

Certificate of Analysis

Product	POLYSORBATE 20
Lot #	062222P00152
Manufacture Date	06/2022
Best Before	06/2024

Properties	Specifications	Results
Identification (IR)	- -	-
C14 Myristic	0.0 – 5.0	0.4
C16 Palmitic	0.0 – 16.0	5.9
C16:1 Hexadecenoic	0.0 – 8.0	0.3
C18 Stearic	0.0 – 6.0	2.1
C18:1 Oleic	58.0 – 90.0	75.3
C18:2 Linoleic	0.0 – 18	0.5
C18:3 Linolenic	0.0 – 4.0	0.0
Oleic Acid Content (C18:1)g/100g	22.0 – 24.0	22.1
Acid Value (C18:1) mgKOH/g	193.0 – 206.0	197.3
Iodine Value (C18:1) g12/100g	80.0 – 92.0	84.5
Oxyethylene Content %	65.0 – 69.5	69.5
1.4 Dioxane pmm	0.0 – 1.0	0.0
Ethylene oxide ppm	0.0 – 1.0	0.9
Hydroxyl Value	65.0 – 80.0	72.2
Ignition Residue	0.000 – 0.250	0.010
Acid value	0.0 – 2.0	1.1
Arsenic, as As, pmm	0.0 – 1.0	0.0
Lead, as Pb, ppm	0.0 – 2.0	0.0
Heavy metals, ppm	0.0 – 10.0	10.0
pH 5% aqueous solution, 25°C	6.0 – 7.0	6.6
Kinematic Viscosity 25°C cSt	300.0 – 500.0	490.0
Peroxide value	0.0 – 9.0	4.9
Specific Weight at 25 °C	1.060 – 1.090	1.098
Saponification Value	45.0 – 55.0	46.3
Moisture	0.0 – 3.0	2.3
Gardner color, 25 °C	0.0 – 4.0	0.9

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Regarding 'Best Before' information: This is the date the distiller or manufacturer suggests as the 'best before date' up to which this product should be good and usable when stored in the manner described above. The 'Best Before' information does not mean the product is no longer usable or that it will self-destruct at midnight on the mentioned date.

Certificate of Analysis

Product	POLYSORBATE 20
Lot #	032222P00114
Manufacture Date	03/2022
Shelf Life	2 years

Properties	Specifications	Results
Identification (IR)	- -	Pass
C10 Capric	0.0 - 10.0	5.2
C12 Lauric	10.0 – 60.0	51.1
C14 Myristic	14.0 – 25.0	21.5
C16 Palmitic	7.0 – 15.0	11.3
C18 Stearic	0.0 - 11.0	3.6
C18:1 Oleic	0.0 – 11.0	3.4
C18:2 Linoleic	0.0 – 3.0	0.0
C6 Caproic	0.0 – 1.0	0.1
C8 Caprylic	0.0 – 10.0	3.9
Identification FCC	- -	Pass
Lauric Acid (C12) content, g/100g	15.0 – 17.0	15.2
Acid Value (C12) mgKOH/g	250.0 – 275.0	250.2
Oxyethylene Content %	70.0 – 74.0	70.8
Dioxane pmm	0 - 10	0
Ethylene oxide ppm	0 – 1	0
Hydroxyl Value	96.0 – 108.0	102.4
Sulfated ashes	0.000 – 0.250	0.04
Acid value	0.0 – 2.0	1.5
Viscosity, 25C,BKF, cP	275.0 – 480.0	377.6
Arsenic, as As, pmm	0.0 – 1	1
Lead, as Pb, ppm	0.0 – 1	1
Heavy metals, ppm	0 – 10	10
pH 5% aqueous solution, 25C	5.0 – 7.0	6.3
Peroxide value	0.0 – 10.0	2.0
Density, 25C	1.080 – 1.120	1.096
Saponification Value	40.0 – 60.0	50.0
Moisture	0.0 -3.0	2.3
Gardner color, 25C	0.0 -3.0	2.3

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Certificate of Analysis

Product	POLYSORBATE 20
Lot #	064-B-PSB20-10-2021
Manufacture Date	10/2021
Shelf Life	2 years

Properties	Specifications	Results
General Appearance (@30 °C)	Pale yellow to amber colored viscous liquid	Pass
Color Gardner	7.0 Max	4.5
Water	3.0 Max	1.99
Acid value	2.0 Max	1.14
Saponification Value	40 - 50	46.24
Hydroxyl Value	96 – 108	101.59
pH Of 5% Aq	5 - 7	6.85

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Certificate of Analysis

Product	POLYSORBATE 20
Lot #	032222P00114
Manufacture Date	03/2022
Shelf Life	2 years

Properties	Specifications	Results
Identification (IR)	- -	Pass
C10 Capric	0.0 - 10.0	5.2
C12 Lauric	10.0 – 60.0	51.1
C14 Myristic	14.0 – 25.0	21.5
C16 Palmitic	7.0 – 15.0	11.3
C18 Stearic	0.0 - 11.0	3.6
C18:1 Oleic	0.0 – 11.0	3.4
C18:2 Linoleic	0.0 – 3.0	0.0
C6 Caproic	0.0 – 1.0	0.1
C8 Caprylic	0.0 – 10.0	3.9
Identification FCC	- -	Pass
Lauric Acid (C12) content, g/100g	15.0 – 17.0	15.2
Acid Value (C12) mgKOH/g	250.0 – 275.0	250.2
Oxyethylene Content %	70.0 – 74.0	70.8
Dioxane pmm	0 - 10	0
Ethylene oxide ppm	0 – 1	0
Hydroxyl Value	96.0 – 108.0	102.4
Sulfated ashes	0.000 – 0.250	0.04
Acid value	0.0 – 2.0	1.5
Viscosity, 25C,BKF, cP	275.0 – 480.0	377.6
Arsenic, as As, pmm	0.0 – 1	1
Lead, as Pb, ppm	0.0 – 1	1
Heavy metals, ppm	0 – 10	10
pH 5% aqueous solution, 25C	5.0 – 7.0	6.3
Peroxide value	0.0 – 10.0	2.0
Density, 25C	1.080 – 1.120	1.096
Saponification Value	40.0 – 60.0	50.0
Moisture	0.0 -3.0	2.3
Gardner color, 25C	0.0 -3.0	2.3

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Certificate of Analysis

Product	POLYSORBATE 20
Lot #	J30426F17022
Shelf Life	2 years

Properties	Specifications	Results
General Appearance (@25 °C)	Yellow Liquid	Pass
Acid value	2.0 Max	1.12
Color Gardner Method	3.0 Max	1.0
Peroxide Value	10.0 Max	2.0
Saponification Value	40.0 – 50.0	45.0
Hydroxyl Value	96.0 – 108.0	97.0
Water Content %	3.0 Max	2.81
pH (5% aqueous solution)	5.0 – 6.5	6.44
1,4 Dioxane, ppm	10.0 Max	1.3
Residue on Ignition %	0.25 Max	<0.25
Arsenic, ppm	1.0 Max	<1.0
Heavy Metals, ppm	10.0 Max	<10.0
Free Ethylene Oxide, ppm	1.0 Max	0.0
Oxyethylene Content	70.0 – 74.0	Conforms
Identification	Passes Tests A&B	Pass
Caproic %	1.0 Max	<1.0
Caprylic %	10.0 Max	<10.0
Capric %	10.0 Max	<10.0
Lauric %	40.0 – 60.0	Conforms
Myristic %	14.0 - 25.0	Conforms
Palmitic %	7.0 – 15.0	Conforms
Stearic %	11.0 Max	Conforms
Oleic %	11.0 Max	Conforms
Linoleic %	3.0 Max	Conforms

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Certificate of Analysis

Product	POLYSORBATE 20
Lot #	J30426D16587
Shelf Life	2 years

Properties	Specifications	Results
General Appearance (@25 °C)	Yellow Liquid	Pass
Color Gardner Method	3.0 Max	1.0
Acid value	2.0 Max	1.4
pH (5% aqueous solution)	5.0 – 6.5	6.2
Residue on Ignition %	0.25 Max	<0.25
Hydroxyl Value	96.0 -108.0	98.0
Saponification Value	40.0 – 50.0	45.0
1,4 Dioxane, ppm	10.0 Max	0.9
Heavy Metals, ppm	10.0 Max	<10.0
Arsenic, ppm	1.0 Max	<1.0
Myristic %	14.0 – 25.0	Conforms
Palmitic %	7.0 – 15.0	Conforms
Stearic %	11.0 Max	<11.0
Oleic %	11.0 Max	<11.0
Linoleic %	3.0 Max	<3.0
Peroxide Value	10.0 Max	3.0
Free Ethylene Oxide, ppm	1.0 Max	0.0
Identification	Passes test A&B	Pass
Caproic %	1.0 Max	<1.0
Capric %	10.0 Max	<10.0
Caprylic %	10.0 Max	<10.0
Lauric %	40.0 – 60.0	Conforms
Oxyethylene Content %	70.0 – 74.0	Conforms

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Product	POLYSORBATE 20
Lot #	J30426A21471
Shelf Life	2 years

Properties	Specifications	Results
General Appearance (@25 °C)	Yellow Liquid	Pass
Color Gardner Method	3.0 Max	1.0
Acid value	2.0 Max	1.0
pH (5% aqueous solution)	5.0 – 6.5	5.88
Moisture % (KF)	3.0 Max	2.80
Residue on Ignition %	0.25 Max	<0.25
Hydroxyl Value	96.0 -108.0	97.0
Saponification Value	40.0 – 50.0	45.0
1,4 Dioxane, ppm	10.0 Max	1.3
Heavy Metals, ppm	10.0 Max	<10.0
Arsenic, ppm	1.0 Max	Conforms
Myristic %	14.0 – 25.0	Conforms
Palmitic %	7.0 – 15.0	Conforms
Stearic %	11.0 Max	Conforms
Oleic %	11.0 Max	Conforms
Linoleic %	3.0 Max	Conforms
Peroxide Value	10.0 Max	1.5
Free Ethylene Oxide, ppm	1.0 Max	0.0
Identification	Passes test A&B	Pass
Caproic %	1.0 Max	Conforms
Capric %	10.0 Max	Conforms
Caprylic %	10.0 Max	Conforms
Lauric %	40.0 – 60.0	Conforms

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Certificate of Analysis

Product	POLYSORBATE 20
Lot #	J9825D30447
Shelf Life	2 years

Properties	Specifications	Results
Appearance @ 25 Degrees C	Clear Liquid	Conforms
Acid Value	2.0 Maximum	1.2
Saponification Value	40.0 – 50.0	46.8
Hydroxyl Value	96.0 – 108.0	100.8
Moisture % (KF)	3.0 Maximum	2.6
Color (Gardner)	2.0 Maximum	1.1
Heavy metals, PPM	10.0 Maximum	0.4
Arsenic, PPM	1.0 Maximum	0.0
1.4 Dioxane, PPM	10.0 Maximum	1.8
Residue on Ignition % w/w	0.25 Maximum	0.15
Free EO, ppm	1.0 Maximum	0.7
pH (5% Solution)	5.0 – 6.5	6.1
C10 Capric, %	10.0 Maximum	5.2
C12 Lauric, %	40.0 – 60.0	52.0
C14 Myristic %	14.0 – 25.0	20.6
C16 Palmitic %	7.0 – 15.0	10.3
C18:1 Oleic %	11.0 Maximum	2.4
C18:2 Linoleic %	3.0 Maximum	0.0
C18:0 Stearic %	11.0 Maximum	3.3
C6 Caproic %	1.0 Maximum	0.5
C8 Capric %	10.0 Maximum	4.4
Oxyethylene Content %	70.0 – 74.0	70.2
Peroxide Value (meq/kg) @Time of Drumming	10.0 Maximum	2.4
Identification	Pass Test A&B	Conforms

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Product	POLYSORBATE 20
Lot #	J9824C01889
Shelf Life	2 years

Properties	Specifications	Results
Appearance @ 25 Degrees C	Clear Liquid	Conforms
Acid Value	2.0 Maximum	1.4
Saponification Value	40.0 – 50.0	47.8
Hydroxyl Value	96.0 – 108.0	102.1
Moisture % (KF)	3.0 Maximum	2.6
Color (Gardner)	2.0 Maximum	1.8
Heavy metals, PPM	10.0 Maximum	0.4
Arsenic, PPM	1.0 Maximum	0.0
1.4 Dioxane, PPM	10.0 Maximum	3.1
Residue on Ignition % w/w	0.25 Maximum	< 0.25
Free EO, ppm	1.0 Maximum	< 1.0
pH (5% Solution)	5.0 – 6.5	6.2
C10 Capric, %	10.0 Maximum	6.0
C12 Lauric, %	40.0 – 60.0	51.9
C14 Myristic %	14.0 – 25.0	19.8
C16 Palmitic %	7.0 – 15.0	11.1
C18:1 Oleic %	11.0 Maximum	3.4
C18:2 Linoleic %	3.0 Maximum	0.0
C18:0 Stearic %	11.0 Maximum	2.3
C6 Caproic %	1.0 Maximum	0.1
C8 Capric %	10.0 Maximum	5.2
Oxyethylene Content %	70.0 – 74.0	70.3
Peroxide Value (meq/kg) @Time of Drumming	10.0 Maximum	2.4
Identification	Pass Test A&B	Conforms

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