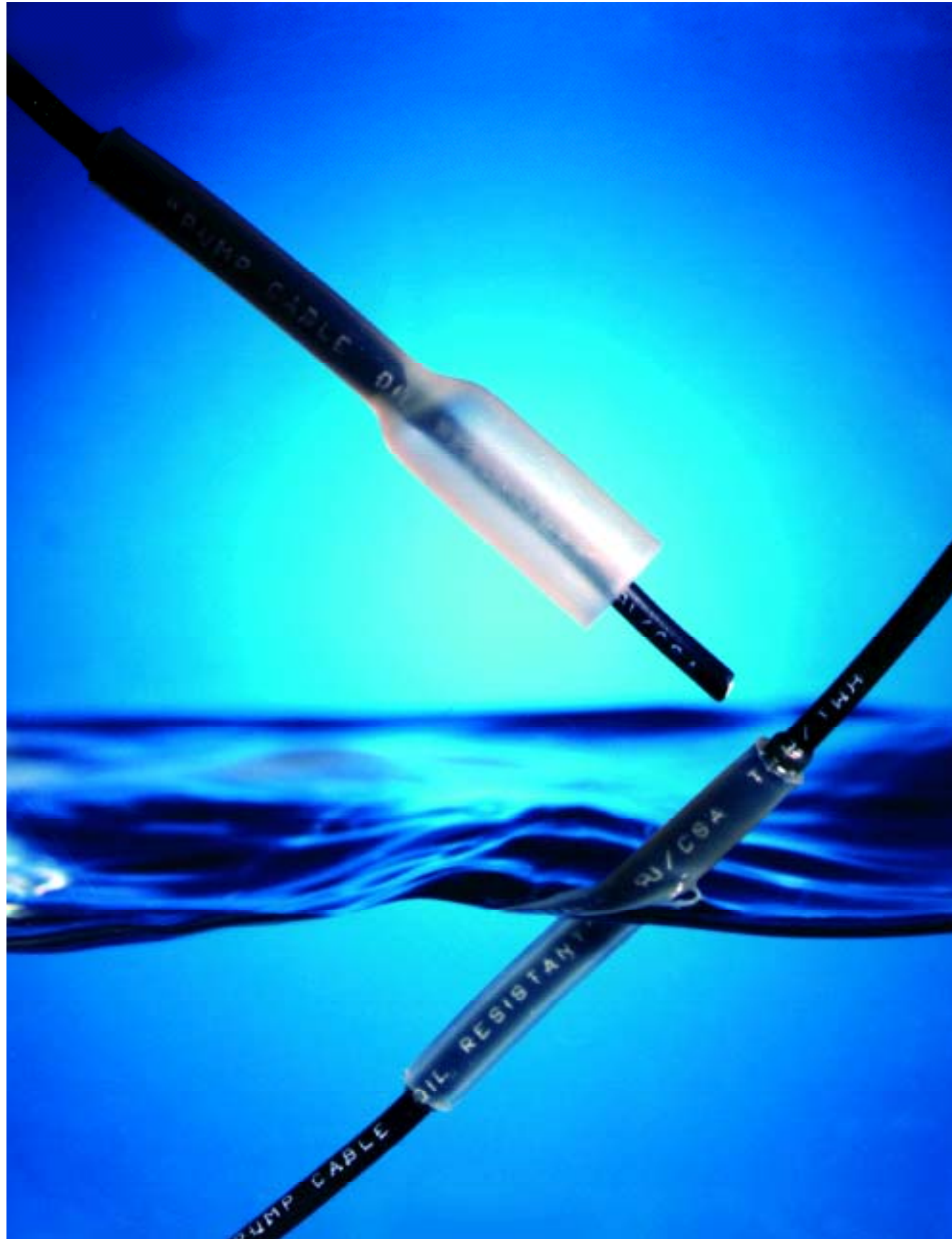


Dual Wall Tubing

| PRODUCT NAME | SHRINK RATIO | DESCRIPTION | OPERATING TEMPERATURE °C | | TYPICAL APPLICATIONS |
|----------------------|--------------|---|--------------------------|-----|--|
| | | | MAX | MIN | |
| → DERAY®-IAKT 3:1 | 3:1 | High Shrink Ratio, Flexible Polyolefin, adhesive-lined | 110* | -55 | Ideal for effective moisture-resistant insulation of electrical connections, splices and other components |
| → DERAY®-IAKT 4:1 | 4:1 | Very High Shrink Ratio, Flexible Polyolefin, adhesive-lined | 110* | -55 | Ideal for effective moisture-resistant insulation of electrical connections, splices and other components, very suitable for objects with large diameter variation |
| → CPA 300 | 3:1 | High Spec. Flexible Polyolefin, adhesive-lined | 125 | -55 | Ideal for applications where both exceptional flame retardancy and environmental sealing capabilities are required |
| → DERAY®-IHKT | 4:1 | Very High Shrink Ratio, Flexible Polyolefin, adhesive-lined | 125* | -55 | Offers reliable protection against short-circuits or malfunctions in electrical assembly components and connections |
| → CBK | 4:1 | Very High Shrink Ratio, Semi-rigid Polyolefin, adhesive-lined | 125 | -55 | Easy assembly over large or irregularly shaped connectors, special Designed to insulate and environmentally protect electronic wire harness assemblies |

*Outer Jacket

→ **Heat Shrink Tubing Products**



Dual Wall Products

DSG-Canusa offers a wide range of dual wall products. The available combinations of jacket materials and adhesives allow the customer to choose just the right tubing for the application and environmental conditions.

→ Product Selection Chart

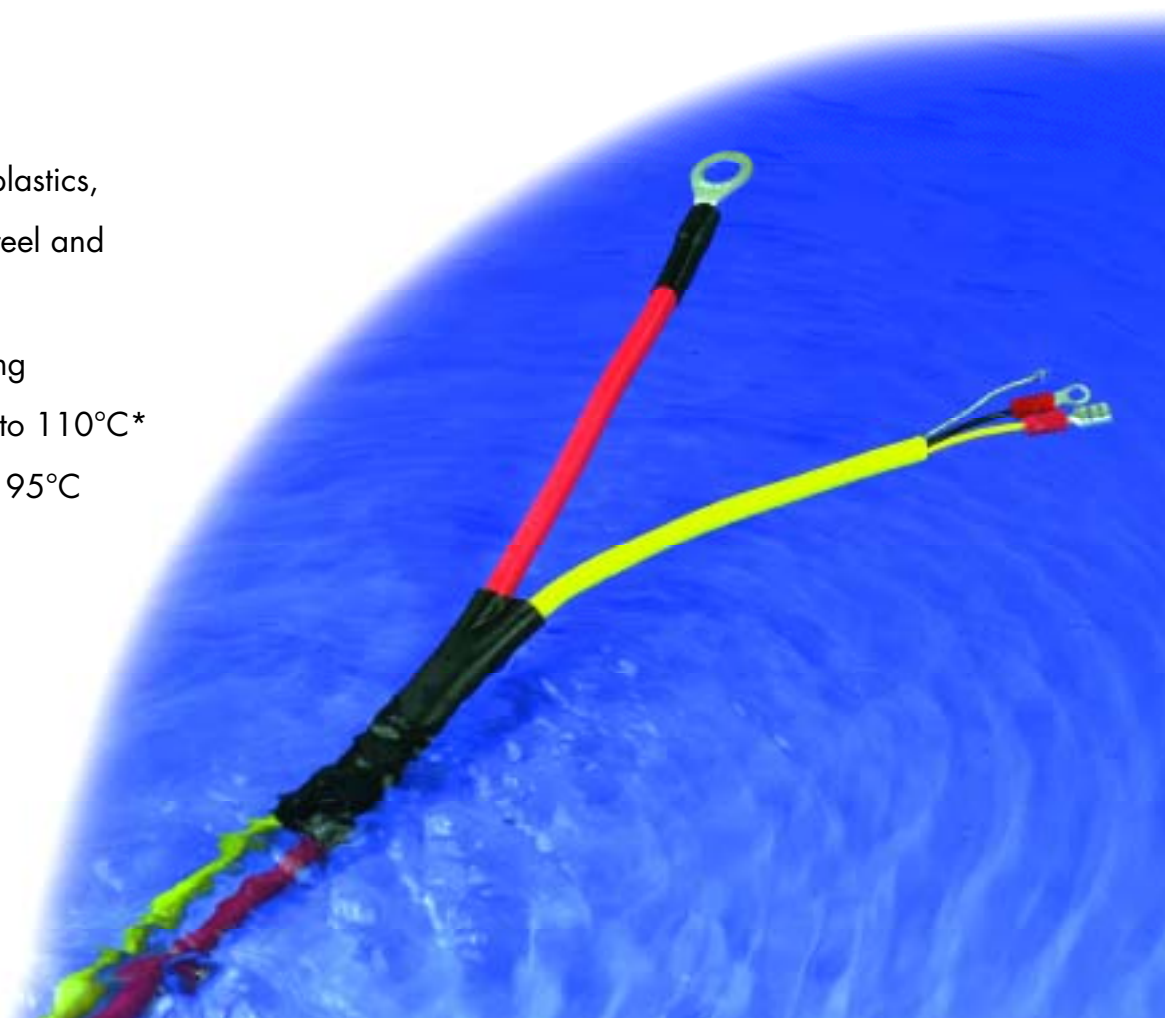
DERAY®-IAKT

Adhesive-lined heat shrink tubing
ideal for effective moisture-resistant
insulation

Features

- Flexible
- High shrink ratio
- Adhesive bonds to plastics, rubber, neoprene, steel and polyethylene
- Continuous Operating Temperature: -55°C to 110°C*
- Shrink Temperature: 95°C

*Outer Jacket



Dimensions 3:1

| EXPANDED | | RECOVERED | | | | DELIVERY UNITS | | | |
|------------------------------|----|------------------------------|-----------------------------------|------------------------------------|------------------------------|----------------|--------------------------------------|---|-------------------|
| INTERNAL DIAMETER (MIN) D | | INTERNAL DIAMETER (MAX) D | WALL THICKNESS OVERALL (NOM) w | WALL THICKNESS ADHESIVE (NOM) w | Black Spool Length Style* | | Black & Clear Spool Length Style* | | Lengths 1.22 m |
| mm | IN | mm | mm | mm | m | | m | | pcs. |
| 3,0 | - | 1,0 | 1,00 | 0,40 | 300 | o | 150 | o | 25 |
| 4,5 | - | 1,5 | 1,10 | 0,50 | 300 | o | 75 | o | 25 |
| 6,0 | - | 2,0 | 1,20 | 0,50 | 300 | o | 75 | o | 10 |
| 9,0 | - | 3,0 | 1,40 | 0,50 | 150 | o | 75 | o | 10 |
| 12,0 | - | 4,0 | 1,70 | 0,60 | 100 | o | 50 | o | 10 |
| 19,0 | - | 6,0 | 2,10 | 0,60 | 50 | o | 30 | o | 10 |
| 24,0 | - | 8,0 | 2,40 | 0,70 | 50 | o | 30 | o | 10 |
| 40,0 | - | 13,0 | 2,40 | 0,70 | 30 | o | - | - | 10 |

Dimensions 4:1

| EXPANDED | | RECOVERED | | | | DELIVERY UNITS | | | |
|------------------------------|----|------------------------------|-----------------------------------|------------------------------------|------------------------------|----------------|--------------------------------------|---|-------------------|
| INTERNAL DIAMETER (MIN) D | | INTERNAL DIAMETER (MAX) D | WALL THICKNESS OVERALL (NOM) w | WALL THICKNESS ADHESIVE (NOM) w | Black Spool Length Style* | | Black & Clear Spool Length Style* | | Lengths 1.22 m |
| mm | IN | mm | mm | mm | m | | m | | pcs. |
| 4,0 | - | 1,0 | 1,00 | 0,40 | 300 | o | 150 | o | 25 |
| 8,0 | - | 2,0 | 1,20 | 0,50 | 150 | o | 75 | o | 10 |
| 12,0 | - | 3,0 | 1,40 | 0,50 | 100 | o | 50 | o | 10 |
| 16,0 | - | 4,0 | 1,70 | 0,60 | 50 | o | - | - | 10 |
| 24,0 | - | 6,0 | 2,10 | 0,60 | 50 | o | 30 | o | 10 |
| 32,0 | - | 8,0 | 2,40 | 0,70 | 50 | o | 30 | o | 10 |
| 52,0 | - | 13,0 | 2,40 | 0,70 | 30 | o | - | - | 10 |

* o = airfilled or oval -- = flattened

Technical Data

Physical

| Property | Test Method | Typical Performance coloured | Typical Performance clear |
|--|--|------------------------------|---------------------------|
| Tensile Strength | IEC 60684-2 | 15,0 MPa | 17,0 MPa |
| Elongation | IEC 60684-2 | 400% | 450% |
| Longitudinal Change 3:1 | ASTM-D 2671 | - 15% max. | - 15% max. |
| Longitudinal Change 4:1 | ASTM-D 2671 | - 18% max. | - 18% max. |
| Specific Gravity | ASTM-D 792, A-I | 1,25 g/cm ³ | 1,00 g/cm ³ |
| Elongation after Heat Aging (168 hrs at 150°C) | IEC 811-1-2 | 320% | 360% |
| Tensile Strength after Heat Aging (168 hrs at 150°C) | IEC 811-1-2 | 14 MPa | 15 MPa |
| Elongation after Heat Shock (4 hrs at 200°C) | IEC 811-1-2 | 360% | 380% |
| Tensile Strength after Heat Shock (4 hrs at 200°C) | IEC 811-1-2 | 15 MPa | 16 MPa |
| Low Temperature Flexibility | ASTM-D 2671 Meth. C | does not break at -55°C | does not break at -55°C |
| Flammability | ASTM-D 876 (coloured) FMVSS 302 (clear) | flame retardant jacket | passed |

| Standard Colours | Special Colours |
|--------------------|-----------------|
| black ■ clear ■ | On Request |

Electrical

| Property | Test Method | Typical Performance coloured | Typical Performance clear |
|---------------------|-----------------|------------------------------|---------------------------|
| Dielectric Strength | VDE 0303 Part 2 | 22 kV/mm | 23 kV/mm |
| Volume Resistivity | VDE 0303 Part 3 | 10 ¹⁴ Ω x cm | 10 ¹⁴ Ω x cm |

Chemical

| Property | Test Method | Typical Performance coloured | Typical Performance clear |
|----------------------|---------------------|------------------------------|---------------------------|
| Corrosive Action | ASTM-D 2671 Meth. A | non-corrosive | non-corrosive |
| Copper Compatibility | ASTM-D 2671 Meth. B | non-corrosive | non-corrosive |
| Chemical Resistance | | good | good |
| Water Absorption | VDE 0472 | 0,15% | 0,17% |

| Printability | Hot stamp | Ink jet | Offset |
|--------------|-----------|---------|--------|
| | very good | good | good |

Ordering: **Specify the product name** plus each of the following options: 1) Size 2) Colour 3) Total Quantity + Delivery Unit 4) Printing Options
For example: DERAY®-IAKT 3:1 12,0 mm black, 1.000 mtr., 100m-spool, unprinted

→ Product Selection Chart

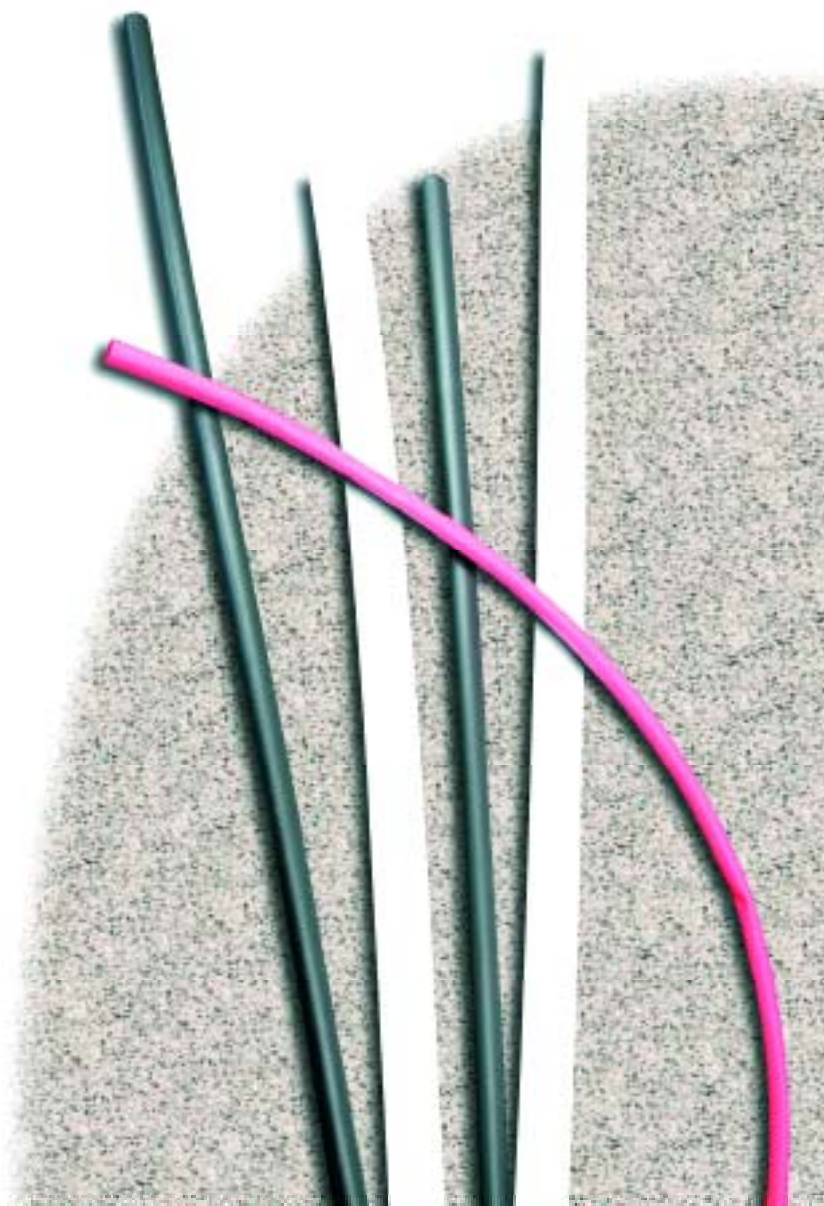
CPA 300

Adhesive-lined heat shrink tubing ideal for applications where both exceptional flame retardancy and environmental sealing capabilities are required



Features

- Flame retardant
- Superior sealing against water, moisture or other contaminants
- Meets MIL - DTL - 23053/4 Class 3
- Continuous Operating Temperature: -55°C to 125°C
- Shrink Temperature: 120°C



Dimensions

| EXPANDED | | RECOVERED | | | DELIVERY UNITS |
|---------------------------|-------|---------------------------|--------------------------------|---------------------------------|----------------|
| INTERNAL DIAMETER (MIN) D | | INTERNAL DIAMETER (MAX) D | WALL THICKNESS OVERALL (NOM) w | WALL THICKNESS ADHESIVE (NOM) w | Lengths 1.22 m |
| mm | IN | mm | mm | m | pcs. |
| 3,2 | 1/8 | 1,0 | 1,00 | 0,50 | 25 |
| 4,8 | 3/16 | 1,5 | 1,00 | 0,50 | 25 |
| 6,4 | 1/4 | 2,0 | 1,00 | 0,50 | 25 |
| 7,9 | 5/16 | 2,5 | 1,30 | 0,70 | 25 |
| 9,5 | 3/8 | 3,2 | 1,50 | 0,70 | 25 |
| 12,7 | 1/2 | 4,1 | 1,80 | 0,80 | 25 |
| 19,1 | 3/4 | 7,5 | 1,80 | 0,80 | 25 |
| 25,4* | 1 | 8,1 | 2,50 | 1,00 | 25 |
| 31,8* | 1 1/4 | 10,6 | 2,50 | 1,00 | 25 |
| 39,9* | 1 1/2 | 13,0 | 2,50 | 1,00 | 20 |

* These sizes are not UL listed

Technical Data

Physical

| Property | Test Method | Typical Performance |
|--|-----------------|--|
| Tensile Strength | ASTM-D 638 | 12,4 MPa |
| Elongation | ASTM-D 638 | 450% |
| Longitudinal Change | ASTM-D 2671 | 1% to -5% max. |
| Specific Gravity | MIL-DTL-23053/4 | 1,22 g/cm ³ |
| Heat Resistant Properties (168 hrs at 175°C) | MIL-DTL-23053/4 | no cracking, flowing or dripping of outer wall |
| Heat Shock (4 hrs at 250°C) | MIL-DTL-23053/4 | no cracking, flowing or dripping of outer wall |
| Flammability | ASTM-D 2671 | flame retardant |

Electrical

| Property | Test Method | Typical Performance |
|---------------------|-------------|-------------------------|
| Dielectric Strength | ASTM-D 2671 | 22 kV/mm |
| Volume Resistivity | ASTM-D 876 | 10 ¹⁴ Ω x cm |

Chemical

| Property | Test Method | Typical Performance |
|----------------------|-----------------|---------------------|
| Corrosive Action | MIL-DTL-23053/4 | non-corrosive |
| Copper Compatibility | MIL-DTL-23053/4 | non-corrosive |
| Chemical Resistance | | good to excellent |
| Water Absorption | ASTM-D 570 | 0,20% |

| Standard Colours | Special Colours |
|---------------------------|-----------------|
| black ■ white** ■ red** ■ | On Request |

** white and red products are not UL listed

| Printability | Hot stamp | Ink jet | Offset |
|--------------|-----------|---------|--------|
| | good | good | good |

Ordering: **Specify the product name** plus each of the following options: 1) Size 2) Colour 3) Total Quantity + Delivery Unit 4) Printing Options
For example: CPA 300, 1/4", black, 244 mtr, 1,22 mtr.-lengths, unprinted

→Product Selection Chart

DERAY®-IHKT

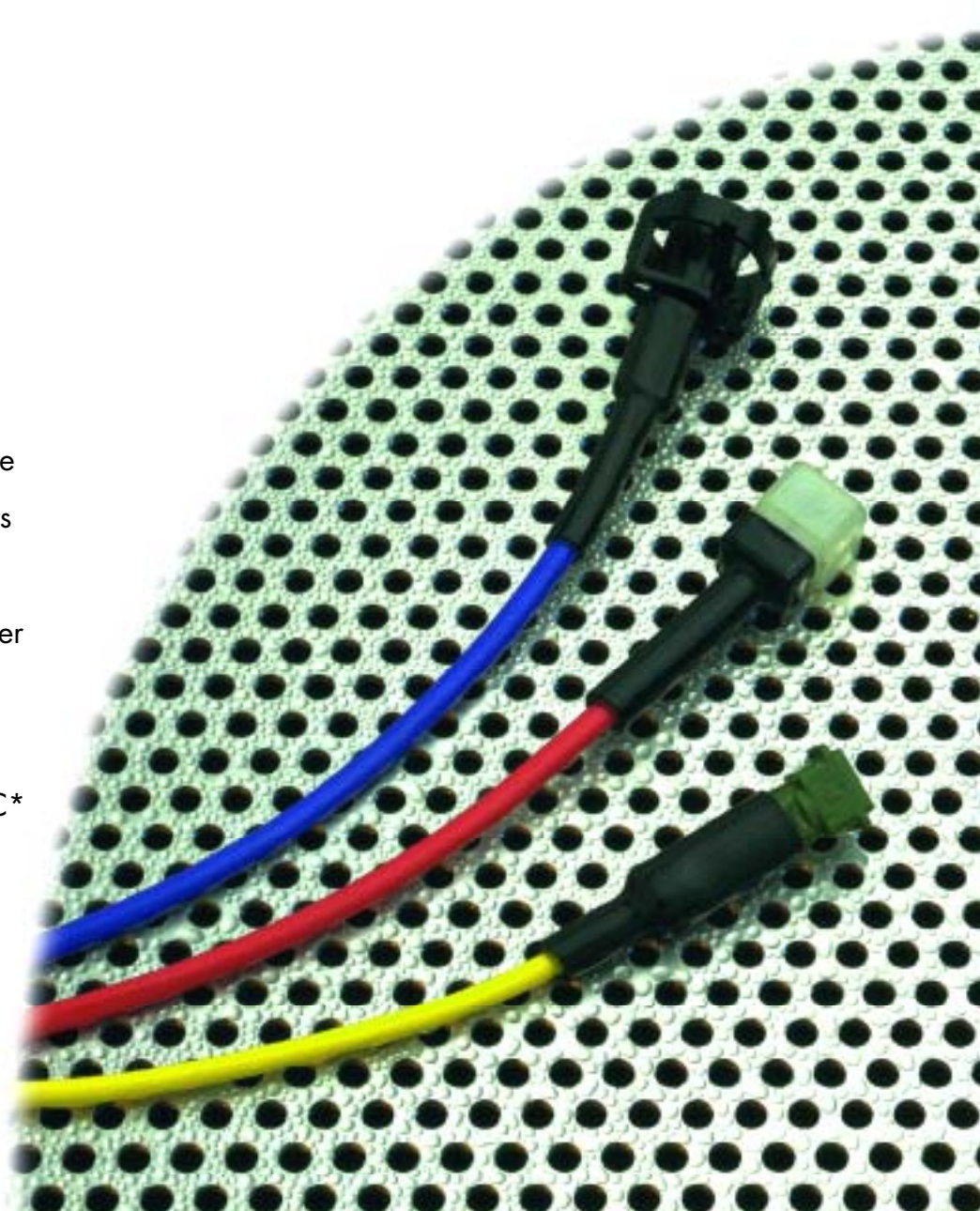
Flexible heat shrink tubing with a temperature resistant polyamide adhesive inner lining



Features

- Flexible
- Very high shrink ratio
- Specially designed polyamide adhesive protects components at higher temperatures
- Superior sealing against water or other contaminants
- Continuous Operating Temperature: -55°C to 125°C*
- Shrink Temperature: 100°C

*Outer Jacket



Dimensions

| EXPANDED | | RECOVERED | | | DELIVERY UNITS | | |
|---------------------------|----|---------------------------|--------------------------------|---------------------------------|--------------------|--------|----------------|
| INTERNAL DIAMETER (MIN) D | | INTERNAL DIAMETER (MAX) D | WALL THICKNESS OVERALL (NOM) w | WALL THICKNESS ADHESIVE (NOM) w | Black Spool Length | Style* | Lengths 1.22 m |
| mm | IN | mm | mm | mm | m | | pcs. |
| 4,0 | - | 1,0 | 1,00 | 0,40 | 300 | o | 25 |
| 8,0 | - | 2,0 | 1,20 | 0,40 | 150 | o | 10 |
| 12,0 | - | 3,0 | 1,40 | 0,40 | 100 | o | 10 |
| 16,0 | - | 4,0 | 1,70 | 0,60 | 50 | o | 10 |
| 24,0 | - | 6,0 | 2,10 | 0,60 | 50 | o | 10 |
| 32,0 | - | 8,0 | 2,40 | 0,70 | 50 | o | 10 |
| 52,0 | - | 13,0 | 2,40 | 0,70 | 30 | o | 10 |

* o = airfilled or oval – = flattened

Technical Data

Physical

| Property | Test Method | Typical Performance coloured | Typical Performance clear |
|--|---------------------|------------------------------|---------------------------|
| Tensile Strength | IEC 60684-2 | 17,0 MPa | 19,0 MPa |
| Elongation | IEC 60684-2 | 600% | 500% |
| Longitudinal Change | ASTM-D 2671 | - 18% max. | - 18% max. |
| Specific Gravity | ASTM-D 792, A-I | 1,25 g/cm ³ | 1,00 g/cm ³ |
| Elongation after Heat Aging (168 hrs at 160°C) | IEC 811-1-2 | 400% | 450% |
| Tensile Strength after Heat Aging (168 hrs at 160°C) | IEC 811-1-2 | 11 MPa | 16 MPa |
| Elongation after Heat Shock (4 hrs at 210°C) | IEC 811-1-2 | 360% | 450% |
| Tensile Strength after Heat Shock (4 hrs at 210°C) | IEC 811-1-2 | 14 MPa | 16 MPa |
| Low Temperature Flexibility | ASTM-D 2671 Meth. C | does not break at -55°C | does not break at -55°C |
| | ASTM-D 876 | flame retardant jacket | |
| Flammability | FMVSS 302 | | passed |

| Standard Colours | Special Colours |
|------------------|-----------------|
| black ■ | Clear ■ |

Electrical

| Property | Test Method | Typical Performance coloured | Typical Performance clear |
|---------------------|-----------------|------------------------------|---------------------------|
| Dielectric Strength | VDE 0303 Part 2 | 16 kV/mm | 18 kV/mm |
| Volume Resistivity | VDE 0303 Part 3 | 10 ¹⁴ Ω x cm | 10 ¹⁴ Ω x cm |

Chemical

| Property | Test Method | Typical Performance |
|----------------------|---------------------|---------------------|
| Corrosive Action | ASTM-D 2671 Meth. A | non-corrosive |
| Copper Compatibility | ASTM-D 2671 Meth. B | non-corrosive |
| Chemical Resistance | | very good |
| Water Absorption | VDE 0472 | 0,10% |

| Printability | Hot stamp | Ink jet | Offset |
|--------------|-----------|---------|--------|
| | very good | good | good |

Ordering: **Specify the product name** plus each of the following options: 1) Size 2) Colour 3) Total Quantity + Delivery Unit 4) Printing Options
For example: DERAY®-IHKT 24,0mm black, 500 mtr., 50m-spool, unprinted

→Product Selection Chart

CBK

Designed to environmentally seal electronic wire harness assemblies

Features

- Very high shrink ratio
- Special adhesive flows readily on installation to fill voids
- Resistant to acids, alkalis and gasoline
- Continuous Operating Temperature: -55°C to 125°C
- Shrink Temperature: 120°C



Dimensions

| EXPANDED | | RECOVERED | | | DELIVERY UNITS | | |
|------------------------------|----|------------------------------|-----------------------------------|------------------------------------|-------------------------------|--------|-------------------|
| INTERNAL DIAMETER (MIN) D | | INTERNAL DIAMETER (MAX) D | WALL THICKNESS OVERALL (NOM) w | WALL THICKNESS ADHESIVE (NOM) w | Black & Clear Spool Length | Style* | Lengths 1.22 m |
| mm | IN | mm | mm | mm | m | | pcs. |
| 6,0 | - | 1,4 | 1,35 | 0,95 | 300 | o | - |
| 8,0 | - | 1,6 | 1,75 | 0,95 | 150 | o | - |
| 12,0 | - | 2,5 | 2,00 | 1,10 | 100 | o | - |
| 18,0 | - | 3,7 | 2,60 | 1,50 | 50 | o | - |

* o = airfilled or oval - = flattened

Technical Data

Physical

| Property | Test Method | Typical Performance coloured | Typical Performance clear |
|--|--|------------------------------|---------------------------|
| Tensile Strength | IEC 60684-2 | 17,0 MPa | 15,0 MPa |
| Elongation | IEC 60684-2 | 500% | 400% |
| Longitudinal Change | ASTM-D 2671 | ± 10% max. | ± 10% max. |
| Specific Gravity | ASTM-D 792, A-I | 1,25 g/cm ³ | 1,20 g/cm ³ |
| Elongation after Heat Aging (168 hrs at 160°C) | IEC 811-1-2 | 320% | 400% |
| Tensile Strength after Heat Aging (168 hrs at 160°C) | IEC 811-1-2 | 12 MPa | 14 MPa |
| Elongation after Heat Shock (4 hrs at 210°C) | IEC 811-1-2 | 360% | 370% |
| Tensile Strength after Heat Shock (4 hrs at 210°C) | IEC 811-1-2 | 14 MPa | 15 MPa |
| Low Temperature Flexibility | ASTM-D 2671 Meth. C | does not break at -30°C | does not break at -30°C |
| Flammability | ASTM-D 876 (coloured) FMVSS 302 (clear) | flame retardant jacket | passed |

| Standard Colours | Special Colours |
|----------------------|-----------------|
| black ■ clear ■ | On Request |

Electrical

| Property | Test Method | Typical Performance coloured | Typical Performance clear |
|---------------------|-----------------|------------------------------|---------------------------|
| Dielectric Strength | VDE 0303 Part 2 | 18 kV/mm | 20 kV/mm |
| Volume Resistivity | VDE 0303 Part 3 | 10 ¹⁴ Ω x cm | 10 ¹⁴ Ω x cm |

Chemical

| Property | Test Method | Typical Performance coloured | Typical Performance clear |
|----------------------|---------------------|------------------------------|---------------------------|
| Corrosive Action | ASTM-D 2671 Meth. A | non-corrosive | non-corrosive |
| Copper Compatibility | ASTM-D 2671 Meth. B | non-corrosive | non-corrosive |
| Chemical Resistance | | very good | very good |
| Water Absorption | VDE 0472 | 0,50% | 0,50% |

| Printability | Hot stamp | Ink jet | Offset |
|--------------|-----------|---------|--------|
| | very good | - | good |

Ordering: **Specify the product name** plus each of the following options: 1) Size 2) Colour 3) Total Quantity + Delivery Unit
For example: CBK 12,0mm black, 3.500 mtr., 100m-spool