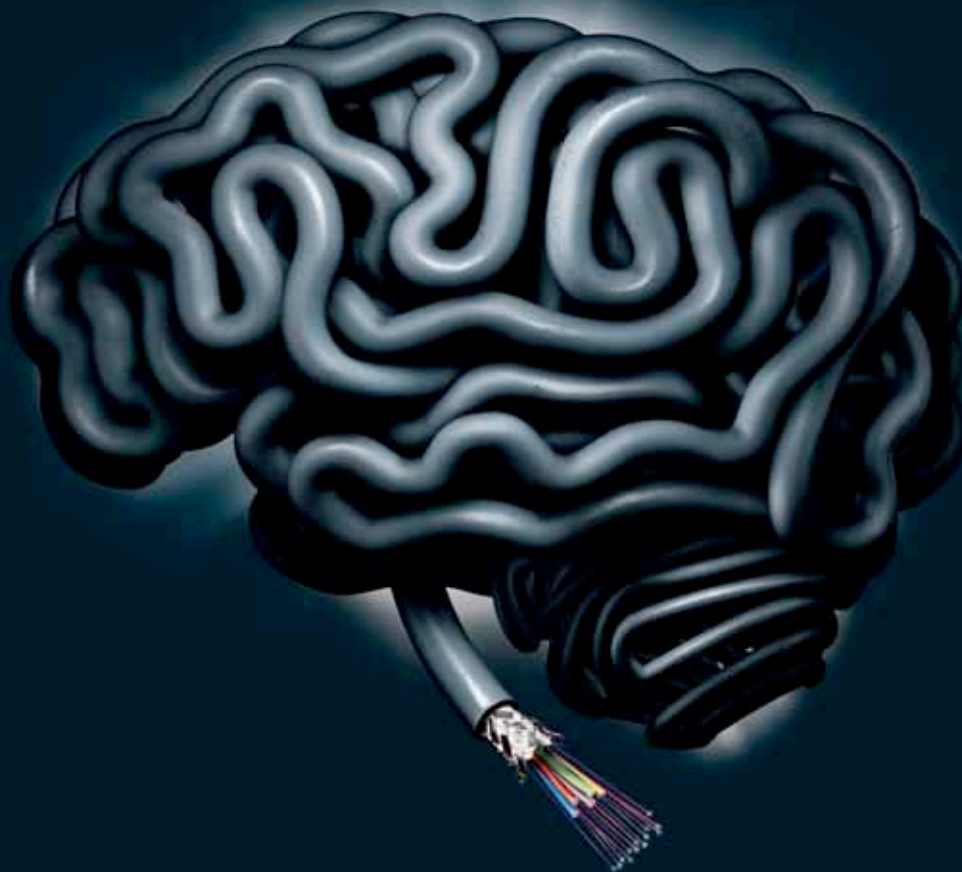


YOUR ENERGY, OUR SYSTEMS, ANYWHERE...

Construction

SINGLE CORE PVC CABLES



Prysmian Cables & Systems Australia combines a complete range of Construction Cable products, services and technical support for wholesalers, contractors and industrial customers in the construction and associated industries. Our aim is to contribute to the efficiency of our customers and, wherever possible, make their job easier. Support is available from technical experts in the fields of materials technology, electrical engineering and electrical systems design and operation. Our specialists, with their vast experience in the electrical industry and understanding of day-to-day requirements, can offer invaluable assistance in managing major projects and providing solutions to technical and application issues. We believe this information will be very useful to all energy cable users and reinforces our commitment and dedication to providing a Total Cable Solution to your requirements.

STANDARD CABLES

The cables included in this technical manual are the standard range of cables manufactured by Prysmian Cables & Systems for the Construction industry. Many of the frequently used cables in this manual are held in stock in warehouses throughout Australia and New Zealand. Others are available on a made-to-order basis.

OPTIONAL VARIATIONS

Where installation conditions do not allow the use of standard cables, Prysmian may provide modified designs to meet those conditions. These include the addition of Termitex®, a nylon jacket or double brass tape for protection against termites. Non-standard insulation and sheath colours may also be requested. Please note that where cables are not held in stock or where optional variations are requested, Prysmian reserves the right to decline a requested quotation for those products. Where Prysmian offers to supply such cables, minimum order quantities and manufacturing lead times may apply.

CURRENT RATINGS

For each design of cable in this manual, indicative current ratings have been included. These ratings are for a single cable installed under the conditions shown. Reference should be made to AS/NZS 3008.1.1 with kind permission of Standard Australia.

CONDUCTOR TEMPERATURES

The maximum continuous operating temperature shown for each product in this design is the conductor temperature at which the cable can be operated on a continuous basis under normal operational conditions without detriment to the cable in its projected lifetime. Many of the products are manufactured with V-90 or V-90HT PVC materials. These materials are designed with improved thermal ageing characteristics and can be operated continuously at temperatures up to 90°C without detriment. V-90HT can operate up to 105°C for limited periods without detriment. However, cables incorporating these materials may be operated at these elevated temperatures only when protected from mechanical forces which might otherwise cause thermoplastic deformation. The use of cables insulated and sheathed with V-90 or V-90HT materials allows the cables to be operated in ambient temperatures up to 55°C without derating for ambient temperature.

CABLE USAGE CHARACTERISTICS



AMBIENT TEMPERATURE

Maximum operating temperature
Minimum operating temperature



MINIMUM BENDING RADIUS

Minimum bending radius of installed cables



MECHANICAL IMPACT RESISTANCE

- 1 Light Impact
- 2 Moderate Impact
- 3 Heavy Impact
- 4 Very Heavy Impact



RESISTANCE TO SOLAR RADIATION AND WEATHER

| | |
|------------|------------|
| Excellent | Permanent |
| Very Good | Frequent |
| Good | Occasional |
| Acceptable | Accidental |
| Poor | None |



RESISTANCE TO WATER

| | |
|-------------|------------------------------|
| Negligible | No humidity |
| Water Drops | Occasional condensation |
| Spray | Water run off |
| Splashes | Exposed to water splashes |
| Heavy Sea | Exposed to waves |
| Immersion | Temporarily covered by water |
| Submersion | Permanently covered by water |



CHEMICAL RESISTANCE

| | |
|------------|------------|
| Excellent | Permanent |
| Very Good | Frequent |
| Good | Occasional |
| Acceptable | Accidental |
| Poor | None |



BEHAVIOUR IN FLAME AND FIRE

| | |
|-------------------------|--------------------------------------------------|
| Reaction To Fire | Resistant To Fire |
| C1 Fire retardant | Level 1 – Ultimate Fire Survival |
| C2 Flame Retardant | Level 2 – Two Hours Fire Survival |
| C3 No Fire Performance | Level 3 – Restrained Spread & Self Extinguishing |



LOW SMOKE EMISSION

AS/NZS 1660.5.2
IEC 61034



FLEXIBILITY

| | |
|------------|---------------|
| Rigid | Flexible |
| Semi-rigid | Very flexible |



HALOGEN FREE

AS/NZS 1660.5.3
IEC 60754.1
Halogen free (toxic fume or corrosives)

LAYING CONDITIONS



MINIMUM BENDING RADIUS DURING INSTALLATION



MINIMUM INSTALLATION TEMPERATURE



IN TRENCH



IN FREE AIR



IN GROUND



IN GROUND WITH PROTECTION



IN DUCT



IN CONDUIT



DOMESTIC APPLIANCES



OUTDOOR APPLIANCES



MACHINES



FESTOON



MOBILE EQUIPMENT



INTERNAL WIRING



SUBMERGED



INDUSTRIAL EQUIPMENT



OVERHEAD AERIAL



EXTERNAL BUILDING

CABLE USAGE CHARACTERISTICS

LAYING CONDITIONS

In accordance with research, new material developments and changes in relevant standards, published details may change without notice.

1C PVC V-90



PVC INSULATED ONLY CABLE TO AS/NZS 5000.1

CABLE CHARACTERISTICS



Semi-rigid



OD ≤ 25 4D
OD > 25 6D



1



Water
Drops



Good



+75°C
-15°C



C3



Good

For separate earth conductors. For switchboard and control panel wiring. For fixed wiring within other enclosures or apparatus where the cable is not accessible without the use of tools. For use where improved aging properties to those of 75°C PVC are required because of higher ambient temperatures. Suitable for glanding.

CABLE DESIGN

CONDUCTOR:

Plain annealed copper conductor to AS/NZS 1125

Maximum continuous operating temperature: 75°C

Can also be operated at temperatures up to 90°C when not exposed to mechanical deformation (see AS/NZS 3008.1)

INSULATION:

V-90 PVC

Colours: Red, Black, White, Blue, Green/Yellow



INSTALLATION CONDITIONS



INDUSTRIAL
EQUIPMENT



OD ≤ 25 6D
OD > 25 9D



IN
CONDUIT



MACHINES



INTERNAL
WIRING



0°C

1C PVC V-90



PVC INSULATED ONLY CABLE TO AS/NZS 5000.1

| Product Code | Conductor | | | Cable | | | | Minimum Installed Bending Radius mm |
|--------------|--------------------------------|------------------------------------|---------------------|---------------------------------|------------------|------------|----------------------|-------------------------------------|
| | Nominal C.S.A. mm ² | Number and Diameter of Wires No/mm | Nominal Diameter mm | Nominal Insulation Thickness mm | Overall Diameter | | Approx. Mass kg/100m | |
| | | | | | Minimum mm | Maximum mm | | |
| 1.0SBW | 1.0* | 1/1.13 | 1.13 | 0.8 | 2.6 | 2.8 | 1.7 | 10 |
| 1.5BW | 1.5 | 7/0.50 | 1.5 | 0.8 | 3.0 | 3.2 | 2.2 | 15 |
| 2.5SBW | 2.5* | 1/1.78 | 1.78 | 0.8 | 3.3 | 3.5 | 3.3 | 15 |
| 2.5BW | 2.5 | 7/0.67 | 2.0 | 0.8 | 3.5 | 3.7 | 3.4 | 15 |
| 4BW | 4 | 7/0.85 | 2.6 | 1.0 | 4.5 | 4.6 | 5.4 | 20 |
| 6BW | 6 | 7/1.04 | 3.1 | 1.0 | 5.1 | 5.2 | 7.6 | 20 |
| 10BW | 10 | 7/1.35 | 4.1 | 1.0 | 6.0 | 6.1 | 12 | 25 |
| 16BW | 16 | 7/1.70 | 5.1 | 1.0 | 7.1 | 7.2 | 18 | 30 |
| 25BW | 25 | 19/1.35 | 6.8 | 1.2 | 9.1 | 9.3 | 27 | 35 |
| 35BW | 35 | 19/1.53 | 7.7 | 1.2 | 10.0 | 10.1 | 36 | 40 |
| 50BW | 50 | 19/1.78 | 8.9 | 1.4 | 11.6 | 11.9 | 51 | 50 |
| 70BW | 70 | 19/2.14 | 10.7 | 1.4 | 13.4 | 13.5 | 70 | 55 |
| 95BW | 95 | 19/2.45 | 12.5 | 1.6 | 15.6 | 15.9 | 98 | 65 |
| 120BW | 120 | 37/2.03 | 14.2 | 1.6 | 17.1 | 17.4 | 120 | 70 |
| 150BW | 150 | 37/2.25 | 15.8 | 1.8 | 19.3 | 19.5 | 148 | 80 |
| 185BW | 185 | 37/2.52 | 17.6 | 2.0 | 21.2 | 21.7 | 185 | 90 |

| Conductor Nominal C.S.A. mm ² | Current Rating (a) | | | | Electrical Characteristics | |
|------------------------------------------|---------------------|-----------------------|---------------------|-----------------------|--------------------------------------|---------------------------------------------|
| | Three Phase | | Single Phase | | Maximum D.C. Resistance at 20°C Ω/km | Reactance per Core (Trefoil, Touching) Ω/km |
| | In Conduit in Air A | Underground in Duct A | In Conduit in Air A | Underground in Duct A | | |
| 1.0* | 11 | 16 | 13 | 18 | 18.1 | 0.119 |
| 1.5 | 14 | 20 | 16 | 24 | 13.6 | 0.111 |
| 2.5* | 20 | 28 | 22 | 33 | 7.41 | 0.102 |
| 2.5 | 20 | 28 | 22 | 33 | 7.41 | 0.102 |
| 4 | 26 | 37 | 30 | 42 | 4.61 | 0.102 |
| 6 | 34 | 46 | 38 | 53 | 3.08 | 0.0967 |
| 10 | 47 | 61 | 53 | 71 | 1.83 | 0.0906 |
| 16 | 62 | 80 | 71 | 91 | 1.15 | 0.0861 |
| 25 | 87 | 105 | 97 | 120 | 0.727 | 0.0853 |
| 35 | 100 | 125 | 115 | 145 | 0.524 | 0.0826 |
| 50 | 125 | 150 | 140 | 170 | 0.387 | 0.0797 |
| 70 | 155 | 185 | 175 | 210 | 0.268 | 0.0770 |
| 95 | 185 | 225 | 210 | 260 | 0.193 | 0.0766 |
| 120 | 220 | 260 | 250 | 295 | 0.153 | 0.0743 |
| 150 | 250 | 290 | 280 | 335 | 0.124 | 0.0745 |
| 185 | 285 | 335 | 325 | 380 | 0.0991 | 0.0744 |

(a) Based on 75°C conductor temperature, 40°C ambient air temperature and where applicable, burial depth of 0.5m, soil temperature of 25°C and soil thermal resistivity of 1.2°C.m/W. Refer to AS/NZS 3008.1 for other installation conditions

* Single wire conductor

1C PVC V-90HT



PVC INSULATED ONLY CABLE TO AS/NZS 5000.1

CABLE CHARACTERISTICS



Semi-rigid



OD≤25 4D
OD>25 6D



1



Water
Drops



Good



+75°C
-15°C



C3



Good

For separate earth conductors. For switchboard and control panel wiring. For fixed wiring within other enclosures or apparatus where the cable is not accessible without the use of tools. For use where improved ageing properties to those of 75°C PVC are required because of higher ambient temperatures. Suitable for glanding.

CABLE DESIGN

CONDUCTOR:

Plain annealed copper conductor to AS/NZS 1125
Maximum continuous operating temperature: 75°C

Can also be operated at temperatures up to 105°C for an average of 500 hours per annum during the cable service life when not exposed to mechanical deformation (see AS/NZS 3008.1)

INSULATION:

V-90HT PVC
Colours: Red, Black, White, Blue, Green/Yellow



INSTALLATION CONDITIONS



INDUSTRIAL
EQUIPMENT



OD≤25 6D
OD>25 9D



MACHINES



INTERNAL
WIRING



0°C

1C PVC V-90HT



PVC INSULATED ONLY CABLE TO AS/NZS 5000.1

| Product Code | Conductor | | | Cable | | | Minimum Installed Bending Radius mm | |
|--------------|-----------------------------------|---------------------------------------|------------------------|------------------------------------|------------------|---------------|-------------------------------------|-------------------------|
| | Nominal C.S.A. mm ² | Number and Diameter of Wires No/mm | Nominal Diameter mm | Nominal Insulation Thickness mm | Overall Diameter | | | Approx. Mass kg/100m |
| | | | | | Minimum mm | Maximum mm | | |
| 1.0SBW90HT | 1.0* | 1/1.13 | 1.13 | 0.8 | 2.6 | 2.8 | 1.7 | 10 |
| 1.5BW90HT | 1.5 | 7/0.50 | 1.5 | 0.8 | 3.0 | 3.2 | 2.2 | 15 |
| 2.5SBW90HT | 2.5* | 1/1.78 | 1.78 | 0.8 | 3.3 | 3.5 | 3.3 | 15 |
| 2.5BW90HT | 2.5 | 7/0.67 | 2.0 | 0.8 | 3.5 | 3.7 | 3.4 | 15 |
| 4BW90HT | 4 | 7/0.85 | 2.6 | 1.0 | 4.5 | 4.6 | 5.4 | 20 |

| Conductor Nominal C.S.A. mm ² | Current Rating (a) | | | | Electrical Characteristics | |
|---------------------------------------------|------------------------|--------------------------|------------------------|--------------------------|-----------------------------------------|------------------------------------------------|
| | Three Phase | | Single Phase | | Maximum D.C. Resistance at 20°C Ω/km | Reactance per Core (Trefoil, Touching) Ω/km |
| | In Conduit in Air A | Underground in Duct A | In Conduit in Air A | Underground in Duct A | | |
| 1.0* | 11 | 16 | 13 | 18 | 18.1 | 0.119 |
| 1.5 | 14 | 20 | 16 | 24 | 13.6 | 0.111 |
| 2.5* | 20 | 28 | 22 | 33 | 7.41 | 0.102 |
| 2.5 | 20 | 28 | 22 | 33 | 7.41 | 0.102 |
| 4 | 26 | 37 | 30 | 42 | 4.61 | 0.102 |

(a) Based on 75°C conductor temperature, 40°C ambient air temperature and where applicable, burial depth of 0.5m, soil temperature of 25°C and soil thermal resistivity of 1.2°C.m/W. Refer to AS/NZS 3008.1 for other installation conditions

* Single wire conductor



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Whilst every care has been taken in the preparation of this publication, Prysmian Cables & Systems takes no responsibility for any errors and/or omissions. This technical manual is intended as a guide only and reference must be made by any person using this information to the appropriate Australian Standard and/or to local Electricity Supply Authority rulings.

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