



NHR ORGANIC OILS
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Certificate of Analysis Sheet

Organic Amaranth Seed Oil (*Amaranthus caudatus*)

Description	
Latin name	Amaranthus caudatus,
Description	Amaranth seed oil is the fixed oil expressed from the seeds of Amaranthus caudatus, Amarathaceae.
INCI (EU)	AMARANTHUS CAUDATUS SEED OIL
Batch number:	030326-2
CAS Registry Number (EU)	68956-68-3
EC# (EINECS/ ELINCS)	273-313-5
CPNP reference	3520948
Customs tariff number	1515 90 59

Physicochemical characteristics			
Parameter	Method	Interval values	Range & unit
Density	20 °C, DGF C-IV 2d, densimetry	0,907 – 0,927 g/ml	0,911 g/ml
Refractive index	DIN EN ISO 6320, Refractometry	1,4720 – 1,4765	1,4743
Acid value	DGF C-V 2, titration	≤ 4,0 ¹ mg KOH/g (KOH = NaOH)	≤ 4,0 mg KOH/g (KOH = NaOH)
Free fatty acids (FFA)	Calculated in oleic acid (DGF C-V 2)	≤ 2,02 ¹ %	≤ 2,02 %
Saponification value	EN ISO 3657, calculated	170 – 220 mg KOH/g	195 mg KOH/g (KOH = NaOH)
Iodine value	DGF-C-V 11d, Wijs	78 – 102 g I ₂ /100g	84 g I ₂ /100g Not drying
Peroxide value	§ 64 LFGB L13.00-40, potentiometry	≤ 10,0 ¹ meq O ₂ /kg oil	≤ 10,0 ¹ meq O ₂ /kg oil
Solvent	-	-	None, free of alcohol (mechanical pressing)

Composition of the main fatty acids According to DGF C-VI 10a, GC-FID

Name, molecular structure	Identifiers	Symbol ¹	Interval values (%)	% *
Palmitic acid	Saturated	16:0	14 – 25	18,3
Stearic acid	Saturated	18:0	2 – 7	4,5
Oleic acid (9-Cis-Octadecenoic acid)	Omega-9, mono unsaturated	18:1	23 – 38	30,3
Linoleic acid (9-Cis,12-Cis-Octadecadienoic acid)	Omega-6, poly unsaturated	18:2	32 – 49	41,8

¹ Number of carbon atoms and of double bonds.

Further ingredients ¹ (Unsaponifiable fraction)	mg/kg (ppm) *
Squalene (triterpene) ² 6 – 8 %	54.000
Sterols	24600
Tocopherols	653
Tocotrienols	
Vitamin E, active	283,2

¹ The oil is free of additives. The above Ingredients are naturally present in the oil.

² Amaranth seed oil has one of the highest levels of natural squalene among vegetable oils.

Sterols ¹ LC-GC-FID	According to Leon- Camacho et al. (2001) (%) *	According to AOCS Firestone et al. (2013), page 14 (%) *
24-methylen-cholesterol	0,3	-
Beta-sitosterol	1,3	-
Campesterol	1,6	-
Clerosterol	42,0	-
Delta-5-avenasterol	2,0	-
Delta-7-avenasterol	11,9	-
Delta-7-Ergosterol	-	14
Delta-7-campesterol	24,8	-
Delta-7-stigmastenol	15,2	-
Delta-7-stigmasterol	-	16
Spinasterol	-	54
Stigmasterol	0.9	8

¹ In contrast to other vegetable oils, amaranth seed oil has a very high content of sterols. Most of the sterols in amaranth seed oil are esterified. This is a special particularity, because the percentage of free sterols is higher in almost all other vegetable fats.

Vitamin E/ Tocopherols according to DGF F-II 4a	mg/kg (ppm) *
Vitamin E, active ¹	283,2
Alpha-Tocopherol (α)	133
Beta-Tocopherol (β)	268
Gamma-Tocopherol (γ)	57
Delta-Tocopherol (δ)	195

¹ Calculated from the tocopherols.

*The given values are to be considered as approximate average values, which are based on scientific references and/or analysis.