

# FIBRE

According to

- > ITU-T G.652
- > ITU-T G.651
- > IEC 60973-2-50 B.1.1
- > IEC 60973-2-10 A1a
- > IEC 60973-2-10 A1b
- > ISO/IEC 11801 2<sup>nd</sup> Ed.



# FIBRE

**With over 20 years experience of manufacturing optical fibres, Prysmian is able to offer an extensive product portfolio which achieves the highest levels of quality and performance. Coupled with a deep understanding of present and future requirements, Prysmian's product range is targeted at the different needs of the market.**

**Prysmian is in the unique position of utilizing all three major manufacturing processes within its plants; MCVD (Modified Chemical Vapor Deposition), OVD (Outside Vapor Deposition) and VAD (Vapor Axial Deposition). This enables Prysmian to obtain an optimized range of products for different applications.**

**Recent investments have maintained Prysmian's leading position in manufacturing processes. Advanced optics are the objective of leading-edge research being carried out in Prysmian's R&D Fibre Optics Labs centre in Milan, Italy and other R&D centres around the world.**

**On the basis of this research capabilities, Prysmian Telecom Cables and Systems has become a world-leading technological partner for its clients.**

**FOR ANY ADDITIONAL INFO ABOUT PRYSMIAN OPTICAL FIBRE CHECK ON SITE OR ASK FOR THE COMPLETE FIBRE CATALOGUE**

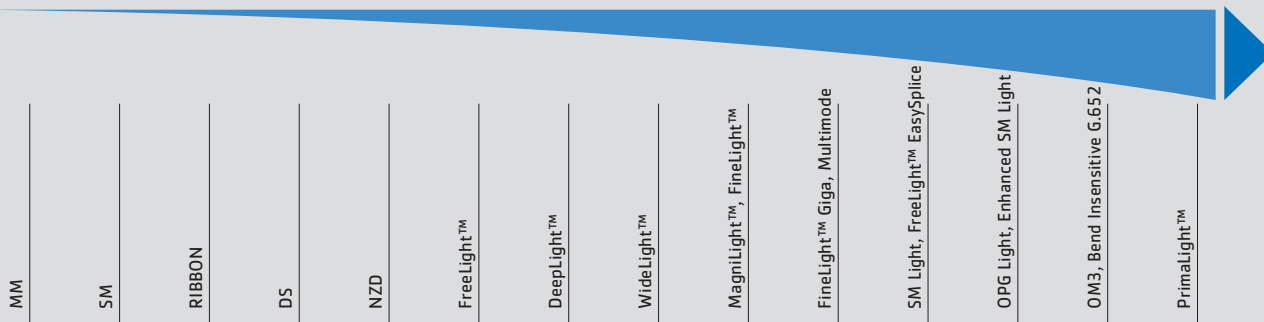
## Applications

The IEEE 10 Gigabit Ethernet standard reflects the strong demand for bandwidth in both Wide Area Network (WAN) and Local Area Network (LAN). Even the growing Fibre To The Home (FTTH) market is demanding high bit rate at low cost. Until today, the only practical answer for such systems requirements has been the short reach multimode fibre (MMF) solution, where the system cost was relatively low. This was offset by the price of the fibre and by the limitations across the potential wavelengths.

The strong commitment of Prysmian to satisfy market requests by using high technology has brought to light a new generation of single-mode optical fibre (SMF), compliant with ITU-T Recommendation G.652 and at the same time achieving performances comparable with latest generation MMF in the short wavelength region (SX) 850 nm. This new generation of Single Mode Optical Fibre fully exploits the advantages of recently developed low cost laser sources, VCSEL (Vertical Cavity Surface Emitting Laser).

PRODUCT PORTFOLIO EVOLUTION

1984 1985 1988 1991 1997 1998 1999 2000 2001 2002 2003 2004 2005 2006



DIMENSIONAL SPECIFICATIONS

	u.m.	9/125	50/125	50/125 Hi Band	50/125 OM3	62,5/125	FineLight™
Cladding diameter	( $\mu\text{m}$ )	125 $\pm$ 1	125 $\pm$ 2	125 $\pm$ 2	125 $\pm$ 2	125 $\pm$ 2	125 $\pm$ 1
Cladding non circularity	(%)	$\leq$ 1,0	$\leq$ 1,0	$\leq$ 1,0	$\leq$ 1,0	$\leq$ 1,0	$\leq$ 1,0
Core/cladding concentricity	( $\mu\text{m}$ )	$\leq$ 0,8	$\leq$ 3,0	$\leq$ 3,0	$\leq$ 1,5	$\leq$ 3,0	$\leq$ 0,8

OPTICAL SPECIFICATIONS

	u. m.	9/125	50/125	50/125 Hi Band	50/125 OM3	62,5/125	FineLight™
Core diameter (m)		9,2 $\pm$ 0,4	50 $\pm$ 3	50 $\pm$ 3	50 $\pm$ 3	62,5 $\pm$ 3	9,2 $\pm$ 0,4
Typical ATTENUATION @ 850 nm	(db/km)	/	2,8	2,8	2,5	3,0	2,2
Typical ATTENUATION @ 1300 nm	(db/km)	/	0,8	0,8	0,7	0,7	/
Typical ATTENUATION @ 1310 nm	(db/km)	0,36	/	/	/	/	0,4
Typical ATTENUATION @ 1550 nm	(db/km)	0,23	/	/	/	/	0,3
CHROMATIC DISPER. @ 1310 nm	(ps/nm $\cdot$ Km)	$\leq$ 3,5	/	/	/	/	$\leq$ 3,5
CHROMATIC DISPER. @ 1550 nm	(ps/nm $\cdot$ Km)	$\leq$ 18	/	/	/	/	$\leq$ 18
Cable cut-off wavelength	(nm)	$\leq$ 1260	/	/	/	/	$\leq$ 1260
BANDWIDTH @ 850 nm	(MHz x Km)	/	$\geq$ 400	$\geq$ 600	$\geq$ 1500	$\geq$ 200	$\geq$ 1000
BANDWIDTH @ 1300 nm	(MHz x Km)	/	$\geq$ 800	$\geq$ 1200	$\geq$ 500	$\geq$ 600	/

AN OVERVIEW OF MULTIMODE APPLICATIONS

Local Area Networks (LAN) are characterised by short distances and a bit rate that is continuously increasing with time. Another important characteristic for local area networks is the great number of access points to the net that correspond to the many users. For this reason the net should use a physical medium that can connect a great numbers of users for short distances without problems. The best solution for fibre in local applications are multimode fibres. Thanks to their specific index profile, multimode fibres are able to ensure an easy and robust splice, simple to carry out without great care and precision. Furthermore, in local area networks a great number of transceivers are used, so an easy, robust and low cost transmitter is required.

Multimode fibres, thanks to their large numerical aperture, can utilise low cost sources like VCSELs or LEDs that have a big spot size. Multimode fibres can work both at 850 nm and 1310 nm, thus are immediately employed with existing LEDs and future VCSELs at 1310 nm. Multimode fibres have a core diameter equal to 50 mm or 62.5 mm. Both of them are able to work with wavelengths equal to 850 nm or 1310 nm and in each case, a great number of modes travel into the fibre. For this reason a natural limitation of multimode fibre is modal dispersion that is not present in single mode fibre; this limits carrying capacity and distance covered. Unfortunately, for traditional single mode fibres, their unlimited bandwidth at 1310 nm and 1550 nm is not reflected in the 850 nm wavelength region.

## About Us

Prysmian is a global market leader in optical cables, supplying a major part of the world's optical cable needs. With a strong heritage of highly advanced R&D, Prysmian is at the leading edge of the technology.

With a worldwide manufacturing presence in 12 countries and in 4 continents Prysmian's global experience and local manufacturing capacity is a significant force in the international marketplace, assuring continuity of supply and high level of service.

Prysmian's optical technology encompasses optical fibers, cables, connectivity, projects and services ensuring that not only the right cable but the right total optical communication system is matched to our customers' needs.

Prysmian offers a complete service from design planning, manufacture and installation through to technical support of commissioned cable networks. Planning and surveying are the cornerstone of our operation, with quality maintained through the expertise and dedication of all our staff working across the business to ISO 9001 and 14000 standards.

When a project is in Prysmian's hands, our customers can depend on a total quality service.

Specifications are subject to change without notice. Cable are designed and tested according to the main national and international specifications (IEC specifications).

dega design group