STL

Empowering Networks with the **Intelligence of Light**

STL's optical fibre experts are pioneering cutting-edge breakthroughs, blending **light science** and **material innovation** to build **future-ready networks.**

Did you know?

A single strand of optical fibre, **thinner than hair** can deliver immense data capacity, enabling everything from smart cities to cloud-powered intelligence.

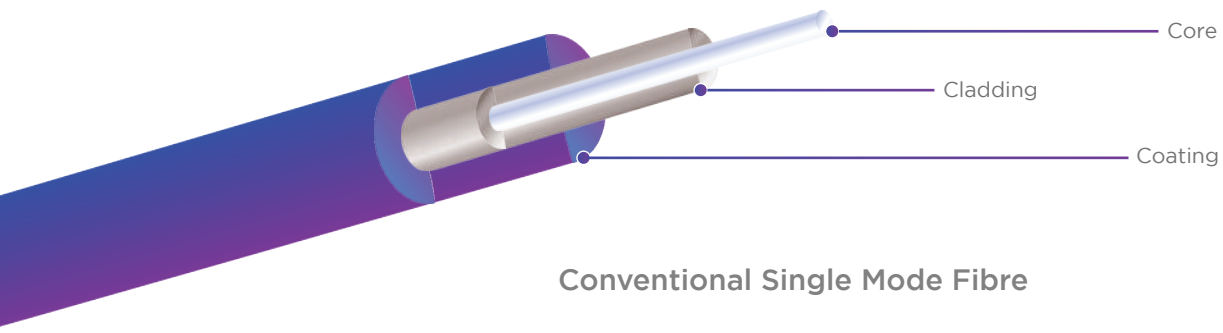
Glass Built for Intelligence

We are entering a decade of exponential growth in connectivity, where data demand will outpace even our current digital capacity. By 2030, more than 40 billion connected devices will be online globally, interacting in real time across homes, industries, and cities. This wave of intelligent machines is setting new benchmarks for speed, scale, and reliability.

As billions of smart sensors, vehicles, and systems go live, the network's backbone must evolve. Today, optical fibre remains the most powerful and future-ready medium for transporting massive data loads with extremely low signal loss. Its scalability and energy efficiency make it the foundation for AI, 5G backhaul, smart infrastructure, and cloud hyperscale networks.

At the heart of every fibre strand lies a remarkable mechanism: light traveling through glass. Light pulses move through the central core, while a surrounding cladding layer locks the light in through total internal reflection. Both elements are made from ultra-pure glass, precisely engineered from STL's proprietary preform technology. A durable outer coating shields the fibre from physical stress and environmental exposure.
This elegant design enables a single optical fibre to transmit terabits of data every second, over hundreds of kilometres, at near light speed and with exceptional integrity.

STL's optical fibre is built from glass so pure, it is often said:
"If oceans were made of this material, you could see the seabed crystal clear."
And that is exactly the kind of clarity and performance we are delivering to the world's most demanding networks.



Conventional Single Mode Fibre

The Right Fibre
for the Right Network

- **Compact Deployments**: 180 µm / 200 µm fibres for ultra-slim cables in tight ducts.
- **High-Capacity Backbones**: Multicore Fibre for 4x–8x throughput in existing pathways.
- **Long-Haul & Subsea**: Ultra-Low Loss Fibre for minimal attenuation across vast distances.
- **Latency-Critical Applications**: Future-ready hollow-core designs for AI, quantum, and fintech needs.
- STL offers tailored solutions across enterprise, telecom, rural broadband, and hyperscale sectors.

Masters of Photonics and Glass Science

At STL, we bring together deep knowledge in glass science, photonics, and optical transmission to design some of the world's most advanced optical fibres. Our work is grounded in a precise understanding of how light moves through glass and how fibre performs in real-world networks.

Our Centre of Excellence leads STL's optical innovation. It drives breakthroughs in fibre design, application engineering, and systems validation to meet the needs of tomorrow's networks.

The CoE includes:

- A photonics lab for precision testing and optical metrology
- A real-time systems testbed that has supported 400G and 800G transmission on STL's own Multicore Fibre
- A 2000 km amplified fibre loop for long-distance transmission simulation
- Advanced tools for component benchmarking and network validation

Our CoE was inaugurated by Dr. APJ Abdul Kalam, former President of India. His vision for scientific progress continues to shape our work.

This end-to-end setup enables STL to deliver fibre that is ready for hyperscale, AI-driven, and ultra-low-latency networks.

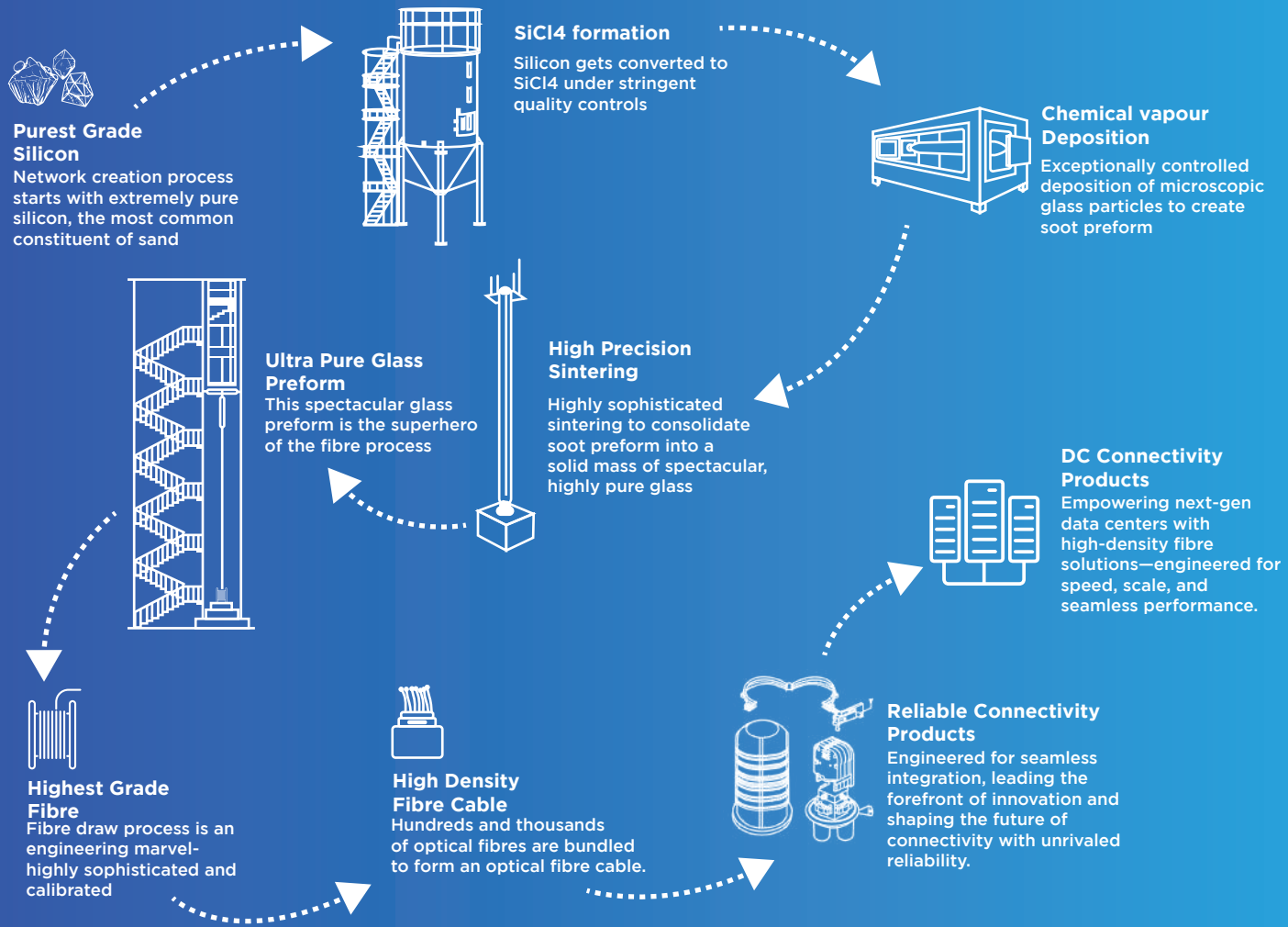
Did you know?

STL produces over 50 million **fibre-kilometres** every year, enough to **reach from Earth to Mars.**

Silicon to DC Connectivity

STL is one of the few companies in the world with end-to-end capability, starting from ultra-pure silicon to finished optical fibre and high-performance connectivity solutions. We transform silicon into fibre through in-house preform and draw processes, and deliver advanced cable and connector technologies for hyperscale and AI-era networks.

Here's a view of our sophisticated silicon to data center connectivity process. This engineering marvel brings together deep expertise in glass science, photonics, data transmission, materials, and chemical engineering, all within a single innovation ecosystem.



Purest Grade Silicon
Network creation process starts with extremely pure silicon, the most common constituent of sand

SiCl4 formation
Silicon gets converted to SiCl4 under stringent quality controls

Chemical vapour Deposition
Exceptionally controlled deposition of microscopic glass particles to create soot preform

High Precision Sintering
Highly sophisticated sintering to consolidate soot preform into a solid mass of spectacular, highly pure glass

Ultra Pure Glass Preform
This spectacular glass preform is the superhero of the fibre process

Highest Grade Fibre
Fibre draw process is an engineering marvel- highly sophisticated and calibrated

High Density Fibre Cable
Hundreds and thousands of optical fibres are bundled to form an optical fibre cable.

Reliable Connectivity Products
Engineered for seamless integration, leading the forefront of innovation and shaping the future of connectivity with unrivaled reliability.

DC Connectivity Products
Empowering next-gen data centers with high-density fibre solutions—engineered for speed, scale, and seamless performance.

Did you know?

Nearly 700 km of fibre, **finer than human hair**, is drawn from a 20 kg preform.

Innovative Fibre Products

STL designs and manufactures advanced optical fibres that are engineered for performance, precision, and scale.

We offer a full suite of fibre types, including single-mode for **low-loss**, **long-distance transmission**, and variants tailored for use across the 1310 nm, 1550 nm, and extended **L-band (1565–1625 nm) wavelength** windows. These fibres enable high-speed performance, especially in dense, data-driven environments.

STL's specialised fibres are designed for seamless integration into loose tube, tight buffered, ribbon, and central tube constructions. They are widely used across underground and aerial deployments, supporting robust performance even in challenging conditions.

From core diameter to coating, every fibre is built using ultra-pure glass and refined processes that ensure low attenuation, bend resistance, and long operational life. With a focus on innovation and application-specific design, STL delivers fibre solutions ready for the networks of today and scalable for the demands of tomorrow.

STL fibres are **crafted with efficiency** and longevity in mind, **supporting greener**, leaner, and faster networks worldwide.

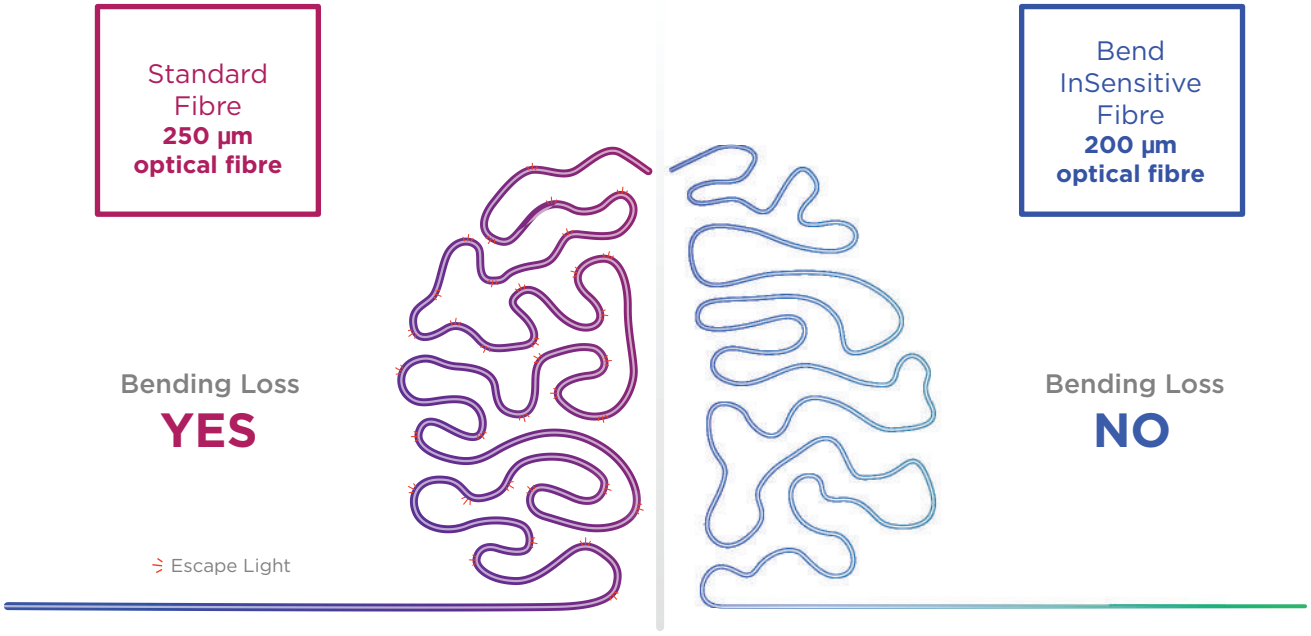
Our fibres are optimised for a wide range of applications, from **long-haul and metro networks to FTTx, access, defence, utility, and intelligent traffic systems.**

STL's Patented Bend In-Sensitive Fibre

HD A1/HD A2 Series

STL's HD A1 and HD A2 fibres are ITU-T G.657.A1/A2 compliant and built for high-density, bend-critical deployments. Available in 250 µm, 200 µm, and 180 µm, they enable up to 20% slimmer cables, ideal for microducts and last-mile use.

These fibres support transmission across O to L bands (1260–1625 nm) and offer reduced attenuation at 1380–1390 nm. Optimised for FTTH, access, and compact cable designs, they ensure low bending loss and robust performance in space-constrained environments.



Enhanced performance parameters

HD A1/A2

- Low macro-bending loss with G.657 A1/A2 compliance
- Slim profiles enable 20% smaller cable designs
- Performs reliably from -40°C to +70°C
- Supports tight bends (20D/15D) for easy routing
- Ideal for microduct blowing, faster installs, and reduced closure size

Stellar

- Optimised for G.657 A1/A2 with low macro-bending loss
- Available in 250 µm and 200 µm for ultra-compact, high-density cables
- Designed for microcables, tight trays, and rack systems in data centers
- Enables efficient air-blown deployment in ducts as small as 8 mm
- 9.1µm MFD compatible with legacy network

HD B3

- Built on G.657 B3 for maximum bend insensitivity
- Ideal for extreme bends in compact closures and tight routing
- Supports low loss in aggressive cornering and cable slack storage
- Maintains high performance even in space-constrained indoor and outdoor networks
- Simplifies installation with strong resistance to bend-induced signal loss

Features

- Low attenuation and dispersion; high level of efficiencies in O-band (1260–1360 nm), C- and L- band (1530–1625 nm)
- Full compatibility with other fibre (for parameters such as transmission, connectors and installation tools)
- Proprietary ACVD manufacturing process
- State of the art testing and R&D capability

Advantages

- Suitable for all types of telecom networks
- Standardised products for worldwide sourcing and applications
- Easier, faster and more secure connections
- High grade purity, geometry and uniformity
- Quality output at every manufacturing stage

Product Name	Standard (ITU-T)	Fibre Dia (µm)	MFD @1310 nm(µm)	Bend Sensitivity	Key Use Case
OH-LITE	G.652.D	250	9.1 ± 0.4	Standard	Legacy deployments
NOVA 250	G.657.A1	250	9.2 ± 0.4	Basic Bend Insensitive	Backward-compatible
NOVA 200		200	9.2 ± 0.4	Basic Bend Insensitive	Microducts
HD A2 250	G.657.A2	250	8.6 ± 0.4	Bend Insensitive⁺	Last mile
HD A2 200		200	8.6 ± 0.4	Bend Insensitive⁺	Microducts
HD A2 180		180	8.6 ± 0.4	Bend Insensitive⁺	Ultra-compact
Stellar 250		250	9.1 ± 0.4	Bend Insensitive⁺	Versatile
Stellar 200		200	9.1 ± 0.4	Bend Insensitive⁺	Versatile
HD B3	G.657.B3	250	8.6 ± 0.4	Bend Insensitive⁺⁺	Harsh bends, Last mile

Product Name	Standard (ITU-T)	Fibre Dia (µm)	MFD @1550 nm(µm)	Bend Sensitivity	Key Use Case
DOF-LITE 655	G.655.C and D	250	± 0.4	NZ-DSF (Low Dispersion)	Long haul / DWDM
DOF-LITE 656	G.656.E/G.656	250	± 0.4	NZ-DSF (Low Dispersion)	Long haul / DWDM

Fibre Frontier

Fibre Type	Status	Use Case
180 µm	Commercial Ready	Ultra-compact cables, Microducts
Multicore Fibre	Commercial Ready + POC	High-capacity backbone (IIT Madras POC)

Enabling advanced connectivity solutions for digital infrastructure

STL began as a global leader in optical fibre – the world's fastest medium for high-speed data transmission. Today, we enable next-gen digital infrastructure with advanced fibre, cable, and optical connectivity solutions.

Our design and manufacturing capabilities span India, China, Italy, and the United States. We offer high-performance products that support AI-scale data centers, hyperscale networks, FTTH rollouts, and 5G backhaul.

Technology and materials innovation is at the core of everything we do. Our solutions are trusted by telcos, data centers, utilities, and defence customers in over 100 countries.

Over the last thirty years, our digital portfolio and global reach have grown significantly and we continue to scale with purpose.


STL
beyond tomorrow