

# UNDERSTANDING A CERTIFICATE OF ANALYSIS



## Certificate of Analysis

<b>Product:</b> Arctic Cod Liver Oil, Orange Liquid	<b>Bulk Batch Nr:</b> N/A	<b>Bottle Lot Nr:</b> 3017
<b>Manufacture Date:</b> June, 2009	<b>Product Storage:</b> Cool dry place, away from sunlight	<b>Shelf Life:</b> Three years from manufacture date

**Freshness**  
The smaller the number, the fresher the oil.

*American Oil Chemists Society*      *Section of AOCS method book*      *Not More Than*      *Potassium Hydroxide*

Oxidation	Test Method	Limits	Assay Result*
ACID	AOCS Cd 3d-63	NMT 1.0 (KOH)/g	0.6 KOH/g
PEROXIDE	AOCS Cd 8b-90	NMT 5.0 meq/kg	1.0 meq/kg
TOTOX (TOTAL OXIDATION)	Calculation	NMT 26.0 meq/kg	5.4 (meq/kg)

*United States Environmental Protection Agency*

*Milliequivalents*

Heavy Metals	Test Method	Limits	Assay Result*
ARSENIC	USEPA 305.1, 200.7, 200.8	NMT 0.1 mg/kg (ppm)	< 0.1 mg/kg (ppm)
CADMIUM	USEPA 305.1, 200.7, 200.8	NMT 0.1 mg/kg (ppm)	< 0.01 mg/kg (ppm)
LEAD	USEPA 305.1, 200.7, 200.8	NMT 0.1 mg/kg (ppm)	< 0.01 mg/kg (ppm)
MERCURY	USEPA 245.6 (Cold Vapour AAS)	NMT 0.1 mg/kg (ppm)	< 0.01 mg/kg (ppm)

**Purity**  
These are toxins and pathogens, so the smaller the number, the purer the oil.

*Parts Per Trillion*

*Parts Per Million*

Environmental Toxins	Test Method	Limits	Assay Result*
POLYCHLORINATED BIPHENYLS (PCBs)	USEPA 1668 Revision A	NMT 0.09 mg/kg (ppm)	0.0004 mg/kg (ppm)
DIOXIN-LIKE PCBs (non-ortho & mono-ortho)	USEPA 1668 Revision A	NMT 1.0 pcg/g (ppt)	0.038 pcg/g (ppt)
DIOXINS & FURANS (WHO TEQ)	USEPA 1613	NMT 2.0 pcg/g (ppt)	0.444 pcg/g (ppt)

*United States Pharmacopeia*

*Colony Forming Units*

Microbial Analysis	Test Method	Limits	Assay Result*
PLATE COUNT	USP 31 (2021)	Negative in <1000 cfu/g	Pass
STAPHYLOCOCCUS AUREUS	USP 31 (2022)	Absent	Absent
ESCHERICHIA COLI	USP 31 (2022)	Absent	Absent
SALMONELLA	USP 31 (2022)	Absent	Absent
PSEUDOMONAS AERUGINOSA	USP 31 (2022)	Absent	Absent
YEAST & MOLD	USP 31 (2021)	Negative in <100 cfu/g	Pass

*Section of AOCS method book*

**Potency**

Fatty Acid Profile	Test Method	Label Claim (Vol. %)	Assay Result*
EICOSAPENTAENOIC ACID (EPA)	AOCS (CE) 1b-89 (modified)	9% (7.2-10.8%)	8.7%
DOCOSAHEXAENOIC ACID (DHA)	AOCS CE 1b-89 (modified)	14% (11.2-16.8%)	13.3%
TOTAL OMEGA-3	AOCS CE 1b-89 (modified)	28% (22.4-33.6%)	27.3%

\*Third party test results by Nutrasource Diagnostics, Inc. Visit [www.ifosprogram.com](http://www.ifosprogram.com) to view IFOS postings.

94 Hangar Way, Watsonville, CA 95076  
Phone 831.724.6200 - Fax 831.724.6600 - Toll Free 800.662.2544 - admin@nordicnaturals.com - nordicnaturals.com

### LIMITS:

Peroxide—CRN & GOED limit: 5.0 mEq/kg  
Totox (Total Oxidation)—CRN limit: 26 mEq/kg  
Heavy Metals—CRN & GOED limit: 0.1 ppm  
Dioxins & Furans—CRN & GOED limit: 2.0 ppt  
Dioxin-like PCBs—CRN & GOED limit: 3.0 ppt

CRN: Council for Responsible Nutrition  
GOED: Global Organization for EPA and DHA Omega-3  
IFOS: International Fish Oil Standards  
WHO: World Health Organization  
PROP 65: CA Prop 65 Safe Harbor Limit for PCBs is .09 µg/day

# FISH OIL STANDARDS/TESTING LIMITS FROM LEADING ORGANIZATIONS & EXPERTS

Key: mEq = Milliequivalents ng = nanogram pg = picogram µg = microgram TE = toxic equivalent KOH= acid value	Nordic Naturals  PASS/FAIL	CRN <sup>1</sup> Internationally Recognized Purity Standards	GOED <sup>2</sup> Omega-3 Trade Association Standards (per CRN Stds.)	IFOS <sup>3</sup> Nutrasource/NDI 3rd Party Testing (per CRN Stds.)	WHO <sup>4</sup> World Health Organization Standards	PROP 65 <sup>5</sup> Safe Harbor (NSRLs), California Standards
<b>ENVIRONMENTAL TOXIN LIMITS</b>						
PCBs	PASS	< 90 ppb	< 90 ppb	< 90 ppb	N/A	0.09 µg/d = < 0.09 ppm = 90 ng = 90 ppb
Dioxins/Furans	PASS	< 2 pg/g = (2 ppt)	< 2 pg/g = (2 ppt)	< 2 pg/g = (2 ppt) ♦	< 2 pg/g = (2 ppt) or < 2 pg TE(WHO)/g ♦	N/A
Dioxin-like PCBs Non-ortho & Mono-ortho	PASS	< 3 pg/g = (3 ppt) or < 3 pg TE(WHO)/g	< 3 pg/g = (3 ppt) or < 3 pg TE(WHO)/g	< 3 pg/g = (3 ppt) or < 3 pg TE(WHO)/g	< 2 pg/g = (2 ppt) or < 2 pg TE(WHO)/g ♦	N/A
<b>OXIDATION LIMITS</b>						
Peroxide (PV)	PASS	< 5 mEq/kg	< 5 mEq/kg	< 5 mEq/kg	N/A	N/A
Anisidine (AV)	PASS	< 20 mEq/kg	< 20 mEq/kg	< 20 mEq/kg	N/A	N/A
Total Oxidation (TOTOX)	PASS	< 26 mEq/kg	< 26 mEq/kg	< 26 mEq/kg	N/A	N/A
Acid Value	PASS	< 3.0 mg KOH/g	< 3.0 mg KOH/g	< 3.0 mg KOH/g	N/A	N/A
<b>HEAVY METAL LIMITS</b>						
Mercury	PASS	< 0.1 ppm	< 0.1 ppm	< 0.1 ppm	N/A	N/A
Lead	PASS	< 0.1 ppm	< 0.1 ppm	< 0.1 ppm	N/A	<15 ppm/ 15 µg/d
Arsenic	PASS	< 0.1 ppm	< 0.1 ppm	< 0.1 ppm	N/A	<10 ppm/ 10 µg/d
Cadmium	PASS	< 0.1 ppm	< 0.1 ppm	< 0.1 ppm	N/A	<4.1 ppm/ 4.1 µg/d

1 CRN <http://www.crnusa.org/pdfs/O3FINALMONOGRAPHdoc.pdf>

2 GOED <http://www.goedomega3.com/portals/0/public/GOEDMonograph.pdf>

3 IFOS <http://www.ifosprogram.com/IFOS/FAQ.aspx> IFOS is an international program that uses the WHO and CRN standards which are internationally recognized bodies in every country where omega-3 products are sold as the standards for purity. Approved AOCS, USP, CRN, WHO, AACC, and/or AOAC methodologies are used wherever appropriate.

4 ♦ UK / [http://docs.google.com/viewer?a=v&q=cache:XP5CQETWCdcj:cot.food.gov.uk/pdfs/cot-diox-full.pdf+tollerable+intake+pcb&hl=en&gl=us&sig=AHIEtbSFM3Q9yu6JpKb7sN5JP0Vetx\\_6uA](http://docs.google.com/viewer?a=v&q=cache:XP5CQETWCdcj:cot.food.gov.uk/pdfs/cot-diox-full.pdf+tollerable+intake+pcb&hl=en&gl=us&sig=AHIEtbSFM3Q9yu6JpKb7sN5JP0Vetx_6uA) PCB 2001/2 pg WHO-TEQ/kg bw per day UK page 2080. We recommend that a tolerable daily intake of 2 pg WHO-TEQ/kg bw per day is established, based upon effects on the developing male reproductive system mediated via the maternal body burden.

5 Prop 65 [http://www.oehha.ca.gov/prop65/law/pdf\\_zip/RegsSet1rev52901.pdf](http://www.oehha.ca.gov/prop65/law/pdf_zip/RegsSet1rev52901.pdf) 1986 [http://www.oehha.org/prop65/policy\\_procedure/pdf\\_zip/SafeHarborProcess.pdf](http://www.oehha.org/prop65/policy_procedure/pdf_zip/SafeHarborProcess.pdf) Safe Harbor Laws NSRL (no significant risk levels)

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