX-KN128 and calculation of Henry's Law constant DuPont Jackson Laboratory AMR 4169-96 Published: No	N	N		DuPont	Study previously reviewed for EU approval in the 2000 DAR.
CA, 2.3	Schmuckler, M.E., Cooke, L.A.	1997	Physical and chemical characteristics of DPX-KN128 DuPont Experimental Station AMR 4141-96 Published: No	N	N		DuPont	Study previously reviewed for EU approval in the 2000 DAR.

Data Requirement No., Reference No.	Author(s)	Year	Title Source Company Report No. GLP or GEP Status (where relevant) Published or not	Vertebrate study Y/N	Data Protection Y/N	Justification if data protection is claimed	Owner	Previous Evaluation
CA, 2.3/01	Craig, W.B.	2004	Indoxacarb (DPX-KN128): Laboratory study of appearance and relative density Inveresk Research International (IRI) Limited (Scotland) DuPont-14115 GLP: Yes Published: No	N	Y	The study is necessary for the regulatory decision, conducted according to GLP and has not previously been protected or if previously protected the period of data protection has not expired at the time of submission of this dossier.	DuPont	N.A.
CA, 2.4/01	Elliot, T.	2014	Indoxacarb (KN128): UV/visible absorption and molar absorptivity and spectra (mass spectrum, infrared spectrum, and NMR) Spectral Data Services, Inc., ABC Laboratories, Inc. (Missouri) DuPont-36503 GLP: Yes Published: No	N	Y	The study is necessary for the regulatory decision, conducted according to GLP and has not previously been protected or if previously protected the period of data protection has not expired at the time of submission of this dossier.	DuPont	N.A.

Data Requirement No., Reference No.	Author(s)	Year	Title Source Company Report No. GLP or GEP Status (where relevant) Published or not	Vertebrate study Y/N	Data Protection Y/N	Justification if data protection is claimed	Owner	Previous Evaluation
CA, 2.4/02	Cukrova, M.	2015a	Characterization of IN-C0800-001 Vyzkumny ustav organickych syntez a.s. (VUOS) DuPont-45314 GLP: Yes Published: No	N	Y	The study is necessary for the regulatory decision, conducted according to GLP and has not previously been protected or if previously protected the period of data protection has not expired at the time of submission of this dossier.	DuPont	N.A.
CA, 2.4/03	Cukrova, M.	2015b	Characterization of IN-C0800-001 Vyzkumny ustav organickych syntez a.s. (VUOS) DuPont-45315 GLP: Yes Published: No	N	Y	The study is necessary for the regulatory decision, conducted according to GLP and has not previously been protected or if previously protected the period of data protection has not expired at the time of submission of this dossier.	DuPont	N.A.

Data Requirement No., Reference No.	Author(s)	Year	Title Source Company Report No. GLP or GEP Status (where relevant) Published or not	Vertebrate study Y/N	Data Protection Y/N	Justification if data protection is claimed	Owner	Previous Evaluation
CA, 2.4/04	Gravelle, W. D.	2014	Batch analysis of indoxacarb (DPX-KN128) technical Supplement No. 3 Title Indoxacarb (DPX-KN128) technical: Confirmation of the identity of the active ingredient and process impurities by HPLC/UV Spectroscopy Product Safety Labs DuPont-38208, Supplement No. 3, Revision No. 1, and DuPont-38208, Supplement No. 3, Revision No. 1, Confidential attachment GLP: Yes Published: No	N	Y	The study is necessary for the regulatory decision, conducted according to GLP and has not previously been protected or if previously protected the period of data protection has not expired at the time of submission of this dossier.	DuPont	N.A.
CA, 2.4/05	Novakova, M.	2015	Characterization of IN-R1T94-001 Vyzkumny ustav organickych syntez a.s. (VUOS) DuPont-41789 GLP: Yes Published: No	N	Y	The study is necessary for the regulatory decision, conducted according to GLP and has not previously been protected or if previously protected the period of data protection has not expired at the time of submission of this dossier.	DuPont	N.A.
CA, 2.5	Schmuckler, M.E., Cooke, L.A.	1997	Physical and chemical characteristics of DPX-KN128 DuPont Experimental Station AMR 4141-96 Published: No	N	N		DuPont	Study previously reviewed for EU approval in the 2000 DAR.

Data Requirement No., Reference No.	Author(s)	Year	Title Source Company Report No. GLP or GEP Status (where relevant) Published or not	Vertebrate study Y/N	Data Protection Y/N	Justification if data protection is claimed	Owner	Previous Evaluation
CA, 2.6/01	Craig, W.B.	2004	Indoxacarb (DPX-KN128): Laboratory study of solubility in organic solvents Inveresk Research International (IRI) Limited (Scotland) DuPont-12940, Revision No. 1 GLP: Yes Published: No	N	Y	The study is necessary for the regulatory decision, conducted according to GLP and has not previously been protected or if previously protected the period of data protection has not expired at the time of submission of this dossier.	DuPont	N.A.
CA, 2.7	Schmuckler, M.E., Cooke, L.A.	1997	Physical and chemical characteristics of DPX-KN128 DuPont Experimental Station AMR 4141-96 Published: No	N	N		DuPont	Study previously reviewed for EU approval in the 2000 DAR.
CA, 2.8	Schmuckler, M.E., Cooke, L.A.	1997	Physical and chemical characteristics of DPX-KN128 DuPont Experimental Station AMR 4141-96 Published: No	N	N		DuPont	Study previously reviewed for EU approval in the 2000 DAR

Data Requirement No., Reference No.	Author(s)	Year	Title Source Company Report No. GLP or GEP Status (where relevant) Published or not	Vertebrate study Y/N	Data Protection Y/N	Justification if data protection is claimed	Owner	Previous Evaluation
CA, 2.8	Lentz, N.R.	2002	Photodegradation of ¹⁴ C-DPX-MP062 in pH 5 buffer by simulated sunlight Ricerca Biosciences, LLC DuPont-9801 Published: No	N	N		DuPont	Study previously reviewed for EU approval in the 2005 DAR.

Data Requirement No., Reference No.	Author(s)	Year	Title Source Company Report No. GLP or GEP Status (where relevant) Published or not	Vertebrate study Y/N	Data Protection Y/N	Justification if data protection is claimed	Owner	Previous Evaluation
CA, 2.8/01	Clark, B.	2015	Hydrolysis of ¹⁴ C-Indoxacarb (DPX-KN128) in buffer solutions at pH 4, 7, and 9 ABC Laboratories, Inc. (Missouri) DuPont-35853, Revision No. 1 GLP: Yes Published: No	N	Y	The study is necessary for the regulatory decision, conducted according to GLP and has not previously been protected or if previously protected the period of data protection has not expired at the time of submission of this dossier.	DuPont	N.A.
CA, 2.9/01	Livingston, I.	2013	Indoxacarb (DPX-KN128): Laboratory study of flammability, autoflammability, oxidizing and explosive properties Chilworth Technology Limited DuPont-36505 GLP: Yes Published: No	N	Y	The study is necessary for the regulatory decision, conducted according to GLP and has not previously been protected or if previously protected the period of data protection has not expired at the time of submission of this dossier.	DuPont	N.A.

Data Requirement No., Reference No.	Author(s)	Year	Title Source Company Report No. GLP or GEP Status (where relevant) Published or not	Vertebrate study Y/N	Data Protection Y/N	Justification if data protection is claimed	Owner	Previous Evaluation
CA, 2.11/01	Livingston, I.	2013	Indoxacarb (DPX-KN128): Laboratory study of flammability, autoflammability, oxidizing and explosive properties Chilworth Technology Limited DuPont-36505 GLP: Yes Published: No	N	Y	The study is necessary for the regulatory decision, conducted according to GLP and has not previously been protected or if previously protected the period of data protection has not expired at the time of submission of this dossier.	DuPont	N.A.
CA, 2.12/01	Siripriya, G.	2013	DPX-KN128 (indoxacarb): Laboratory study of surface tension Advinus Therapeutics Limited DuPont-36502 GLP: Yes Published: No	N	Y	The study is necessary for the regulatory decision, conducted according to GLP and has not previously been protected or if previously protected the period of data protection has not expired at the time of submission of this dossier.	DuPont	N.A.

Data Requirement No., Reference No.	Author(s)	Year	Title Source Company Report No. GLP or GEP Status (where relevant) Published or not	Vertebrate study Y/N	Data Protection Y/N	Justification if data protection is claimed	Owner	Previous Evaluation
CA, 2.13/01	Livingston, I.	2013	Indoxacarb (DPX-KN128): Laboratory study of flammability, autoflammability, oxidizing and explosive properties Chilworth Technology Limited DuPont-36505 GLP: Yes Published: No	N	Y	The study is necessary for the regulatory decision, conducted according to GLP and has not previously been protected or if previously protected the period of data protection has not expired at the time of submission of this dossier.	DuPont	N.A.

^a N.A. = not applicable, as this is a new study submitted for the first time at EU level for the purpose of renewal.