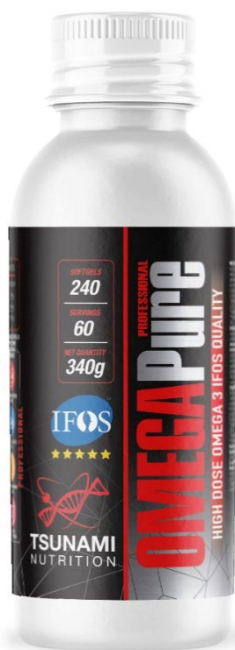




PRODUCT REPORT

IFOS Product Reports help you make an informed choice about the Omega-3 products you buy.



COMPANY DETAILS

TSUNAMI NUTRITION

(+39) 06.51847983/06.69301609

www.tsunaminutrition.it

PRODUCT SUMMARY

OMEGAPURE

Batch / Lot #: A202793

Expiry Date: 09/2023

Recommended Dosage: 4 softgels per day

TESTING RESULTS

This product receives a FIVE out of FIVE Star IFOS rating based on the following criteria:

- Omega-3 concentration consistent with label – YES
- Passes IFOS oxidation standards – YES
- Passes IFOS PCB, PCDD/F standards – YES
- Passes IFOS heavy metal standards – YES
- Passes all IFOS testing categories – YES



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PRODUCT REPORT

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Category 1: Potency	Specification mg/4 softgels	Batch Results mg/4 softgels	IFOS Compliance
EPA	2000	2000	YES
DHA	1000	1041	YES
Total Omega-3	4000	4000	YES

Category 2: Purity, Safety & Cleanliness	Specification	Batch Results	IFOS Compliance
PCBs	<= 45 ppb	3.87 ppb	YES
Dioxins and Furans	<= 1 ppt	0.175 ppt	YES
Dioxin-Like PCBs	<= 1.5 ppt	0.0646 ppt	YES

Category 3: Stability	Specification	Batch Results	IFOS Compliance
Acid Value	<= 3 KOH/g	0.17 KOH/g	Yes
Peroxide	<= 5 meq/kg	3.39 meq/kg	Yes
Anisidine	<= 20	6.23	Yes
Total Oxidation	<= 19.5	13.01	Yes

Category 4: Heavy Metals	Specification	Batch Results	IFOS Compliance
Mercury	<= 0.1 ppm	< 0.0050 ppm	YES
Lead	<= 0.1 ppm	0.021 ppm	YES
Total Arsenic	<= 0.1 ppm	0.073 ppm	YES
Cadmium	<= 0.1 ppm	< 0.010 ppm	YES

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PRODUCT TESTING REPORT

OMEGA PURE, Lot#A202793

Date received: 05-Aug-2020


NDI#: 13302020

Analysis for:


Tsunami Nutrition S.R.L

Via marcandreaola, 5
CIAMPINO, ROME, 00043

Date: 19-Aug-2020



Kevin Yan, M.Sc.
Director,
Certification & Analytics
Dated: 19-Aug-2020



Hyun Ah Kim
Customer Care Manager,
Certification & Analytics
Dated: 19-Aug-2020

Oxidation Analysis

Component	Analytical Method	Specification	Result	Units	Meets Specification
Acid Value	AOCS Cd 3d-63	≤ 3	0.17	KOH/g	Yes
Anisidine Value (AOCS)	AOCS Cd 18-90	≤ 20	6.23		Yes
Peroxide Value	AOCS Cd 8b-90	≤ 5	3.39	meq/kg	Yes
Total Oxidation	Calculation	< 26	13.01		Yes

Essential Fatty Acid Profile

Fatty Acid as EE		mg per cap	%
C4:0	Butyric Acid	0.00	0.0
C6:0	Caproic Acid	0.18	0.0
C8:0	Caprylic Acid	3.51	0.4
C10:0	Capric Acid	3.06	0.3
C12:0	Lauric Acid	0.05	0.0
C14:0	Myristic Acid	1.40	0.1
C14:1	Myristolic Acid	0.03	0.0
C15:0	Pentadecanoic Acid	0.07	0.0
C16:0	Palmitic Acid	3.76	0.4
C16:1	Palmitoleic Acid	1.81	0.2
C18:0	Stearic Acid	20.59	2.2
C18:1	Oleic Acid	49.24	5.2
C18:2N6	Linoleic Acid	3.96	0.4
C18:3N6	Gamma-linolenic Acid	1.68	0.2
C18:3N3	Alpha-linolenic Acid	3.45	0.4
C18:4N3	Stearidonic Acid	22.54	2.4
C20:0	Arachidic Acid	2.73	0.3
C20:1	Eicosenoic Acid	11.97	1.3
C20:2N6	Eicosadienoic Acid	3.03	0.3
C20:3N6	Dihomo-gamma-linolenic Acid	1.46	0.2
C20:4N6	Arachidonic Acid	8.02	0.8
C20:3N3	Eicosatrienoic Acid	0.77	0.1
C20:4N3	Eicosatetraenoic Acid	9.69	1.0
C20:5N3 (EPA)	Eicosapentaenoic Acid	487.30	51.5
C22:0	Behenic Acid	4.02	0.4
C22:1	Cetoleic Acid	3.33	0.4
C22:2N6	Docosadienoic Acid	0.03	0.0
C22:4N6	Adrenic Acid	0.39	0.0
C22:5N6	Docosapentaenoic Acid (n-6)	0.16	0.0
C22:5N3	Docosapentaenoic Acid (n-3)	21.72	2.3
C22:6N3 (DHA)	Docosahexaenoic Acid	260.32	27.5
C24:0	Lignoceric Acid	0.00	0.0
C24:1	Nervonic Acid	1.49	0.2
Total Fatty Acids		946.33	100.0

Saturated	39.39	4.2
Monounsaturated	67.88	7.2
Polyunsaturated	839.06	88.7

Omega-3	805.78	85.1
Omega-6	18.73	2.0

Modified AOCS Official Method Ce 1b-89

Dioxin Analysis (Method USEPA 1613B)

POLYCHLORINATED DIBENZO DIOXIN (7 OF 75 TOXIC SUB-SET)	Result (ppt - pg/g)
2378-TCDD	<0.042
12378-PeCDD	<0.071
123478-HxCDD	<0.10
123678-HxCDD	<0.085
123789-HxCDD	<0.082
1234678-HpCDD	<0.086
OCDD	<0.21

Furan Analysis (Method USEPA 1613B)

POLYCHLORINATED DIBENZO FURANS (10 OF 135 TOXIC SUB SET)	Result (ppt - pg/g)
2378-TCDF	<0.074
12378-PeCDF	<0.038
23478-PeCDF	<0.020
123478-HxCDF	<0.041
123678-HxCDF	<0.044
234678-HxCDF	<0.043
123789-HxCDF	0.0603
1234678-HpCDF	<0.052
1234789-HpCDF	<0.046
OCDF	<0.082

Notes:

- ppt - parts per trillion
- ND - none detected (detection limits in brackets)

Dioxin and Furan (PCDD/F) Toxicity Summary

WHO TEQ (2005) Dioxin and Furan (PCDD/F):	Upper Bound	0.175 ppt
	Lower Bound	0.00603 ppt

Dioxin and Furan Toxicity Cut-Offs

International Fish Oil Standard (IFOS) 5-Star Rating (PCDD/F WHO TEQ 2005)	Upper Bound	1.0 ppt
European Union (EU 2012) Cut-Off for Marine Oil (PCDD/F WHO TEQ 2005)	Upper Bound	1.75 ppt
Council of Responsible Nutrition (CRN 2006) / GOED Voluntary Monograph Cut-Off (PCDD/F WHO TEQ/g 2005)	Upper Bound	1.75 ppt
European Union (EU 2012) Cut-Off for Vegetable Oil (PCDD/F WHO TEQ 2005)	Upper Bound	0.75 ppt

Notes:

- Upper Bound assumes detection limits as the value when no substance is detected
- Lower Bound assumes zero as the value when no substances is detected
- WHO-TEQ, Martin van den Berg et al., The 2005 World Health Organisation Re-evaluation of Human and Mammalian Toxic Equivalency Factors for Dioxins and Dioxin- like Compounds. Toxicological Sciences 93(2), 223–241 (2006)

Dioxin-like PCB Analysis (Method USEPA 1668A/C)

CHLORINATED BIPHENYL CONGENERS (12 of 209 TOXIC SUB SET)	Result (ppt - pg/g)
PCB #81 (tetra)	0.0466
PCB #77 (tetra)	0.559
PCB #123 (penta)	<1.8
PCB #118 (penta)	121
PCB #114 (penta)	1.20
PCB #105 (penta)	41.5
PCB #126 (penta)	0.520
PCB #167 (hexa)	21.1
PCB #156 / 157 (hexa)	37.8
PCB #169 (hexa)	<0.19
PCB #189 (hepta)	<2.3

Dioxin-like PCB Toxicity Summary

WHO TEQ (2005) Toxic Dioxin-Like PCBs	Upper Bound	0.0646 ppt
	Middle Bound	0.0617 ppt
	Lower Bound	0.0587 ppt

Dioxin-like PCB Toxicity Cut-Offs

International Fish Oil Standard (IFOS) 5-Star Rating (DL-PCB WHO TEQ 2005)	Upper Bound	1.5 ppt
CRN / GOED Voluntary Monograph Cut-Off (DL-PCBs WHO TEQ/g 2005)	Upper Bound	3.00 ppt

Dioxin, Furan & Dioxin-like PCB Toxicity Summary

WHO TEQs (2005) Total PCDD, PCDF & DL-PCB	Upper Bound	0.240 ppt
	Middle Bound	0.153 ppt
	Lower Bound	0.0648 ppt

Dioxin, Furan & Dioxin-like PCB Cut-Offs

GOED Monograph (2012) for Marine Oil (Total PCDD, PCDF & DL-PCB WHO TEQ/g 2005)	Upper Bound	4.0 ppt (pg/g)
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EU 2012 Cut-Off for Marine Oil (PCDD/F & DL-PCB WHO TEQ 2005)	Upper Bound	6.0 ppt
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EU 2012 Cut-Off for Vegetable Oil (PCDD/F & DL-PCB WHO TEQ 2005)	Upper Bound	1.25 ppt
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GOED Monograph (2012) Proposition 65 for Marine Oil (Total PCDD, PCDF & DL-PCB WHO TEQ/g 2005)	Upper Bound	3.00 ppt Effective Dec 31, 2012
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Total PCB Summary (Method USEPA 1668 A/C)

TOTAL PCBs	Lower Bound	3.87 ppb
	Upper Bound	3.95 ppb

Total PCB Cut-Offs

International Fish Oil Standard (IFOS) 5-Star Rating (Total PCBs)	Lower Bound	45 ppb
GOED 2012 Voluntary Monograph (sum of all PCB congeners)	Lower Bound	90 ppb (0.09 mg/kg)
NSF / ANSI 173 Dietary Supplement Standard Part 5.3.6.1 (Total PCBs)	Lower Bound	90 ppb (0.09 mg/kg)
Health Canada Consumption Tolerance Limit for Fish Oil (Total PCBs)	Lower Bound	100 ppm (mcg/g of body weight per day)
FDA Tolerance Limit for PCBs in Foods (Total PCBs)	Lower Bound	2,000 ppb

Marker PCB Analysis (Method USEPA 1668 A/C)

PCB CONGENER	Results ppt (pg/g)	
PCB-28	<2.7	
PCB-52	<4.2	
PCB-101	42.3	
PCB-153	885	
PCB-138	751	
PCB-180	305	
Total (ICES-6)¹ Marker PCBs:	Upper Bound	1.99 ppb
	Lower Bound	1.98 ppb
PCB CONGENER	Results ppt (pg/g)	
PCB-118	121	
Total (ICES-7)² Marker PCBs:	Upper Bound	2.11 ppb
	Lower Bound	2.10 ppb

Marker PCB Summary Cut-Offs

CRN 2006 Voluntary Monograph Cut-Off for Omega-3 Products (ICES-7 Marker PCBs)	Upper Bound	90 ppb (0.09 mg/kg)
EU 2012 Cut-Off for Marine Oil (ICES-6 Marker PCBs)	Upper Bound	200 ppb
EU 2012 Cut-Off for Vegetable Oil (ICES-6 Marker PCBs)	Upper Bound	40 ppb

Notes:

1. The ICES-6 are a subset of the ICES-7, that does not include congener 118, and are used to establish cut-offs by the EU.
2. International Council for the Exploration of the Sea has identified seven non-dioxin-like chlorinated biphenyls (ICES-7) that include Congeners 28, 52, 101, 118, 153, 138 and 180.

Heavy Metals

Component	Analytical Method	Specification	Result	Units	Meets Specification
Total Arsenic	USP 233 (ICP-MS)	< 0.1	0.073	ppm	Yes
Cadmium	USP 233 (ICP-MS)	< 0.1	<0.010	ppm	Yes
Lead	USP 233 (ICP-MS)	< 0.1	0.021	ppm	Yes
Mercury	USP 233 (CVAA)	< 0.1	<0.0050	ppm	Yes

Physical Properties

Component	Analytical Method	Specification	Result	Units	Meets Specification
Capsule Fill Weight	In-house	Not Applicable	1.023	g / cap	Not Applicable

IFOS Test Summary

Contaminants

Test	Cut-off Reference	Cut-off	Result	Compliance
Total PCBs	Lower Bound	<= 45 ppb	3.87 ppb	Yes
Dioxin and Furan	Upper Bound PCDD/F WHO TEQ 2005	<= 1 ppt	0.175 ppt	Yes
Dioxin-Like PCBs	Upper Bound DL-PCB WHO TEQ 2005	<= 1.5 ppt	0.0646 ppt	Yes
Acid Value	GOED (CRN) Monograph 2012	<= 3 mg KOH/g	0.17 mg KOH/g	Yes
Peroxide	GOED (CRN) Monograph 2012	<= 5 meq/kg	3.39 meq/kg	Yes
Anisidine	GOED (CRN) Monograph 2012	<= 20	6.23	Yes
Total Oxidation	75% of the GOED (CRN) Monograph 2012	<= 19.5	13.01	Yes
Mercury	GOED (CRN) Monograph 2012	< 0.1 mg/kg	<0.0050 mg/kg	Yes
Lead	GOED (CRN) Monograph 2012	< 0.1 mg/kg	0.021 mg/kg	Yes
Total Arsenic	GOED (CRN) Monograph 2012	< 0.1 mg/kg	0.073 mg/kg	Yes
Cadmium	GOED (CRN) Monograph 2012	< 0.1 mg/kg	<0.010 mg/kg	Yes

- Results reported as "Not Tested" indicate that this test has not yet been performed on the sample in accordance with the IFOS Panel testing requirements
- The State of California's Proposition 65 requires that consumer products (i.e. branded finished products) should ensure that they do not contain more than 0.09 mg of Total PCBs per labeled daily serving.