

# VITROVEX® instrumentation housings



Protection for deep ocean explorations to 12,000 meters



Nautilus Marine Service is the manufacturer of the finest VITROVEX® glass housings that are capable of operating in the most extreme regions of the Earth and can withstand full ocean pressure. VITROVEX® glass enclosures are indispensable in ocean exploration and offer the dual advantage of buoyancy and a pressure proof housing – a perfect combination for small and autonomous underwater instrumentation packages. VITROVEX enclosures are supplied in spherical, cylindrical, and capsular designs and cover a large range in terms of depth rating and buoyancy. Various optical grade hemispheres and lenses are available for applications featuring camera, video and lights.

## Instrumentation housings

VITROVEX® spheres <sup>1</sup>	depth rating m	buoyancy		outer diameter		density g/cm <sup>3</sup>
		kg	lbs	inch	mm	
IS-12000-2.3	12,000	0.0	0.0	2.3	60	1.77
IS-12000-3.1	12,000	-0.1	-0.2	3.15	80	1.49
IS-12000-4.5	12,000	0.1	0.2	4.5	114	0.77
IS-12000-5	12,000	0.1	0.2	5	130	0.87
IS-12000-7	12,000	1.0	2.0	7	180	0.69
IS-12000-7.5	12,000	0.5	1.0	7.5	187	0.88
IS-10000-10	10,000	4.6	10.0	10	250	0.45
IS-7000-13	7,000	10.6	23.0	13	330	0.46
IS-12000-13	12,000	8.5	19.0	13	334	0.58
IS-6700-17	6,700	26.0	57.0	17	432	0.41
IS-9000-17	9,000	21.5	47.0	17	432	0.51
IS-12000-17	12,000	18.3	40.0	17	432	0.59
IS-4000-20	6,000	43.1	95.0	20	508	0.40

1) Buoyancy is based on salinity of 1.025g/cm<sup>3</sup> and vacuum port installed.



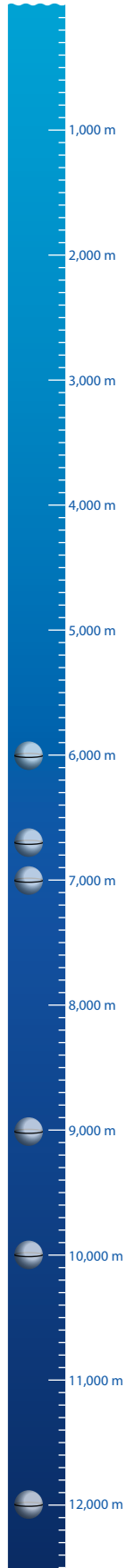
## Clear advantages

- Cost-effective ■ Through hole solutions and purge ports
- Extensive range of accessories ■ High expertise in glass processing
- Integration of metal and plastic parts ■ Customized pressure tests

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## Optical hemispheres and cylinders

VITROVEX® hemispheres and cylinders of the same outside diameter and wall thickness are completely interchangeable and can be replaced individually offering an immense versatility with all its design and combination options.

VITROVEX® optical grade hemispheres <sup>2</sup>	outer diameter m	wallsize mm
HS-OPT-1.2/5	30	5
HS-OPT-2.3/5	60	5
HS-OPT-2/5	50	5
HS-OPT-3.94/12	100	12
HS-OPT-4.5/7	114	7
HS-OPT-5.75/14	146	14.5
HS-OPT-5/9	127	9
HS-OPT-6/9	150	9
HS-OPT-7.5/14	187	14
HS-OPT-10/9	250	9
HS-OPT-13/12	330	12
HS-OPT-17/14	432	14
HS-OPT-17/18	432	18



VITROVEX® cylinders <sup>2</sup>	outer diameter m	wallsize mm
FIT-114-7	114	7
FIT-130-9	130	9
FIT-187-14	187	14
FIT-250-9	250	9

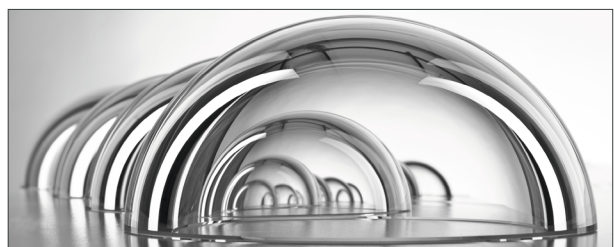


2) Other specification are possible, please contact us directly.

## VITROVEX® glass characteristics

Most parts of VITROVEX® enclosures are made of borosilicate glass with standardized physical, chemical, electrical, and optical properties as shown below resulting in very high physical strength and very low thermal expansion. Glass properties for lenses, cylinders and optical grade hemispheres may vary and can be provided on request.

Thermal coefficient of expansion	3.3 x 10 <sup>-6</sup> /°K
Specific gravity at 25°C	2.23 g/cm <sup>3</sup>
Young's modulus	63 GPa
Poisson's ratio	0.20
Refractive index nd	1.472
Thermal conductivity at 90°C	1.2 W/m x °K
Specific heat	0.8 J/g x °K



## Clear advantages

Immense strength to weight ratio ■ Precise flatness and finish  
 High resistance to breakage ■ Non-magnetic and electrically non-conductive  
 Remarkable transparency ■ Permeable for radio and electromagnetic waves (i.e. WiFi)  
 Corrosion resistant, non-polluting and ecologically acceptable