

## Certificate of Analysis

<b>Product</b>	CASTOR OIL, USP
<b>LOT #</b>	10857
<b>Manufacturing Date</b>	08/2021
<b>Shelf Life</b>	3 years

Properties	Specifications	Results
Free Fatty Acid Value	≤ 1.5	0.515
Saponification Value	176 – 185	180.28
Hydroxyl Value	160 – 168	165.27
Iodine Value	82 – 90	84.66
Specific Gravity @30°C		0.9592
Heavy metals	≤ 0.001	0.0
Distinction		Conform

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## Certificate of Analysis

<b>Product</b>	CASTOR OIL, USP
<b>LOT #</b>	COUSP/07/21
<b>Date of Production</b>	07/2021
<b>Shelf Life</b>	3 years

Properties	Specifications	Results
Distinction	Partly soluble in solvent hexane. Yields a clear liquid with an equal volume of alcohol.	Conforms
Free Fatty Acid Value	Max 1.5	0.445
Saponification Value	176 – 185	181.47
Hydroxyl Value	160 – 168	166.61
Iodine Value	82 – 90	84.95
Specific Gravity @ 30°C		0.955
Heavy Metals	Max 0.001	ND

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<b>Product</b>	CASTOR OIL, USP
<b>LOT #</b>	COUSP/04/21
<b>Shelf Life</b>	3 years

Properties	Specifications	Results
Distinction	Partly soluble in solvent hexane. Yields a clear liquid with an equal volume of alcohol.	Conforms
Free Fatty Acid Value	Max 1.5	0.34
Saponification Value	176 – 185	178.43
Hydroxyl Value	160 – 168	163.11
Iodine Value	82 – 90	86.12
Specific Gravity @ 30°C		0.9580
Heavy Metals	Max 0.001	0.0

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<b>Product</b>	CASTOR OIL, USP
<b>LOT #</b>	COUSP/08/20
<b>Shelf Life</b>	3 years

Properties	Specifications	Results
Free Fatty Acid	1.5 Max	0.325
Saponification Value	176 – 185	176.80
Hydroxyl Value	160 – 168	161.22
Iodine Value	82 – 90	82.39
Specific Gravity @30°C		0.9730
Heavy metals	0.001 Max	0.0
Distinction	Partly soluble in solvent hexane. Yields a clear liquid with an equal volume of alcohol.	Comforms

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## Certificate of Analysis

<b>Product</b>	CASTOR OIL, USP
<b>LOT #</b>	1136116
<b>Shelf Life</b>	2 years

Properties	Specifications	Results
Flavor/Aroma	Typical	Typical
Hydroxyl Value	160 – 168	161.130
Specific Gravity	0.957 – 0.961	0.958
Acid Value	0.0 – 2.0	0.76
Unsaponifiable Matter	0.0 – 0.80	0.3800
Peroxide Value	0 – 10	2.04
Palmitic Acid	0.0 – 2.0	1.30
Stearic Acid	0.0 – 2.5	1.29
Oleic Acid	2.5 – 6.0	4.56
Linoleic Acid	2.5 – 7.0	4.63
Linolenic Acid	0.0 – 1.0	0.51
Eicosenic Acid	0 – 1	0.18
Ricinoleic Acid	85 – 92	87.03
Moisture Content	0 – 0.3	0.190
UV Absortion	0.7 – 1.5	1.12

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## Certificate of Analysis

<b>Product</b>	CASTOR OIL, USP
<b>LOT #</b>	10729
<b>Shelf Life</b>	3 years

Properties	Specifications	Results
Free Fatty Acid	1.5 Max	0.26
Saponification Value	176 – 185	180.29
Hydroxyl Value	160 – 168	167.71
Iodine Value	82 – 90	85.30
Specific Gravity @30°C		0.9590
Heavy metals	0.001 Max	0.0
Distinction	Partly soluble in solvent hexane. Yields a clear liquid with an equal volume of alcohol.	Comforms

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## Certificate of Analysis

<b>Product</b>	CASTOR OIL, USP
<b>LOT #</b>	PH/38/E/20
<b>Shelf Life</b>	2 years

Properties	Specifications	Results
Distinction from most other fixed oils	It is only slightly soluble in solvent hexane, Yields a clear liquid with an equal volume of alcohol.	Pass
Identification, UV absorption	0.7 – 1.5	1.14
Fats and fixed oils (AV)	NMT 2.0	0.68
Hydroxyl Value	160 – 168	161.42
Peroxide value	NMT 10.0	2.15
Unsaponifiable matter	NMT 0.8	0.39
Water	NMT 0.3	0.21
Specific Gravity @25°C	0.957 – 0.961	0.958
<b>Triglyceride Composition</b>		
RRR	≥ 90	Conforms
RRL	2.0 - 4.0	Conforms
RRO	2.5 - 5.0	Conforms
RRS	0.2 - 0.8	Conforms
<b>Fatty Acid Composition</b>		
Palmitic Acid (C16:0)	< 2.0	1.28
Stearic Acid (C18:0)	< 2.5	1.34
Oleic Acid (C18:1)	2.5 - 6.0	4.43
Linoleic Acid (C18:2)	2.5 – 7.0	4.64
Linolenic Acid (C18:3)	< 1.0	0.48
Cis-11-Eicosenoic Acid (C20:1)	< 1.0	0.16
Ricinoleic Acid	85 – 92	87.14
Cis-11-Octadecenoic acid or other unidentified fatty acid	< 1.0	0.53

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<b>Product</b>	CASTOR OIL, USP
<b>LOT #</b>	PH/13/C/20
<b>Shelf Life</b>	2 years

Properties	Specifications	Results
Acid value	≤ 2.0	0.86
Unsaponifiable matter	≤ 0.8	0.36
Peroxide value	≤ 10	1.71
Water By KF	≤ 3	0.14
Ultraviolet Absorbance (Specific Absorption)	0.7 – 1.5	268 nm=1.325 269 nm =1.336 270nm =1.313
<b>Fatty Acid Composition</b>		
Palmitic Acid (C16:0)	≤ 2	1.05
Stearic Acid (C18:0)	≤ 2.5	1.26
Oleic Acid (C18:1)	2.5 – 6.0	3.42
Linoleic Acid (C18:2)	2.5 – 7.0	4.38
Linolenic Acid (C18:3)	≤10	0.54
Cis-11-Eicosenoic Acid (C20:1)	≤1.0	0.26
Ricinoleic Acid	85 – 92	88.46
Others	≤1.0	0.63

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<b>Product</b>	CASTOR OIL, USP
<b>Lot #</b>	1121109
<b>Shelf Life</b>	2 years

Properties	Specifications	Results
Flavor/Aroma	Typical	Complies
Acid Value MG KOH/G	0 – 2	0.88
Unsaponifiable matter	0.0 – 0.80	0
Peroxide Value (MEQ/KG)	0 - 10	2.40
Palmitic Acid C 16:0	0.0 – 2.0	1.22
Stearic Acid C18:0	0.0 – 2.5	1.48
Oleic Acid C18:1	2.5 – 6.0	4.65
Linoleic Acid C18:2	2.5 – 7.0	5.32
Linolenic Acid C18:3	0.0 – 1.0	0.57
Eicosenoic Acid C20:1	0 - 1	0.30
Ricinoleic Acid	85 - 92	87.18
Moisture Content	0 – 0.3	0.110
Uv Absorption	0.7 – 1.5	1.126

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