



Cliente: Shelter srl.

Indirizzo: Viale Gran Sasso, 13 – 20131 Milano (ITALY)

C/A: Dott. Paolo Bigoni

Commessa: 2238H04

Descrizione campione (matrice): Acqua di mare

Codice campione: RAV2304 - R1, -R2, -R3

Codice Accettazione: 1371-23/1, 1644-23/1, 1667-23/1

Data campionamento: 06/04/2023

Luoogo: FSRU Ravenna

Campionamento effettuato da: CIBM

Procedura di campionamento: Bottiglia Niskin

Documentazione di Riferimento Interno: MP 130/23

Data ricezione campione in laboratorio: 26/04/23

Trasporto del campione: TA

Conservazione campione: TA

Risultati di Prova:

Data inizio prove: 26/04/23	Data fine prove: 07/07/23
Metodi di prova: ISPRA-SIBM. Manuali e Linee Guida 56/2010	
Dati di abbondanza: espressi in n. cellule/litro	

Specie o Taxon	R1	R2	R3
Diatomee			
<i>Amphora laevis</i> Gregory 1857			
<i>Amphora</i> spp.			
<i>Asterionellopsis glacialis</i> (Castracane) Round 1990			
<i>Bacteriastrum delicatulum</i> Cleve 1897			
<i>Bacteriastrum hyalinum</i> Lauder 1864	11736		
<i>Bacteriastrum jadrinum</i> Godrijan, Maric & Pfannkuchen 2012			
<i>Bacteriastrum parallelum</i> Sarno, Zingone & Marino 1997			
<i>Cerataulina pelagica</i> (Cleve) Hendey 1937	11736		2945
<i>Chaetoceros affinis</i> Lauder 1864			
<i>Chaetoceros brevis</i> Schütt 1895			
<i>Chaetoceros</i> cf. <i>costatus</i> Pavillard 1911	14670		
<i>Chaetoceros compressus</i> Lauder 1864	143767	117582	20616
<i>Chaetoceros curvisetus</i> Cleve 1889	67483	67610	38286
<i>Chaetoceros decipiens</i> Cleve 1873			
<i>Chaetoceros laciniosus</i> Schütt 1895			
<i>Chaetoceros neogracile</i> Van Landingham 1968	32274	5879	
<i>Chaetoceros socialis</i> Lauder 1864	164306	5879	23561
<i>Chaetoceros</i> spp.	102691	88187	5890
<i>Chaetoceros subtilis</i> Cleve 1896			
<i>Chaetoceros tenuissimus</i> Meunier 1913			
<i>Chaetoceros thronsdonii</i> (Marino, Montresor & Zingone) Marino, Montresor & Zingone 1991	14670		
<i>Chaetoceros wighamii</i> Brightwell 1856	23472		
<i>Cyclotella</i> spp.		11758	2945
<i>Cylindrotheca closterium</i> (Ehrenberg) Reimann & Lewin 1964	46944	44093	58902
<i>Cylindrotheca gracilis</i> (Brébisson ex Kützing) Grunow 1882			
<i>Dactyliosolen blavyanus</i> (Peragallo) Hasle 1975			
<i>Dactyliosolen fragilissimus</i> (Bergon) Hasle 1996	58681	67610	26506



Specie o Taxon	R1	R2	R3
<i>Dactyliosolen phuketensis</i> (Sundstrom) Hasle 1996			
<i>Diatomea pennata</i> n.i. (forma p)			
Diatomee centriche $\leq 20 \mu\text{m}$ n.i.		26456	2945
Diatomee centriche $> 20 \mu\text{m}$ n.i.		14698	
Diatomee pennate $\leq 20 \mu\text{m}$ n.i.			
Diatomee pennate $> 20 \mu\text{m}$ n.i.			2945
<i>Entomoneis</i> spp.			
<i>Hantzschia amphioxys</i> (Ehrenberg) Grunow 1880			
<i>Leptocylindrus danicus</i> Cleve 1889	173108	99945	8835
<i>Licmophora flabellata</i> (Grev.) Agardh 1831			
<i>Lithodesmium undulatum</i> Ehrenberg 1839			
<i>Navicula cancellata</i> Donkin 1872			
<i>Navicula</i> cf. <i>transitans</i> Heimdal 1970			
<i>Navicula</i> spp.			
<i>Nitzschia</i> (sez. <i>sigmatae</i>) sp.			
<i>Nitzschia bilobata</i> Smith 1853			
<i>Nitzschia longissima</i> (Brébisson) Ralfs 1861	2934	5879	5890
<i>Nitzschia lorenziana</i> Grunow 1879			
<i>Nitzschia spathulata</i> Smith 1853			
<i>Nitzschia</i> spp.			
<i>Plagiotropis</i> sp.			
<i>Pleurosigma naviculaceum</i> Brébisson 1854			
<i>Pleurosigma normanii</i> Ralfs 1861			
<i>Proboscia alata</i> (Brightwell) Sundström 1986			
<i>Pseudo-nitzschia</i> cf. <i>fraudulenta</i> (Cleve) Hasle 1993			
<i>Pseudo-nitzschia</i> sp. (seriata complex)			
<i>Pseudo-nitzschia</i> spp. (delicatissima complex)	2693438	3018923	2447362
<i>Pseudo-nitzschia</i> spp. (pseudodelicatissima complex)	613212	573213	256222
<i>Pseudo-nitzschia subfraudulenta</i> (Hasle) Hasle 1993	11736		8835
<i>Rhizosolenia hebetata</i> f. <i>semispina</i> (Hensen) Gran 1905			
<i>Rhizosolenia imbricata</i> Brightwell 1858			
<i>Rhizosolenia</i> sp.			
<i>Skeletonema costatum</i> (Greville) Cleve 1873	11736		
<i>Skeletonema marinoi</i> Sarno & Zingone 2005			
<i>Skeletonema pseudocostatum</i> Medlin 1991	11736		
<i>Synedra</i> cf. <i>affinis</i> Kützing 1844			
<i>Thalassionema</i> cf. <i>bacillare</i> (Heiden) Kolbe 1955			
<i>Thalassionema frauenfeldii</i> (Grunow) Hallegraeff 1986			
<i>Thalassionema nitzschioides</i> (Grunow) Mereschkowsky 1902			
<i>Thalassiosira angulata</i> (Gregory) Hasle 1978			
<i>Thalassiosira delicatula</i> Ostensfeld 1908			2945
<i>Thalassiosira rotula</i> Meunier 1910			
<i>Thalassiosira</i> spp.	8802	2940	
Dinoflagellati			
<i>Alexandrium catenella</i> (Whedon & Kofoid) Balech 1985			
<i>Alexandrium</i> cf. <i>margalefii</i> Balech 1994			2945
<i>Alexandrium</i> cf. <i>minutum</i> Halim 1960	2934		2945
<i>Alexandrium ostenfeldii</i> (Paulsen) Balech & Tangen 1985			
<i>Alexandrium pseudogonyaulax</i> (Biecheler) Horiguchi ex Kita & Fukuyo 1992			
<i>Alexandrium tamarense</i> (Lebour) Balech 1995			
<i>Amphidinium</i> cf. <i>flagellans</i> Schiller			
<i>Amphidinium</i> cf. <i>globosum</i> Schröder 1911			
<i>Amphidinium</i> cf. <i>sphenoides</i> Wulff 1916			
<i>Amphidinium longum</i> Lohmann 1908			



Specie o Taxon	R1	R2	R3
<i>Amphidinium</i> spp.			
<i>Amphidoma languida</i> Tillmann, Salas & Elbrächter 2012			
<i>Azadinium caudatum</i> var. <i>margalefii</i> Nézan & Chomérat 2012			
<i>Azadinium spinosum</i> Elbrächter & Tillmann 2009			
<i>Cochlodinium helix</i> (Pouchet) Lemmermann 1899			
<i>Cochlodinium pulchellum</i> Lebour 1917			
<i>Cochlodinium pupa</i> Lebour 1925			
<i>Cochlodinium</i> sp.			
Dinoflagellati tecati $\leq 20 \mu\text{m}$ n.i.			2945
Dinoflagellati tecati $> 20 \mu\text{m}$ n.i.		2940	
<i>Dinophysis acuminata</i> Claparède & Lachmann 1859			
<i>Dinophysis hastata</i> Stein 1883			
<i>Dinophysis sacculus</i> Stein 1883			
<i>Diplopsalis lenticula</i> Bergh 1881			
<i>Gonyaulax spinifera</i> (Claparède & Lachmann) Diesing 1866			
Gymnodiniaceae $\leq 20 \mu\text{m}$ n.i.	8802	11758	14725
Gymnodiniaceae $> 20 \mu\text{m}$ n.i.		2940	
<i>Gymnodinium voukii</i> Schiller 1928			
<i>Gyrodinium fusiforme</i> Kofoid & Swezy 1921			2945
<i>Gyrodinium</i> spp.			
<i>Heterocapsa circularisquama</i> Horiguchi 1995			
<i>Heterocapsa horiguchii</i> Iwataki, Takayama & Matsuoka 2002			
<i>Heterocapsa illdefina</i> (Herman & Sweeney) Morrill & Loeblich III 1981			
<i>Heterocapsa minima</i> Pomroy 1989		2940	2945
<i>Heterocapsa niei</i> (Loeblich III) Morrill & Loeblich III 1981			
<i>Heterocapsa orientalis</i> Iwataki Botes & Fukuyo 2003			
<i>Heterocapsa triquetra</i> (Ehrenberg) Stein 1883		2940	
<i>Karenia brevis</i> (Davis) Hansen & Moestrup 2000			
<i>Karenia mikimotoi</i> (Miyake & Kominami ex Oda) Hansen & Moestrup 2000			
<i>Karenia papilionacea</i> Haywood & Steidinger 2004			
<i>Karenia</i> spp.			
<i>Lessardia elongata</i> Saldarriaga & Taylor 2003		2940	2945
<i>Mesoporos adriaticus</i> (Schiller) Lillick			
<i>Mesoporos perforatus</i> (Gran) Lillick 1937		2940	
<i>Minuscula bipes</i> (Paulsen) Lebour 1925		2940	2945
<i>Neoceratium furca</i> (Ehrenberg) Gómez, Moreira & López-García 2010			
<i>Neoceratium fusus</i> (Ehrenberg) Gómez, Moreira & López-García 2010			2945
<i>Neoceratium horridum</i> (Gran) Gómez, Moreira & López-García 2010			2945
<i>Oxytoxum adriaticum</i> Schiller 1937			
<i>Oxytoxum coronatum</i> Schiller 1937			
<i>Oxytoxum laticeps</i> Schiller 1937			
<i>Oxytoxum longum</i> Schiller 1937			
<i>Oxytoxum mediterraneum</i> Schiller			
<i>Oxytoxum variabile</i> Schiller 1937			
<i>Pentapharsodinium dalei</i> Indelicato & Loeblich III 1986			
<i>Phalacroma rotundatum</i> (Claparède & Lachmann) Kofoid & Michener 1911			
<i>Prorocentrum balticum</i> (Lohmann) Loeblich 1970			
<i>Prorocentrum compressum</i> (Bailey) Abé ex Dodge 1975			
<i>Prorocentrum cordatum</i> (Ostenfeld) Dodge 1975			
<i>Prorocentrum gracile</i> Schütt 1895			
<i>Prorocentrum micans</i> Ehrenberg 1833			
<i>Prorocentrum minimum</i> (Pavillard) Schiller 1933			
<i>Prorocentrum scutellum</i> Schröder 1900			
<i>Protoperidinium breve</i> Paulsen 1907			



Specie o Taxon	R1	R2	R3
<i>Protoperidinium brevipes</i> (Paulsen, 1908) Balech 1974			
<i>Protoperidinium cerasus</i> (Paulsen) Balech 1973			
<i>Protoperidinium cf. globulus</i> (Stein) Balech 1974			2945
<i>Protoperidinium conicum</i> (Gran) Balech 1974			
<i>Protoperidinium divergens</i> (Ehrenberg) Balech 1974			
<i>Protoperidinium leonis</i> (Pavillard) Balech 1974			
<i>Protoperidinium oceanicum</i> (VanHöffen) Balech 1974			
<i>Protoperidinium ovum</i> (Schiller) Balech 1974			
<i>Protoperidinium pentagonum</i> (Gran 1902) Balech 1974			
<i>Protoperidinium quarnerense</i> (Schröder, 1900) Balech 1974			
<i>Protoperidinium tuba</i> (Schiller) Balech 1974			
<i>Scrippsiella trochoidea</i> (Stein) Balech ex Loeblich III 1965			
<i>Spatulodinium pseudonociluca</i> (Pouchet) Cachon & Cachon 1968			
<i>Torodinium robustum</i> Kofoid & Swezy 1921			
Prymnesiophyceae/Coccolitofori			
<i>Acanthoica quattrosipina</i> Lohmann 1903	5868	2940	
<i>Calcidiscus leptoporus</i> (Murray & Blackman) Loeblich & Tappan 1978			
<i>Calciosolenia brasiliensis</i> (Lohmann) Young 2003			
<i>Calyptrorpha oblonga</i> Lohmann 1902			
Coccolitofori $\leq 10 \mu\text{m}$ n.i.	29340	55852	14725
<i>Dakylethra pirus</i> (Kamptner) Norris 1985	5868	2940	5890
<i>Emiliana huxleyi</i> (Lohmann) Hay & Mohler 1967	17604	79368	73627
<i>Helladosphaera cornifera</i> (Schiller) Kamptner 1937	14670	26456	29451
<i>Ophiaster hydroideus</i> (Lohmann) Lohmann 1913			
<i>Pontosphaera</i> sp.	8802		
<i>Sphaerocalyptra quadridentata</i> (Schiller) Deflandre 1952			
<i>Syracosphaera cf. molischii</i> Schiller 1925	2934		
<i>Syracosphaera histrica</i> Kamptner 1941		2940	
<i>Syracosphaera pulchra</i> Lohmann 1902		5879	
<i>Zygospaera hellenica</i> Kamptner 1937	41076	108764	23561
Altro			
Cryptophyceae n.i.	82153	91126	73627
<i>Plagioselmis prolunga</i> Butcher ex Novarino, Lucas & Morrall 1994	8802	5879	14725
<i>Apedinella radians</i> (Lohmann) Campbell 1973			
<i>Dictyocha fibula</i> Ehrenberg 1839			
<i>Dictyocha speculum</i> Ehrenberg 1839			
<i>Dinobryon faculiferum</i> (Willén) Willén 1992			
<i>Ollicola vangoorii</i> (Conrad) Vørs 1992	5868	8819	5890
<i>Pseudopedinella pyriformis</i> Carter 1937			
<i>Euglena acusformis</i> Schiller			
<i>Eutreptia lanowii</i> Steuer 1904			
<i>Eutreptia viridis</i> Perty 1852			
<i>Eutreptiella braarudii</i> Throndsen 1969			
<i>Eutreptiella gymnastica</i> Throndsen 1969			
<i>Ankistrodesmus falcatus</i> (Corda) Ralfs 1848		2940	
<i>Desmodesmus communis</i> (Hegewald) Hegewald			
<i>Halosphaera viridis</i> Schmitz 1878	5868	2940	
<i>Pachysphaera pelagica</i> Ostenfeld 1899	2934		
<i>Pseudoscofieldia marina</i> (Throndsen) Manton 1975			
<i>Pyramimonas</i> spp.	26406	5879	8835
<i>Tetraselmis</i> sp.	8802	2940	
<i>Phaeocystis</i> sp.	137899	267499	150199
<i>Pseudanabaena</i> sp.			
Flagellati indeterminati $< 10 \mu\text{m}$	41076	79368	50066



Specie o Taxon	R1	R2	R3
<i>Commation cryoporinum</i> Thomsen & Larsen 1993	29340	20577	35341
<i>Heterosigma akashiwo</i> (Hada) Hada ex Hara & Chihara 1987	2934	2940	
<i>Leucocryptos marina</i> (Braarud) Butcher 1967	20538	32335	5890
<i>Mesodinium rubrum</i>			
<i>Paulinella ovalis</i> (Wulff) Johnson, Hargraves & Sieburth 1988	2934	8819	
<i>Telonema</i> sp.	14670	11758	20616
Totale	4747258	5011941	3472250
Diatomee	88,88%	82,82%	83,97%
Dinoflagellati	0,25%	0,65%	1,27%
Prymnesiophyceae Coccolitofori	2,66%	5,69%	4,24%
Altro plancton	8,22%	10,85%	10,52%
N. taxa	44	45	41

- I risultati riportati sono riferiti al solo campione sottoposto a prova.
- Il presente rapporto di prova non può essere riprodotto in forma parziale, salvo l'approvazione scritta del Dipartimento di Biologia dell'Università di Firenze.

OPERATORI TECNICI:

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