3M™ TAPE RESIN SPLICE
VN-5B & 6B series

DATA SHEET **Update: Dec 2019**

Application

3M™ Splice Solutions are designed to help you reduce the time, labor and cost involved in a variety of electrical cable splicing applications.
When you want the versatility of tape, 3M™ Tape Resin Splice VN-5B & 6B series are the answer for almost any application, regardless of cable type or size. The splice kit comprises 3M™ Scotch® splicing tape and 3M™ Scotchcast™ Resin, which are designed for extra-long shelf life, so there's less chance of being caught without the supplies you need for emergencies. 3M™ Tape Resin Splice products are available to splice cables from 600V to 69 kV.
The splicing kits have a high degree of mechanical strength for physical protection of connections and provide moisture-resistant insulation in above ground or direct burial applications.

Application

A splice may be considered as two or more conductors joined with a suitable connector reinsulated, reshielded and rejacketed with compatible materials applied over a properly prepared surface. Whenever possible, splicing is normally avoided. However splicing is often an economic necessity. There can be many reasons for building splices such as:
• The supplied length of cable is not sufficient to perform the intended job only so much cable can be wound on a reel (reel ends) ... only so much cable can be pulled through so much conduit, around so many bends, etc.
• Cable failures
• Cables damaged after installation
• A tap into an existing cable (tee or wye splices) In all the above cases, the option is to either splice the cable or replace the entire length. The economy of modern splicing products in many cases makes splicing an optimal choice.
Whatever the reason to splice, good practice dictates that splices have the same rating as the cable. In this way the splice does not derate the cable and become the weak link in the system

Key Features

• EXCELLENT ENVIRONMENT SEAL: the Scotchcast™Resin provides impact resistance and durability against moisture and atmospheric corrosion.
• LARGER APPLICATION RANGE: all splicing kits only have different quantity of tapes and resin bags which
make large kit could be used for smaller size, increasing the availability in case of emergency.
• FLEXIBILITY: beside the inline joint, with knowledge, tape resin splicing kit could be adjusted to use for branch joint and jacket damaged repair.
• ENVIRONMENT FRIENDLY : 3M™ Scotchcast™ Resin is RoHS 2002/95/EC compliance.
• EASY INSTALLATION : the resin bag now come with spout and opener B.

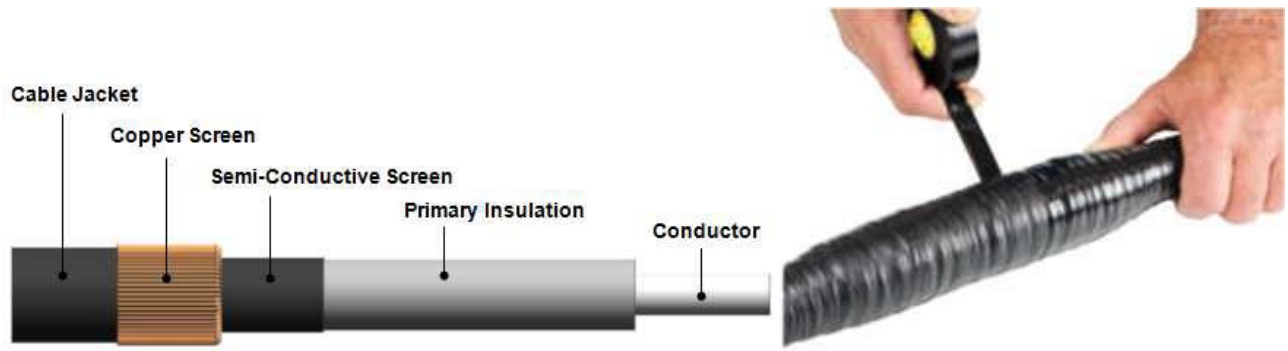
Standard Application

3M™ Tape Resin Splice VN-5B & 6B series are in accordance with **IEE 404/D9 & IEC 60502-4**

Maximum Voltage Class (Um):	36kV
AC 5 Minute Voltage Withstand:	90kV
DC 15 Minute Voltage Withstand:	80kV
Minimum Corona Voltage Level:	35kV < 10pC
BIL and Full Wave Crest (Impluse):	170kV
Thermal Short Circuit (Conductor, 2sec.)	25 kA

Detailed installation of the Tape Resin Splice

The six common steps in building a splice:
1. Prepare surface
2. Join conductors with connector(s)
3. Strand reshield
4. Reinsulate
5. Insulation & metallic reshield
6. Rejacket
It should be recognized that the greatest assurance against splice failure remains with the person who makes the splice. Adequate cable preparation, proper installation of all components and good workmanship require trained skills performed by people adept at them. Yet the expertise, skills and care of the installer are still necessary to make a dependable splice



1. **Prepare the surface**

   High quality products usually include detailed installation instructions. These instructions should be followed. A suggested technique is to check off steps as they are completed. Good instructions alone do not qualify a person as a “cable splicer”. Certain anufacturers offer “hands-on” training programs designed to teach proper installation of their products. It is highly recommended that inexperienced splice and termination installers take advantage of such programs where available.

2. **Join conductors with connector**

   After the cables are completely prepared, the rebuilding process begins. The first step is reconstructing the conductor with a suitable connector. A suitable connector for high voltage cable splices is a compression or crimp type.

   DO NOT USE mechanical type connectors (e.g. splitbolts). Connector selection is based on conductor material: copper or aluminum.

   Aluminum conductor

   Connect with aluminum-bodied connector (marked CU/AL). These must come pre-loaded with contact aid (anti-oxide paste) to break down the insulating aluminum oxide coating on both the connector and conductor surfaces.

   Copper conductor

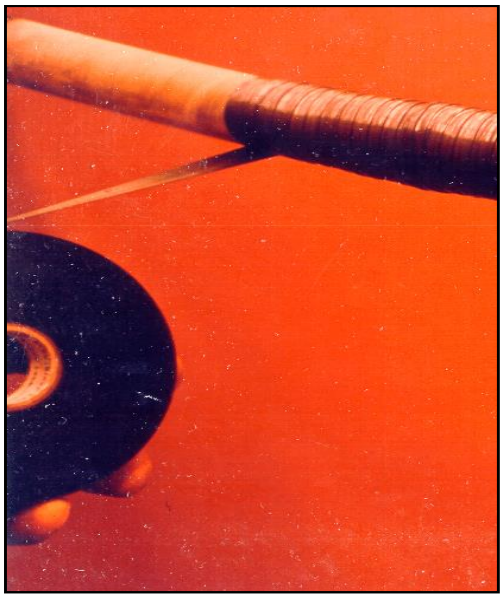
   Connect with either copper or aluminum bodied connectors. It is recommended that a UL listed connector be used that can be applied with any common crimping tool. This connector should be tested and approved for use at high voltage. In this way, the choice of the high voltage connector is at the discretion of the user, and is not limited by the tools available.

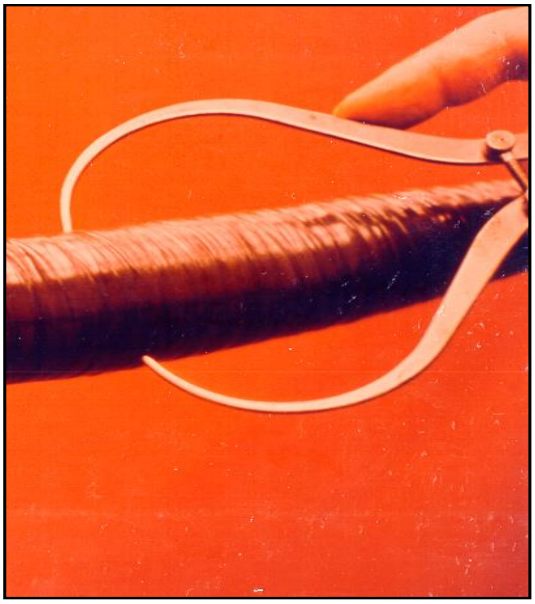
3. **Strand reshield**

   The cable’s two shielding systems (strand shield and insulation shield system) must be rebuilt when constructing a splice. The cable strand shielding is replaced by a semiconductive tape. This tape is wrapped over the connector area to smooth the crimp indents and connector edges.

4. **Reinsulate**

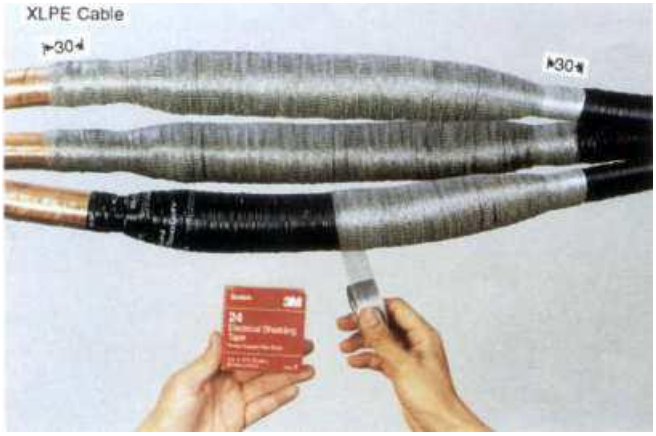
The most versatile approach, tape, is not dependent upon cable types and dimensions. Tape has a history of dependable service and is generally available. However, wrapping tape on a high voltage cable can be time consuming and error prone since the careful build-up of tape requires accurate half-lapping and constant tension in order to reduce build-in air voids.





5. **Insulation & metallic reshield**

The insulation shielding system is replaced by a combination of tapes. Semi-con is replaced with the same semi-conducting tape used to replace the strand shield. The cable's metallic shield is generally replaced with a flexible woven mesh of tin plated copper braid. This braid is for electrostatic shielding only, and not designed to carry shield currents. For conducting shield currents, a jumper braid is installed to connect the cables metallic shields. This jumper must have an ampacity rating equal to that of the cables' shields.



6. **Rejacket**

   The jacket is reconstructed by a combination of tapes and resin. P3F Spacer Tape is used to build up voids in odd shaped splices, ensures full resin coverage, and forms a liquid tight mould. The filament tape is used to increase the impact strength of the splice. The transparent tape provides outer layer to ensure safe and enclosed resin injection. The Scotchcast™ resin unique electrical and physical properties make it ideal for cable jacket replacement.

Selection Guide

for 1C XLPE/EPR amoured tape shield Cu cable, 24KV

No.	Product Description	Cable (mm2)	Phase	Voltage
1	VN-5B-1C-50-Cu	50	1	24kV
2	VN-5B-1C-70-Cu	70	1	24kV
3	VN-5B-1C-95-Cu	95	1	24kV
4	VN-5B-1C-120-Cu	120	1	24kV
5	VN-5B-1C-150-Cu	150	1	24kV
6	VN-5B-1C-185-Cu	185	1	24kV
7	VN-5B-1C-240-Cu	240	1	24kV
8	VN-5B-1C-300-Cu	300	1	24kV
9	VN-5B-1C-400-Cu	400	1	24kV
10	VN-5B-1C-500-Cu	500	1	24kV
11	VN-5B-1C-630-Cu	630	1	24kV

for 1C XLPE/EPR amoured tape shield AL cable, 24KV

No.	Product Description	Cable (mm2)	Phase	Voltage
1	VN-5B-1C-50-AL	50	1	24kV
2	VN-5B-1C-70-AL	70	1	24kV
3	VN-5B-1C-95-AL	95	1	24kV
4	VN-5B-1C-120-AL	120	1	24kV
5	VN-5B-1C-150-AL	150	1	24kV
6	VN-5B-1C-185-AL	185	1	24kV
7	VN-5B-1C-240-AL	240	1	24kV
8	VN-5B-1C-300-AL	300	1	24kV
9	VN-5B-1C-400-AL	400	1	24kV
10	VN-5B-1C-500-AL	500	1	24kV
11	VN-5B-1C-630-AL	630	1	24kV

for 3C XLPE/EPR amoured tape shield Cu cable, 24KV

No.	Product Description	Cable (mm2)	Phase	Voltage
1	VN-5B-50-Cu	50	3	24kV
2	VN-5B-70-Cu	70	3	24kV
3	VN-5B-95-Cu	95	3	24kV
4	VN-5B-120-Cu	120	3	24kV
5	VN-5B-150-Cu	150	3	24kV
6	VN-5B-185-Cu	185	3	24kV
7	VN-5B-240-Cu	240	3	24kV
8	VN-5B-300-Cu	300	3	24kV
9	VN-5B-400-Cu	400	3	24kV
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7	VN-5B-240-AL	240	3	24kV
8	VN-5B-300-AL	300	3	24kV
9	VN-5B-400-AL	400	3	24kV
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for 1C XLPE/EPR amoured tape shield Cu cable, 36KV

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1	VN-6B-1C-50-Cu	50	1	36kV
2	VN-6B-1C-70-Cu	70	1	36kV
3	VN-6B-1C-95-Cu	95	1	36kV
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8	VN-6B-1C-300-Cu	300	1	36kV
9	VN-6B-1C-400-Cu	400	1	36kV
10	VN-6B-1C-500-Cu	500	1	36kV
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9	VN-6B-400-AL	400	3	36kV
10	VN-6B-500-AL	500	3	36kV

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