INDUSTRY SOLUTIONS.

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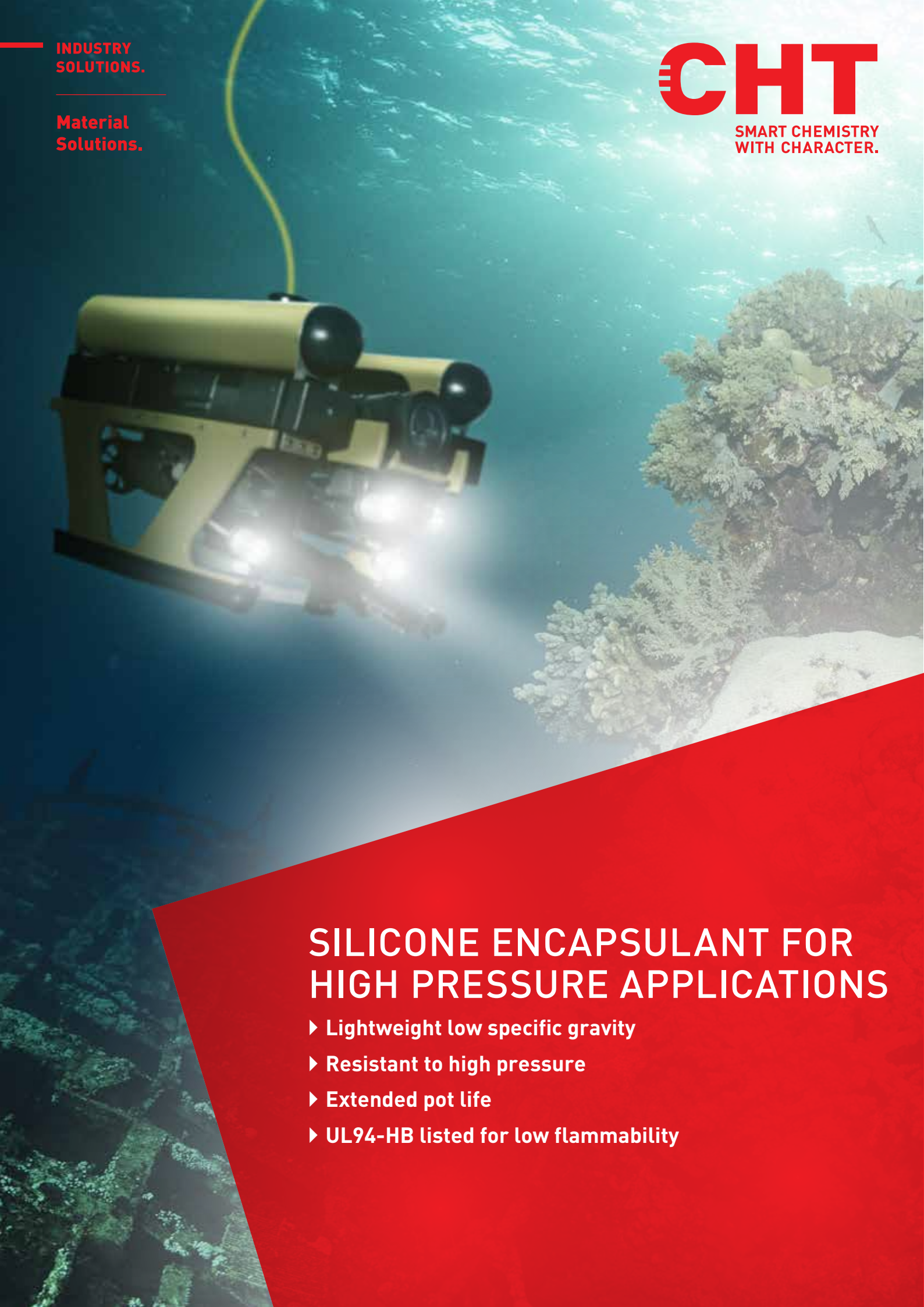

SILICONE ENCAPSULANT FOR HIGH PRESSURE APPLICATIONS

- Lightweight low specific gravity
- Resistant to high pressure
- Extended pot life
- UL94-HB listed for low flammability

SILICONE ENCAPSULANT FOR HIGH PRESSURE APPLICATIONS

Encapsulants used in high atmospheric pressure environments require the physical properties needed to resist the forces exerted upon the components and the elastomer used to encapsulate them.

If the material is too rigid and hard, it will transfer pressure to the component causing stress fractures and damage particularly to delicate electronics. On the other hand, if the elastomeric material is too soft, both the encapsulant and the components will distort under pressure causing failure through cracking or ingress of moisture or other contaminants. Therefore, there is a need to balance both the hardness and modulus of the material being selected.

CHT have formulated **SilSo SE2014** specifically for these applications. Using specialist fillers resistant to high pressures, along with elastomeric silicone polymers, the resulting encapsulant protects against stress while remaining flexible enough to maintain contact with the components and enclosures.

FEATURES OF SILSO SE2014

- Resistant to high under water pressure up to 11,000 meters and 1000 bar
- Low density (0.73 g/cm^3)
- UL94-HB tested and approved
- <0.1% of volatile cyclic siloxanes
- Extended open pot life to allow for processing
- Tensile: 2.7 N/mm
- Mixed viscosity: 10,000 mPas
- Long-term low temperature stability

DEEP-SEA APPLICATIONS

Deep-sea submersibles are connected to the surface operating ships via cables that carry power and communications. The single umbilical cables will contain several individual cables held within an outer sheath.

Operating in a deep sea, high pressure environment, these cables are subject to extreme stress and need a high level of protection. Temperatures can remain below 3°C for long periods causing conventional rubbers to lose flexibility and crack.

The voids between the individual cables need to be filled with a compatible encapsulant capable of absorbing the stress without adding additional weight or reducing flexibility. **SilSo SE2014** silicone encapsulant has all the correct properties and is compatible with the various cabling materials being used. It has also been designed with an extended pot life to allow for the longer production processing times associated with this application. For making cable connections or repairs, **SilSo SE2014** can be used as a joining compound between cable connectors and tapes.

AVIATION AND SPACE APPLICATIONS

High pressures are also found within aerospace and space applications but they also present additional challenges for encapsulants. Operating conditions also include extreme fluctuations in temperature and the resulting thermal cycles will produce additional stress within the encapsulant.

The space industry also requires silicone polymers to have low volatile levels to prevent contamination within the electronics. Flame retardancy is also an important factor to ensure the end product meets relevant safety requirements.

SilSo SE2014 contains <0.1% of volatile cyclic siloxanes and the levels are below the threshold of declaration for a Substance of Very High Concern (SVHC). It has also passed the criteria for low flammability (UL94-HB). Additional benefits are derived from the low specific gravity (SG) of just 0.73 g/cm^3. This represents a weight saving of approx. 15% when compared to similar encapsulants. With low outgassing, low SG and UL94-HB approval, engineers can design components that are lighter while not having to compromise on performance, safety or the integrity of the finished product.

OTHER HIGH-PRESSURE APPLICATIONS

- Gas turbines
- Underground / subsurface electronics
- Underwater electronics
- High pressure test equipment
- Vacuum pumps
- Industrial cabling

Material Data for SilSo SE2014

Mix Ratio	Mixed Viscosity	Hardness	Elongation	Specific Gravity	Working Temperatures
1:1	10,000 mPas	67 Shore A	54%	0.73 g/cm^3	-55°C to +200°C

The data is based on standard values and not suitable for establishing specifications! Please note that the given values were determined in the laboratory and have to be verified in your own tests for your specific manufacturing conditions and practice. Liability cannot be derived from this information. Liability can be assumed only for the consistently high quality of our product.

You need further information?
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