dura·line

CREATING WHAT CONNECTS US

6th Technical Fitce Forum

Radek Vyvlečka

DURA-LINE IS PART OF ORBIA

Orbia is a community of companies working together to tackle some of the world's most complex challenges. We are bounded by a common purpose: **To Advance Life Around the World.**

orbia

Orbia Brands

NETAFIM wavin Koura dura·line vestolit alphagary

GLOBAL FOOTPRINT

1953	~22,000	100+ Countries	US $8.8B	23.3%
Founded	Employees	Commercial Activities	2021 Revenues	2021 EBITDA Margin

ADDRESSING THE WORLD'S BIGGEST CHALLENGES

Dura-Line and parent company Orbia have pledged support to the United Nations' Sustainable Development Goals

Dura-Line is on track to connect 1 billion people across the globe by 2025.

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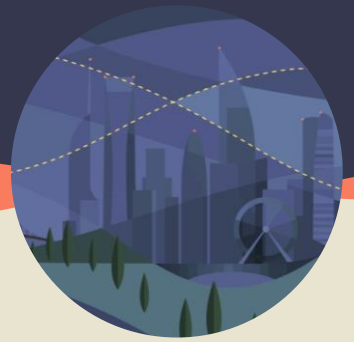
ADDRESSING THE WORLD'S BIGGEST CHALLENGES

How do we feed the world sustainably?

How can we better manage our water systems?

How do we make cities more livable, lovable and resilient ?



How do we connect and empower communities with data?

Can health and well-being be made accessible?

How do we push beyond sustainability to regeneration?

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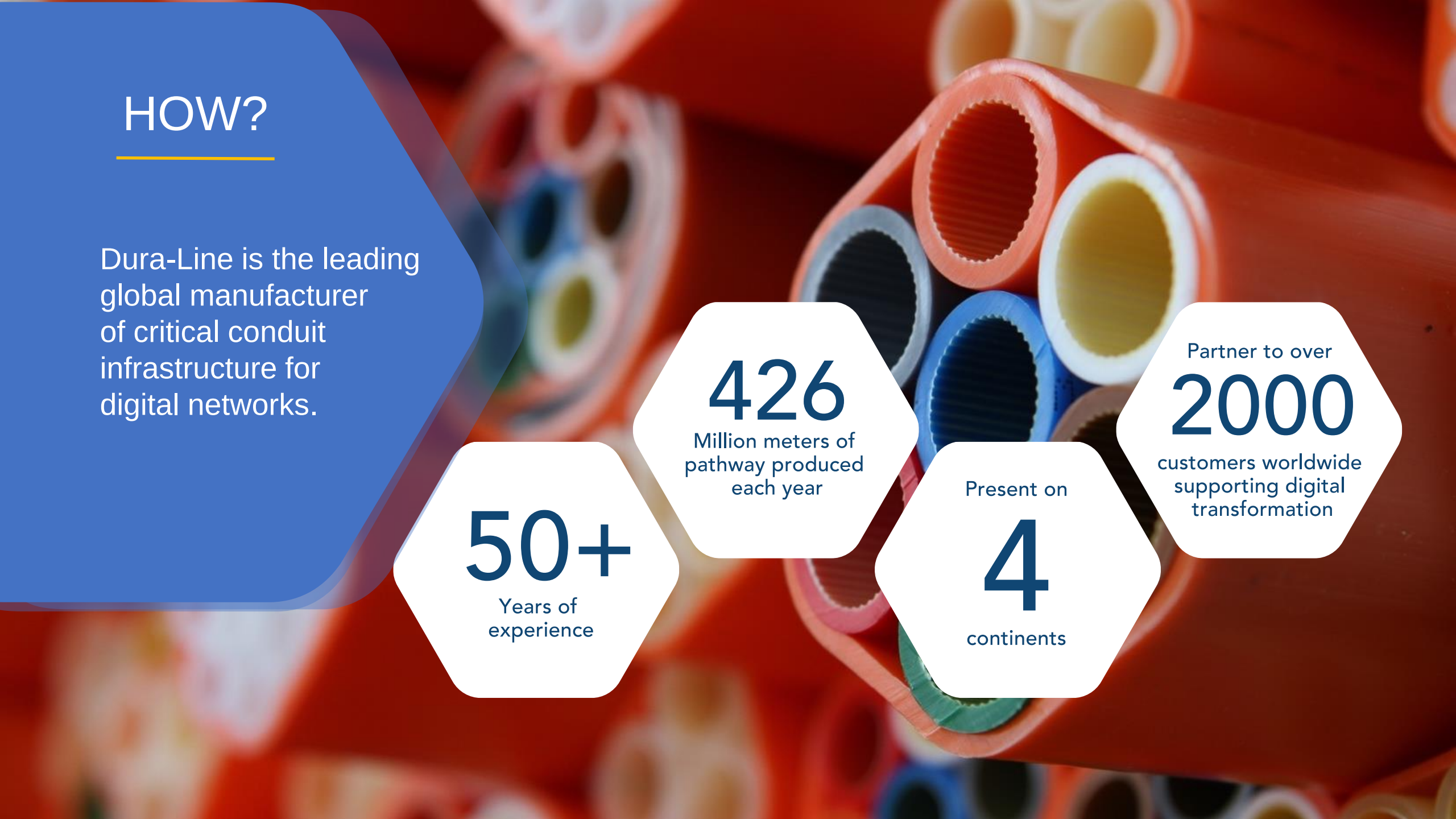
HOW?

Dura-Line is the leading global manufacturer of critical conduit infrastructure for digital networks.



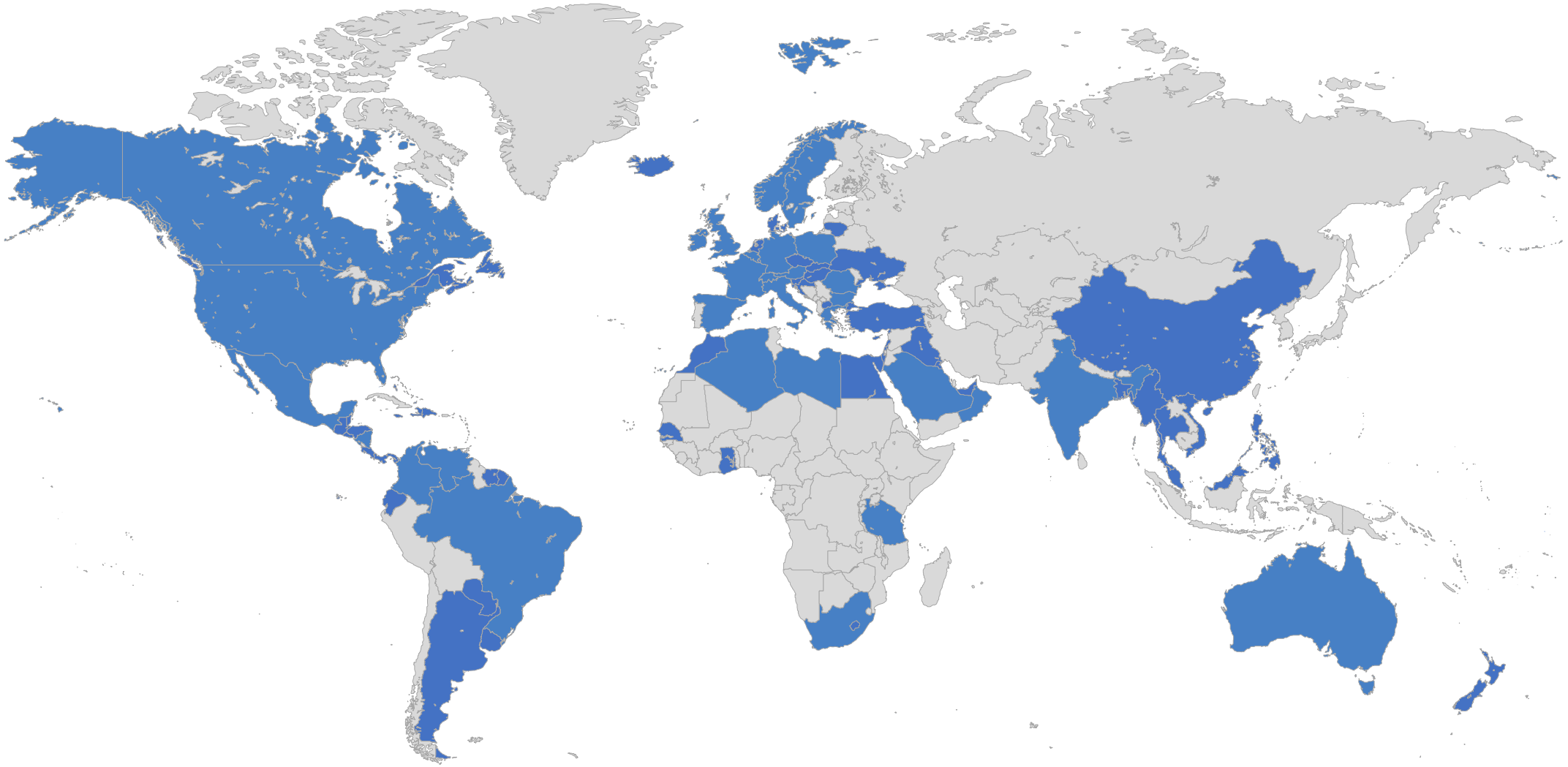
50+
Years of experience

426
Million meters of pathway produced each year

Present on
4
continents

Partner to over
2000
customers worldwide supporting digital transformation

DIVERSIFIED AND LOYAL CUSTOMER BASE



Dura-Line is a key partner of the top global telecommunications operators, hyper scalers and utility companies.
The average length of relationship for our top 10 customers is over 15 years.

Strong Global Footprint

- 20 plants
- 3 R&D centres
- 5 testing facilities

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HISTORY OF INNOVATION

dura·line

1971 Company founded Middlesboro, KY
Water and gas products

1981 First manufacturer of fiber optic subduct. First manufacturer of duct with pre-installed pull line

1983 First manufacturer of longitudinally ribbed duct

1984 Introduced EVEN-LOAD® pull line slack system

1985 First manufacturer to offer all major type of ducts including: Fiber Optic, Smoothwall, Cable-in-Conduit, Ribbed, Pre-Lubricated, Corrugated, Fire-Retardant

1986 Introduced SILICORE® super slick permanent lining

1987 Introduced DURATHANE® riser rated

1988 Introduced Fiber Cable-in-Conduit (CIC)

1991 First ISO-9000 Certification

1992 Introduced FIREJACKET® plenum rated

1993 Introduced FIGURE-8® aerial duct

1998 Introduced PINPOINT® locatable duct. Introduced MicroDucts

1999 Introduced FuturePath® bundled MicroDucts

2003 Introduced Fire Retardant MicroDucts

2005 Introduced FuturePath Flex
Introduced Fire Retardant FuturePath
Introduced CIC MicroDucts

2006 Introduced Aerial MicroDucts

2008 Introduced Locatable MicroDucts

2011 Introduced Enterprise FuturePath Acquisition of BoreFlex

2012 20 Manufacturing Facilities Worldwide

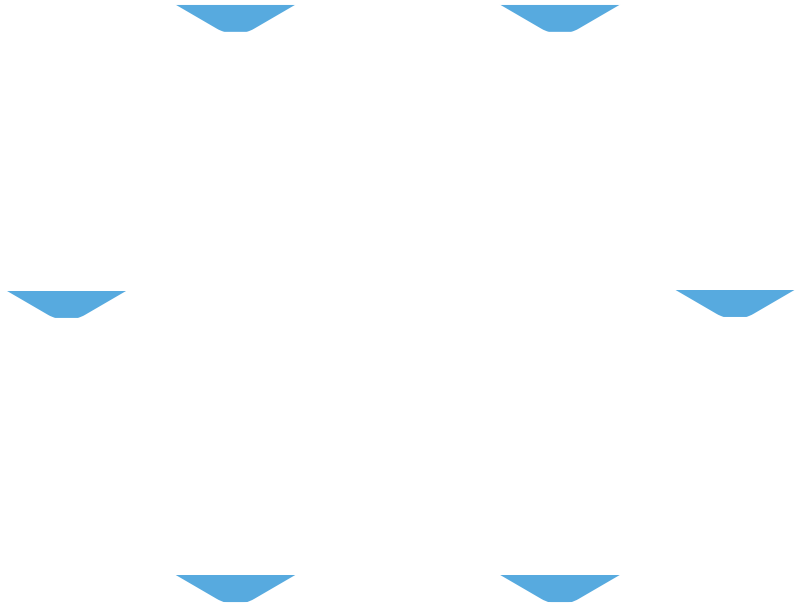
2018 Introduced LSZH Conduit

2019 Introduced FuturePath® Jumbo

2022 Improved formula, new SILICORE® ULF "Ultra Low Friction"

DURA-LINE: CREATING WHAT CONNECTS US

To help you make the right connection, we strive to be your partner of choice through our services, knowledge, and products.



R&D AND TESTING CENTERS

Dura-Line's R&D and Testing Centres offer product expertise and design services to connect the world more efficiently and sustainably with pioneering infrastructure technology.

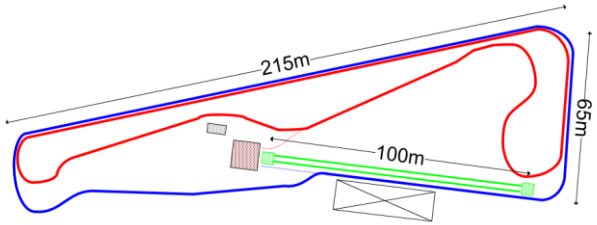
- Products, tooling, and additives testing
- Conduit raw material optimization
- Product composition analysis
- Micro cable blowing demonstrations
- Technical audits and verification
- OTDR/attenuation measuring

WORLD-CLASS CABLE JETTING TEST FACILITY

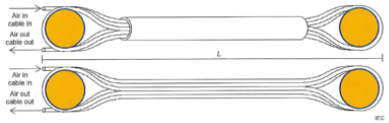
- 5000m² in Motz, France
- Follows the international IEC testing standards
- Various installation techniques:
  - IEC underground installation - 200m (green)
  - In concrete (red and blue)
  - Aerial - 500m of 12x5 duct (red)

TESTING CENTRE

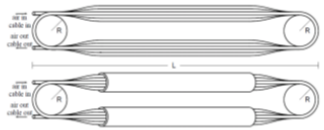
R&D



External 1 : length = 465m
External 2 : length = 500m
IEC test : length = 100m



IEC 60794-1-21 (2015)



IEC 60794-5-10 (2014)

STRONG CUSTOMER PARTNERSHIPS

We help you identify the best solution for your project with a team of experts and the power of a global enterprise.

Our team consists of **experienced infrastructure specialists** and bright talents with an **engineering/ telecom background**. This combination makes Dura-Line a reliable partner for all:

- Technical support from the concept and design stage, through construction and operation
- Selection of material solutions considering technical requirements and Total Cost of Ownership (TCO)
- Customized solutions development in partnership with R&D
- Customer focused support in 5 languages
- Customer training

SOLUTION ARCHITECTS

DURA-LINE PRODUCT APPLICATIONS

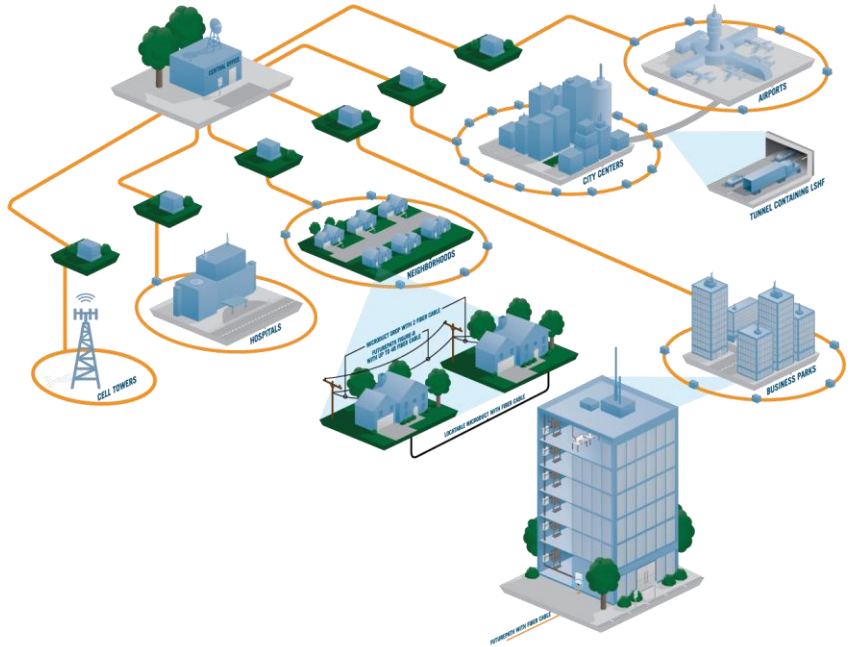
The fast growth of internet users and data-driven online services challenge our telecommunications networks. Future demand for increased bandwidth is driving the need for more flexible, scalable fibre-optic networks. **Our conduit systems are flexible and suitable for:**

Applications

- FTTx
- Wireless Networks
- Enterprise Networks
- Metropolitan Networks
- Smart Cities
- Backbone Network Infrastructure
- CATV/MSO
- In-Building Installations
- Railway or Road Tunnels
- Aerial Overhead Networks

Installation techniques

- Trench
- Sub-ducting
- Plow
- MicroTrench
- Aerial
- Tray
- Override
- Confined Spaces
- Directional Bore
- Interior



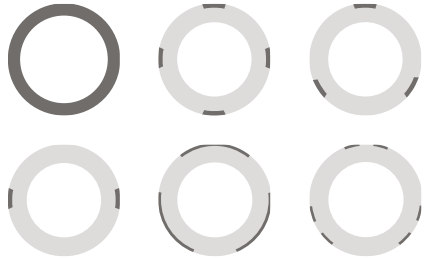
CUSTOM SOLUTIONS

All Dura-Line conduits and MicroDucts can be manufactured in a variety of sizes and colours, with stripes and custom print streams available for ease of identification.

Colors

Color combination options

Various configurations of colour coding are available: fully opaque or colourless with stripes



Marking

Standard marking is as follows and can be customised on request:

For MicroDucts:

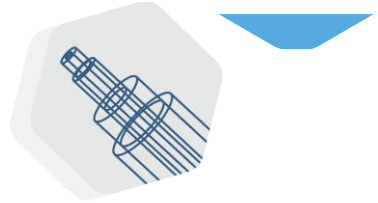
DURA-LINE CT DuraMicro DB/DI OD/IDmm
SILICORE MM/YYYY LOT No 0000m >I<

For bundled products:

Metrication I Manufacturer I Batch Number I
Type of bundle I PE-HD I Production date I Machine -No. I

Additional customization:

- Resin type
- Wall thickness
- Custom marking
- Delivery scope
- Certification
- Packaging configurations



PACKAGING CONFIGURATIONS

A broad range of packaging options
for efficient transport and ease of use

- Plywood drums (HPD drums)
- Wooden drums (HWD drums)
- Plastic drums

QUALITY IS OUR FOCUS

We carry out a wide range of tests on our products to ensure optimal quality. All our production and quality measurement records are stored and fully-trackable, available for customers and quality inspections to review.

Internally Tested

We perform more than **15 in-house production and laboratory tests** on our products

Externally Certified

- Dura-Line Europe has been successfully recertified according to international standards **ISO 9001, ISO 14001 and ISO (OHSAS) 18001.**
- Dura-Line's products and plants are continuously tested and audited twice a year by SKZ, the independent European plastic institute.
- **Dura-Line is the only European manufacturer of MicroDucts holding the SKZ certification**

RESPONSIBLE MANUFACTURING

Dura-Line and parent company Orbia have pledged support to the United Nations' Sustainable Development Goals.

Closed Loop Water System

Our manufacturing equipment reuses 1,362 litres of water every minute, reducing overall water requirements and avoiding creation of wastewater.

Renewable Energy

We partner with local power companies to drive energy efficiency at our 3 European manufacturing locations. All 3 plants have also converted to LED lighting.

Regrind Programme

Scrap HDPE from our manufacturing processes is reground and reused in conduits that can be installed in future-proof digital networks.

Reel Recycling Programme

Each of our plants recycles or has a partner that recycles reels. Sochaczew, Poland also has a Green Label certificate and is a member of the Pallet Recovery System.

Zero Waste to Landfill

All Dura-Line plants are working toward a zero-waste-to-landfill goal. Motz, France was the first to reach the goal with all waste recycled or burnt for energy recovery.

OUR PRODUCTS

Dura-Line is the global leader in digital infrastructure combining proven quality and production power.

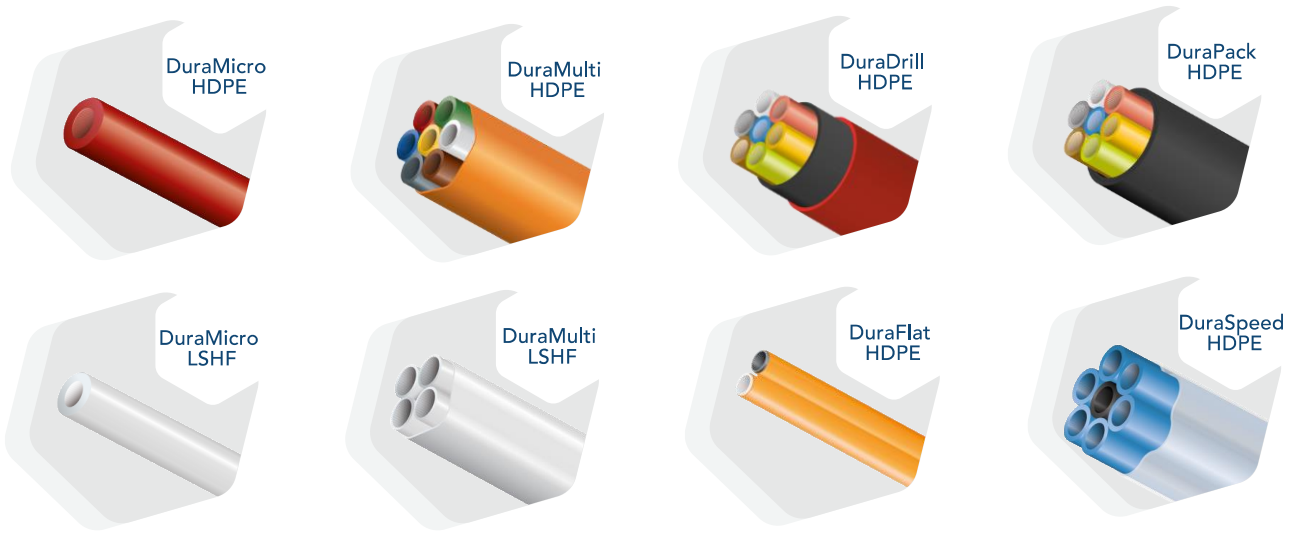
- Innovative and sustainable product range
- Flexible and suitable for various applications and installation techniques
- Quality confirmed by stringent internal tests and external certification
- Choice of material including virgin HDPE, recycled, fire-retardant, antirodent
- Solutions for underground, in-house and aerial environments
- UV stabilized for short or long term

Product Overview ❯

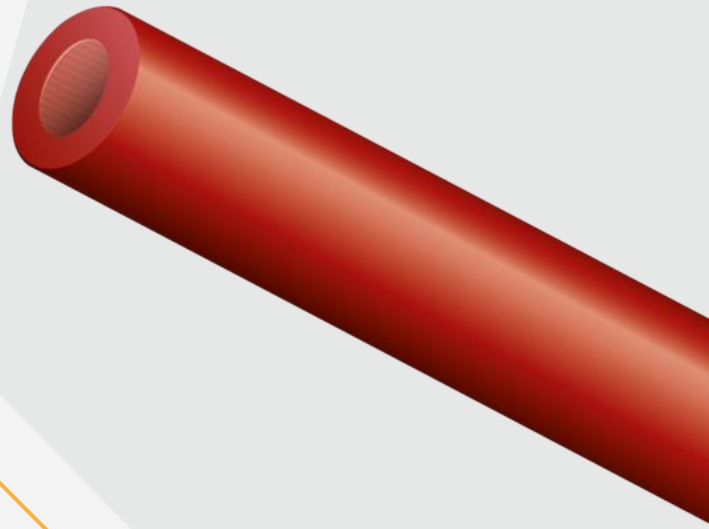
MICROTECHNOLOGY

MicroTechnology is a term given to smaller conduits and fiber used in Inside and Outside Plant (ISP and OSP) environments. DuraMicro was developed as a solution to house fiber cables that are smaller in size, but still carry significant capacity.

- MicroCables are available with fibre counts from 6 to 864 fibres
- Unique cable design to reduce the diameter of the cable sheath and support system
- MicroDucts bundled under one sheath are called DuraMulti and provide multiple ducts in one structure for future expansion of networks



DURAMICRO HDPE



Dura-Line's DuraMicro ducts are made from top quality virgin or reground HDPE and are lined with Dura-Line's SILICORE™ permanently lubricated lining as standard. DuraMicro HDPE is offered in two variations, one designed for creating a new direct buried pathway, the other specifically for placing as a subduct in an existing line.

- Made from virgin HDPE
- Any size from Ø 5 to > 20mm
- Internal low friction layer and optional internal ribs to maximize blowing performance
- Pressure resistant to 15 bars
- Improved impact and compression resistance for direct buried products
- Installation can be done with single MicroDucts or bundles

DURAMULTI HDPE

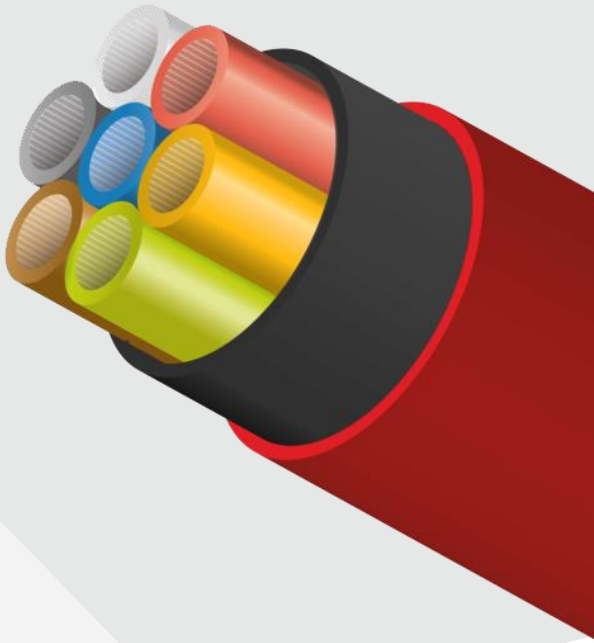
DuraMicro is factory bundled with a polyethylene oversheath into an easy-to-handle unit, DuraMulti. With an easy to remove sheath, it's simple to access individul DuraMicro pathways for uncomplicated branching. The unique shape makes installation easy for direct buried installations, utilizing common duct placing installation techniques.

- Made from HDPE
- Available in configurations with 2 to 24 DuraMicro pathways
- Any size from Ø 7 to > 20mm
- Internal low friction layer (Silicore) + optional internal ribs to maximize blowing performance
- Pressure resistant to 15 bars
- Improved impact and compression resistance for direct buried products
- User-friendly deployment of multipe MicroDucts

DURAPACK HDPE

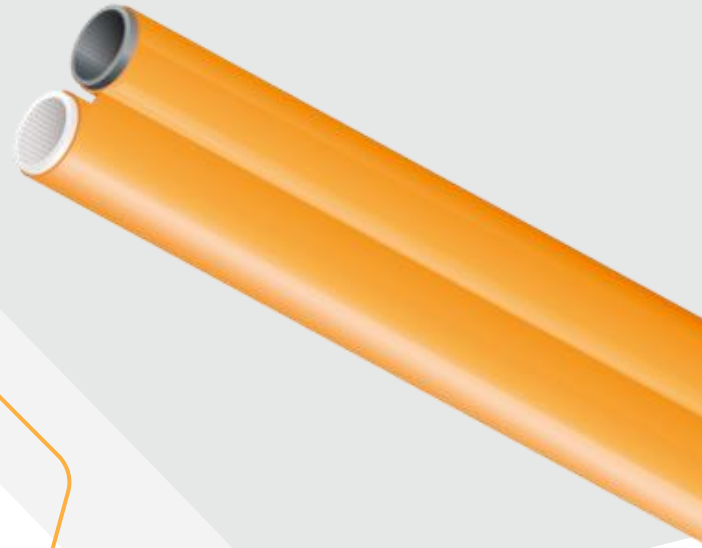
DuraPack provides direct install DuraMicro MicroDucts factory pre-installed into a larger conduit with more efficiency than can be easily achieved on-site. Loose bundles of DuraMicro within a larger conduit are a proven installation method for FTTH.

- Made from HDPE
- Any size from Ø 5 to > 20mm
- Internal low friction layer (Silicore) + optional internal ribs to maximize blowing performance
- Pressure resistant to 15 bars
- Stiff construction to prevent undulations of MicroDucts resulting in longer blowing distances



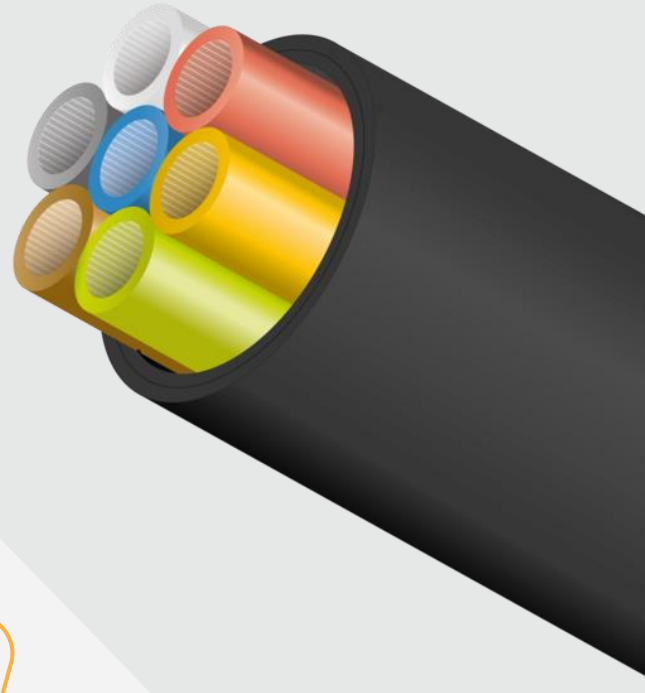
DURAFLAT HDPE

DuraFlat consists of DuraMicro direct buried MicroDucts for additional strength in a flat configuration connected with a thin webbing. This unique shape, with thin profile is primarily used in MicroTrenching applications.



- Up to 8 DuraMicro in one bundles
- Internal low friction layer (Silicore) + optional internal ribs to maximize blowing performance
- Easy to remove outer sheath providing access individual pathways
- Place inside existing pathways for subducting
- User-friendly deployment of multipe MicroDucts

DURADRILL HDPE

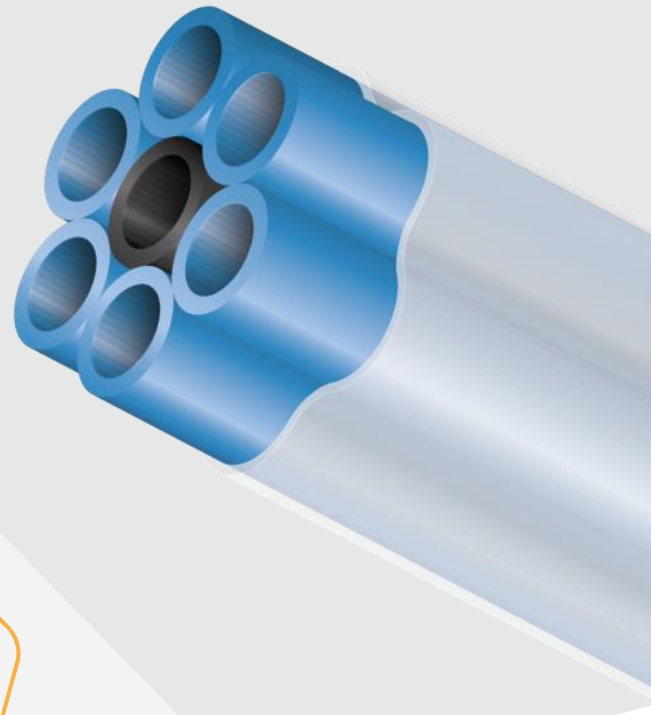


DuraDrill is designed for the most demanding applications like directional drilling and direct buried applications. With two jackets, this rugged product has exceptionally high pulling resistance and provides additional protection for the internal MicroDucts.

- Made from HDPE
- Very high pulling resistance
- High scratch resistance during the pulling process
- Internal low friction layer (Silicore) + optional internal ribs to maximize blowing performance
- Pressure resistant to 15 bars
- Stiff construction prevents undulations of DuraDrill to create an optimal cable jetting pathway

DURASPEED HDPE

DuraSpeed's lightweight design creates multiple pathways when placed inside an existing, unoccupied route. Comprised of DuraMicro direct install MicroDucts in several configurations. Installation of DuraSpeed into existing empty ducts can be accomplished by blowing, pulling or pushing.

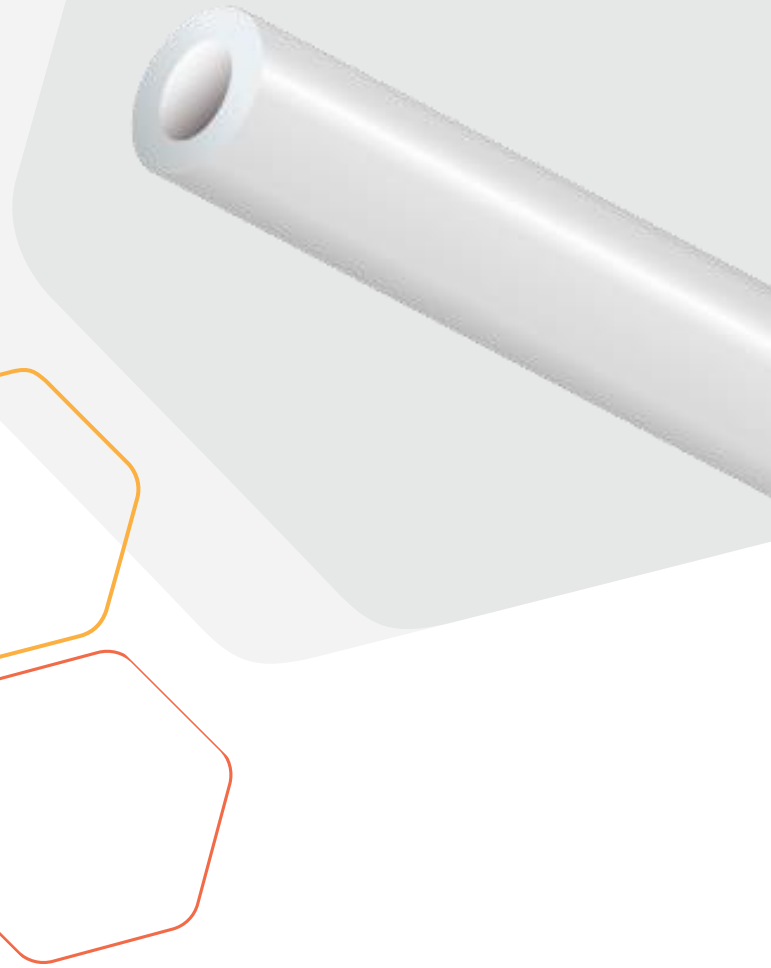


- Made from HDPE
- Internal low friction layer + optional internal ribs to maximize blowing performance
- Pressure resistant to 15 bars
- Thin outer sheet for compact construction
- Long blowing distances at optimal fill ratio of 80%

DURAMICRO LSHF

Dura-Line's DuraMicro ducts are made from top quality virgin or reground HDPE and are lined with Dura-Line's SILICORE™ permanently lubricated lining as standard. DuraMicro LSHF is a flame retardant solution for indoor networks utilizing Direct Install (DI) applications.

- Made from flame retardant LSHF materials
- Any size from Ø 4 to > 16mm
- Internal low friction layer + optional internal ribs to maximize blowing performance
- Pressure resistant to 15 bars
- Installation directly on the wall or in existing gutter systems.
- Suitable for creating new routes and also as a subduct in an existing lines
- Anti-static inner layer reduces friction caused by static electricity build-up during fiber installation



DURAMULTI LSHF

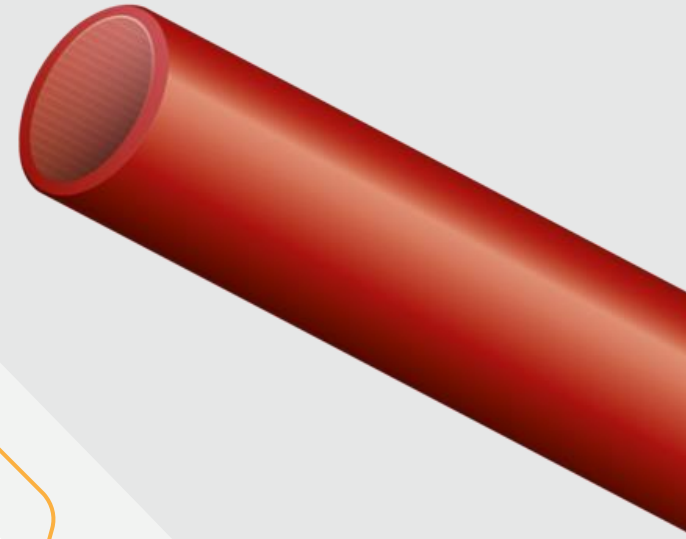
DuraMulti LSHF was engineered to be installed indoors where flame retardant characteristics are critical. Two or more DuraMicro pathways are factory bundled under a polyethylene oversheath for one easy-to-handle unit. DuraMulti is available in a variety of configurations, with several options for DuraMicro sizes.

- Made from LSHF materials
- Available in configurations with 2 to 24 DuraMicro pathways
- Any size from Ø 5 to > 12mm
- Internal low friction layer (Silicore) + optional internal ribs to maximize blowing performance
- Pressure resistant to 15 bars
- Improved impact and compression resistance for DB products
- Installation can be done with single MicroDucts or bundles

DURAOPTO HDPE

Dura-Line’s DuraOpto ducts are made from top quality virgin or reground HDPE and are lined with Dura Line’s SILICORE™ permanently-lubricated lining as standard. DuraOpto ducts come ready for direct-burial (DB) or with thinner walls for direct-install (DI).

- Made from virgin HDPE
- Any size from Ø 20 to > 63mm
- Internal low friction layer + optional internal ribs to maximise blowing performance
- Pressure resistant to 15 bars
- Improved UV resistance
- Can be delivered on segmented drums or coiled with several lengths on one drum



MICRODUCT ACCESSORIES

To complete your installation, Dura-Line offers a complete line of accessories for both telecommunications and power networks.

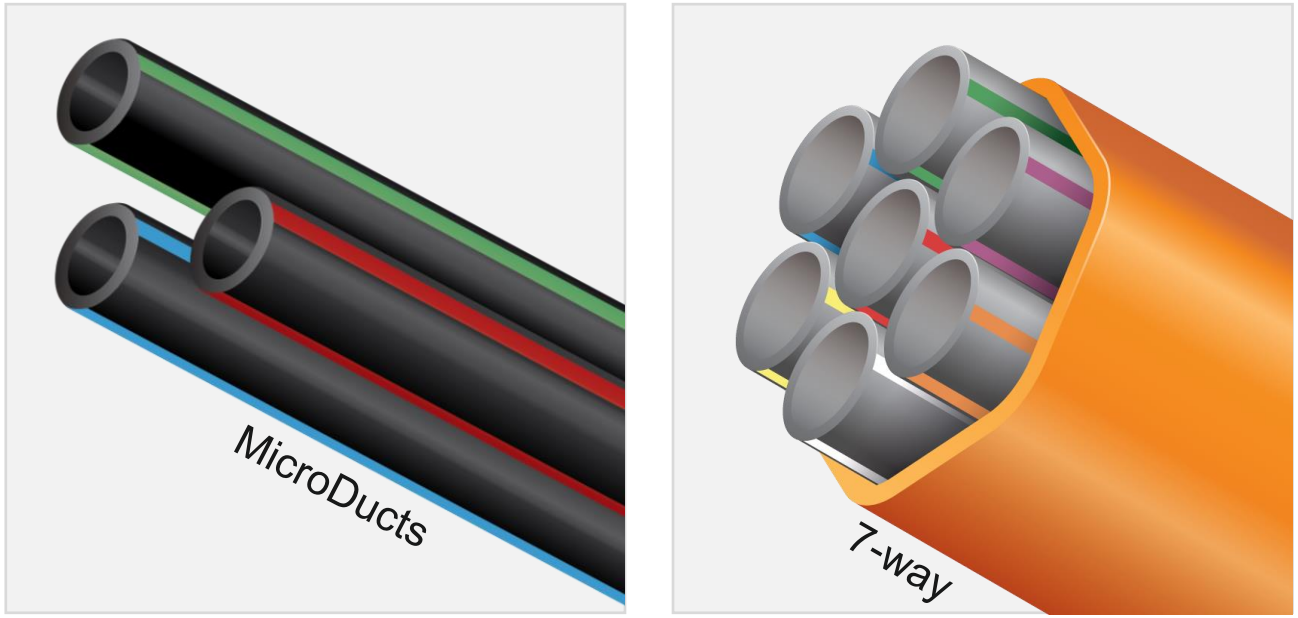
- The Dura-Line core ranges includes selections for coupling, sealing, locating, and terminating ducts
- Products are also available to aid in installing cables including Gas Block connectors and Wall Entry Seals
- PowerDuct Accessories can facilitate cable laying and pulling, as well as watertight and gas-tight seals.

Introducing MicroDucts and FuturePath ECO

All the same possibilities, with less of the plastic

- All standard MicroDuct sizes and bundle combinations available
- Individual MicroDucts use up to **100% internal, reground Dura-Line scrap HDPE**
- MicroDuct bundles typically utilize **~80% scrap HDPE**
- Protective jacket and coloured identification stripes use virgin materials
- Products meet stipulated parameters for virgin-based products

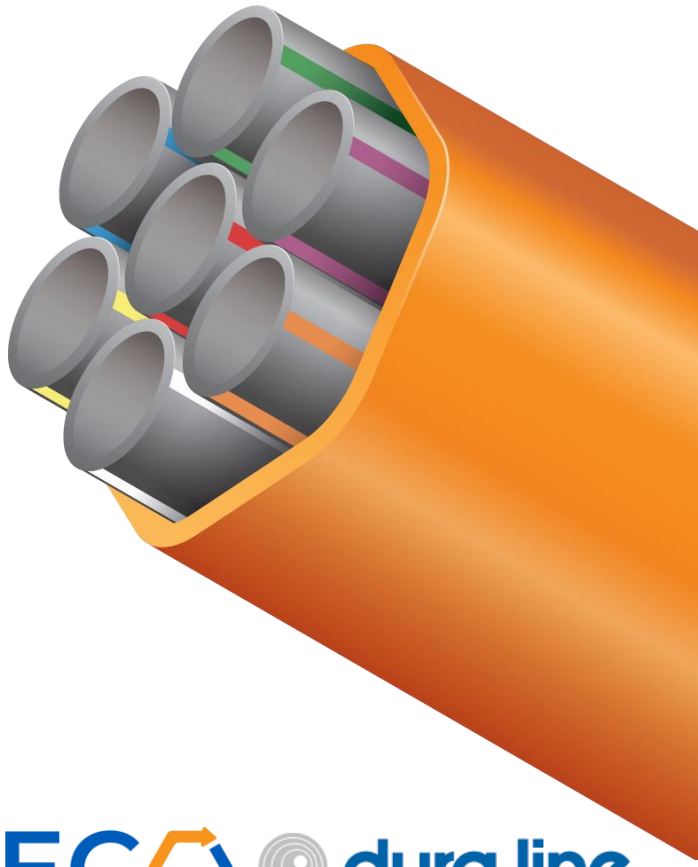
Typical MicroDuct and FuturePath ECO configurations:



ECO dura-line

Why MicroDucts and FuturePath ECO?

- Well-established manufacturing process (15+ years)
- Manufactured in-region – no overseas transport required to mainland Europe
- Supports Dura-Line's "Zero Waste to Landfill" goal
- Meet stipulated parameters for virgin-based products
- Tested and proven in customer field trials



MicroDuct and FuturePath ECO products meet stipulated parameters for virgin-based products

Parameter	Stipulated Range for Virgin-Based	Circular Economy Product Pilot Sample Result
Outer Diameter (mm)	13.9 to 14.1 mm	14.03 mm
Average Wall Thickness (mm)	1.90 to 2.10 mm	1.93 mm
Minimum Wall Thickness (mm)	≥ 1.90 mm	1.90 mm
Inner Diameter (mm)	10 mm	10 mm
Yield Strength (MPa)	≥ 18.0 MPa	19. 5 MPa
Yield Force (N)	≥ 1360 N	1432 N
Strain at break (%)	≥ 450%	625%
Inner Coefficient of Friction	≤ 0.1	0.059
Compression Strength (N)	≥ 2100 N	2373 N
Compression Deformation (%)	≤ 15%	13.9%
Flexural Strength (Nm^2)	≥ 1415 Nm^2	1499 Nm^2
Quality and Legibility of Printing	Remains legible after EN IEC 60 794-1,2 stipulated wet rubbing cycle	Remained legible after text
Longitudinal Reversion and Shrinkage (%)	≤ 3%	2.8%

Note: attributes stated for a 14/10 mm pilot sample product – attributes will vary based upon Microduct size and wall thickness

ECO dura-line

FuturePath ECO MicroDucts perform equivalent to virgin products in crucial field tests

Spiralling

- Both FuturePath ECO and virgin products exhibited spiralling when first removed from the shipping reel
- Both products were removed from shipping reels at -3.5°C temperature
- Both products were later straightened and covered with soil, when temperature was +2 °C

Jetting

- 96F micro cable (8 x 12F, 6.3mm OD, 65% fill ratio) was blown into FuturePath ECO and virgin MicroDucts
- Cable completed double loop of 500m test track in FuturePath ECO MicroDuct
- Both products facilitated 130m/min speed and 6 bar pressure during jetting
- Environmental conditions were same for both tests

Dura-Line is manufacturing responsibly across Europe

Dura-Line has made products from reground internal scrap materials for more than 15 years

Closed Loop Water System

Our manufacturing equipment reuses 1,362 litres of water every minute, reducing overall water requirements and avoiding creation of wastewater.

Regrind Programme

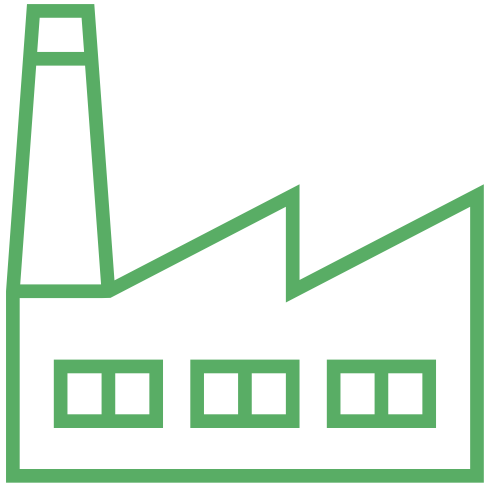
Scrap HDPE from our manufacturing processes is reground and reused in conduits that can be installed in future-proof digital networks.

Zero Waste to Landfill

All Dura-Line plants are working toward a zero-waste-to-landfill goal. Motz, France was the first to reach the goal with all waste recycled or burnt for energy recovery.

Renewable Energy

We partner with local power companies to drive energy efficiency at our 3 European manufacturing locations. All 3 plants have also converted to LED lighting.



Reel Re-use Programme

Each of our plants re-uses or has a partner that re-uses reels. Sochaczew, Poland also has a Green Label certificate and is a member of the Pallet Recovery System.

ECO dura-line

Ready to connect the world together?

Safer, smarter and sustainable

CONTACT US:

Call: +420 577 199 111

Or visit: www.duraline.com

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