



# Technical Data Sheet



## TIU-MicroPACK DB – Microduct Bundles



- **Application:** Protection of optical micro cables in the telecommunication nets.
- Microducts have smooth inner wall LF (Low Friction) for easy optical micro cables installation. The ribbed inner wall is available on the request.
- HDPE sheath tightly binds the microduct bundle but it is not physical joined to microducts.
- The minimal HDPE sheath thickness is 0,75 mm.
- HDPE sheath is in the natural translucent version or in the required RAL scale. HDPE sheath with UV stabilization is available on the request.
- Microduct's wall thickness, HDPE sheath thickness and the type of used material allow „Direct Burial“(DB) without additional protective duct.
- All microduct's bundles comply with the EN 60 794-1-2: “Optical fibre cables-Part 1-2: Generic specification-Basic optical cable test procedures”.
- Design life of the TIU-MicroPACK DB in the ground is 50 years.

### 1. Bundles types, dimensions and mechanical properties

7/3,5 mm	OD (mm)	Max. Tensile (N)	Weight (kg/km)	Bend Radius (mm)	Crush (N)
3way triangle	15.6x14.7	1200	115	156	2000
3way flat	22.6x8.6	1200	115	226	2000
4way	18.5x15.6	1600	150	185	2000
7way	22.6x20.7	2800	232	226	2000
12way	29.6x26.8	4800	395	296	2000



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8/4,4 mm	OD (mm)	Max. Tensile (N)	Weight (kg/km)	Bend Radius (mm)	Crush (N)
1way	9,6	450	58	96	1000
2way	17.8x9.8	880	85	178	1000
3way triangle	17.6x16.5	1320	138	176	2000
4way	20.9x17.6	1760	190	209	2000
7way	25.6x23.5	3080	255	256	2000
12way	33.6x30.4	5280	430	336	2000

12/8 mm	OD (mm)	Max. Tensile (N)	Weight (kg/km)	Bend Radius (mm)	Crush (N)
1way	13,6	900	96	136	1000
2way	25.6x13.6	1700	160	256	2000
3way triangle	25.6x24.0	2550	238	256	2000
4way	30.6x25.6	3400	305	306	2000
7way	37.6x34.4	5900	505	376	2000

12/10 mm	OD (mm)	Max. Tensile (N)	Weight (kg/km)	Bend Radius (mm)	Crush (N)
3way triangle	25.6x24.0	1350	224	256	2000
7way	37.5x35.0	3200	320	375	2000



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14/10 mm	OD (mm)	Max. Tensile (N)	Weight (kg/km)	Bend Radius (mm)	Crush (N)
1way	15.6	1050	114	156	1000
2way	29.6x15.6	1900	195	296	2000
3way triangle	29.6x27.7	2850	285	296	2000
3way flat	43.6x15.6	2850	285	436	2000
4way	35.4x29.6	3800	365	354	2000
5way	43.6x27.7	4250	455	436	2000
6way	39.8x36.6	5100	505	398	2000
7way	43.6x39.8	6650	636	436	2000
8way	43.6x41.7	6800	685	436	2000
12way	57.6x57.6	10200	1015	576	2000

16/12 mm	OD (mm)	Max. Tensile (N)	Weight (kg/km)	Bend Radius (mm)	Crush (N)
2way	33.6x17.6	2300	238	336	2000
3way triangle	33.6x31.5	3450	325	336	2000
4way	40.2x33.6	4600	425	402	2000
6way	49.6x33.6	6900	610	496	2000
12way	65.6x65.6	13800	1210	656	2000



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20/16 mm	OD (mm)	Max. Tensile (N)	Weight (kg/km)	Bend Radius (mm)	Crush (N)
1way	21.6	2000	165	216	2000
2way	41.6x21.6	4000	320	416	2000
3way triangle	41.6x41.6	6000	580	416	2000
3way flat	61.6x21.6	6000	580	616	2000
4way	41.6x41.6	8000	630	416	2000
7way	61.6x60.6	14000	1000	616	2000

### 2. External and internal surface

Smooth with no scraps, cracks and grooves.

### 3. Colour

HDPE sheath is in natural translucent version as standard or in the mentioned RAL scale:

RAL 9003	RAL 7004	RAL 1018	RAL 2003	RAL 3020	RAL 3015	RAL 4005	RAL 5018	RAL 5015

					NATURAL
RAL 5003	RAL 6018	RAL 5021	RAL 8004	RAL 9017	translucent

Other colours are available according to the customer demand.

### 4. Marking and Printing

The bundles are contrast printed by (INK-JET) with basic identification – length, producer name, seller name, type, dimension, date and time of the production (see example). Printing scheme is repeating by 1 meter. It is possible to change the printing according to the customer request.

#### Printing Example

><0000 m TIU-PLAST MicroPACK DBB 4x14/10 mm LOT No 12345678 DD.MM.YYYY HH:MM



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### 5. Quality

The specification of the raw material for bundles production complies with guaranty of use and installation.

All microduct's bundles comply with the EN 60 794-1-2: "Optical fibre cables-Part 1-2: Generic specification-Basic optical cable test procedures".

The quality control is periodically carried out directly during the production and also in the producer laboratory.

### 6. Packaging

The bundles are coiled on non-return wooden drums and wrapped by the protective wrap. The wrap consists of two layers. The lower layer is the foamed PE foil (the protection against the mechanical damage) and the upper layer is black stretch foil (the protection against the UV radiation). Bundle's ends are protected by plastic caps – protecting them from impurities penetrating into microducts. Standard length is 1000 m.

### 7. Storage

Storage conditions comply with EN ISO 8331. It is necessary to protect the HDPE bundles (by the packed foil) from the daylong daylight heating radiation, mechanical failure, effect of organic solvents, etc.

The HDPE bundles wound on the drums or in coils are stored only for necessary time before the installation, maximally 1 year from the production date.

The coils (without drums) are stored in the horizontal position on each other, bedded on pallets, maximal height 2 m.

Recommended temperature for the storage is from  $-40^{\circ}\text{C}$  to  $+55^{\circ}\text{C}$ . Distance from the heating source has to be minimally 1 m.

HDPE material of the bundles is classified as the "F" level flammability according to the EN 13501-1. Recommended extinguishers fire: water, foam, powder,  $\text{CO}_2$ .

### 8. Transport

The bundles are transported conventionally. No special instructions are necessary. It is recommended to fix drums or coils by fixing belts on a truck during the transportation.

### 9. Manipulations

The drum with the wound bundle is necessary to pick up only on the wood side of the drum! No contacts between the outside of drums and bundles are allowed!

The recommended temperature range for the installation:  $0^{\circ}\text{C}$  to  $+50^{\circ}\text{C}$ .



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The bundles are less flexible at temperature below 0 °C and when the bundle is bent it could crack. Nevertheless by the careful handling it is possible to make installation up to –5 °C without damage. During the installation it is necessary to keep the outer and inner surface clean and dry.

**Minimal radius** during the installation is recommended in the range about 20 to 18 multiple of the outer diameter (OD) of the bundle, exceptionally 15 x OD.

**Average length expansion coefficient** is  $1.6 \cdot 10^{-4} \text{ K}^{-1}$  in the temperature range: -20°C to +70°C (see ISO 11359-2).

### 10. Environment

The waste from bundles is a green product. Standard is recyclable and it is used for secondary class products. Disposal is also possible by burning in a special incineration plant or by the transport to the dumping place.

User can order a disposal at the nearest recycling company or at the producer.

Generic mark of ducts material is according to EN ISO 11469 > **PE-HD** < (see the **printing**).

### 11. Safety

Safety conditions for manipulation with coils and drums are based on the “Standard manipulation with heavy weight”. It is necessary to be careful during recoiling the first row from the drum or coil. An unfasten end of the bundle could whip and cause an injury. Bundles are not dangerous in any case for the user and the environment.