The test results in Table 21 illustrate that as the urethane concentration decreases the fiber pull-out friction decreases and the crack propagation increases. The test results in Table 21 also illustrate that as the molecular weight of the polymeric block increases the fiber pull-out friction decreases and the crack propagation increases. The polymeric block used was a polycarbonate.

Ribbon Assemblies

Ribbon assemblies are now well known in the art and one skilled in the art will readily be able to use the disclosure provided herein to prepare the novel ribbon assemblies having enhanced ribbon strippability for the desired applications. The novel ribbon assembly made according to this invention can be advantageously used in various telecommunication systems. Such telecommunication systems typically include ribbon assemblies containing optical glass fibers, in combination with transmitters, receivers, and switches. The ribbon assemblies containing the coated optical glass fibers are the fundamental connecting units of telecommunication systems. The ribbon assembly can be buried under ground or water for long distance connections, such as between cities. The ribbon assembly can also be used to connect directly to residential homes.

The novel ribbon assembly made according to this invention can also be used in cable television systems. Such cable television systems typically include ribbon assemblies containing optical glass fibers, transmitters, receivers, and switches. The ribbon assemblies containing the coated optical glass fibers are the fundamental connecting units of such cable television systems. The ribbon assembly can be buried under ground or water for long distance connections, such as between cities. The ribbon assembly can also be used to connect directly to residential homes.

The novel ribbon assemblies can also be used in a wide variety of technologies, including but not limited to, various security systems, data transmission lines, high density television, and computer appliance systems. It will be appreciated that as a result of the fundamental discoveries described herein including the relationship between the fiber friction forces and the cohesive strength of the coatings themselves, and the means to control and establish such features and functions, the optical fiber art is now able to realize significant advantages. These are primarily exhibited, as explained above, in the stripping and cable splicing function, but those operations are nonetheless critical in the establishment of a ribbon/cable network of communication.

While the invention has been described in detail and with reference to specific embodiments thereof, it will be apparent to those of ordinary skill in the art that various changes and modifications can be made to the claimed invention without departing from the spirit and scope thereof. For instance, while this invention has principally been described with reference to ribbon constructions and assemblies of optical fibers, it is equally adaptable to other geometric and structural arrays of multiple fiber conduits and cables.

Accordingly, applicants believe that the scope of this invention is defined solely by the terminology set forth in the following claims and is not otherwise limited.

What is claimed is:

1. A composition for coating an optical fiber, said composition comprising propoxylated nonyl phenol acrylate and an oligomer having at least one functional group capable of polymerizing under the influence of radiation, said composition after radiation cure having the combination of properties of:

(a) a fiber pull-out friction of less than 40 g/mm at 90° C.;

(b) a crack propagation of greater than 1.0 mm at 90° C.;

(c) a glass transition temperature of below 10° C.; and

(d) sufficient adhesion to said glass fiber to prevent delamination in the presence of moisture and during handling.

2. A coated optical fiber comprising at least an inner primary coating and an outer primary coating, wherein said inner primary coating is obtained by curing the composition of claim **1**.

3. A ribbon assembly comprising:

(i) a plurality of coated optical fibers, at least one of said coated optical fibers being the coated optical fiber of claim **2**; and

(ii) a matrix material bonding said plurality of coated optical fibers together.

4. The composition of claim **1**, wherein said oligomer comprises a polyether polyol residue, an isophorone diisocyanate residue, and a hydroxyethylacrylate residue.

5. The coated optical fiber of claim **2**, wherein said oligomer comprises a polyether polyol residue, an isophorone diisocyanate residue, and a hydroxyethylacrylate residue.

6. The ribbon assembly of claim **3**, wherein said oligomer comprises a polyether polyol residue, an isophorone diisocyanate residue, and a hydroxyethylacrylate residue.

7. The composition of claim **4**, wherein said oligomer further comprises a bis 4,4'-(isocyanatocyclohexyl)methane residue.

8. The composition of claim **1**, further comprising gamma-mercaptopropyl trimethoxysilane.

9. The composition of claim **7**, further comprising gamma-mercaptopropyl trimethoxysilane.

10. A composition for coating an optical fiber, said composition comprising an oligomer having an aliphatic diisocyanate residue and at least one functional group capable of polymerizing under the influence of radiation, said composition after radiation cure having the combination of properties of:

(a) a fiber pull-out friction of less than 40 g/mm at 90° C.;

(b) a crack propagation of greater than 1.0 mm at 90° C.;

(c) a glass transition temperature of −20° C. or less; and

(d) sufficient adhesion to said glass fiber to prevent delamination in the presence of moisture and during handling.

11. A coated optical fiber comprising at least an inner primary coating and an outer primary coating, wherein said inner primary coating is obtained by curing the composition of claim **10**.

12. A ribbon assembly comprising:

(i) a plurality of coated optical fibers, at least one of said coated optical fibers being the coated optical fiber of claim **11**; and

(ii) a matrix material bonding said plurality of coated optical fibers together.

13. The composition of claim **10**, wherein said oligomer further comprises a polyether polyol residue.

14. The coated optical fiber of claim **11**, wherein said oligomer further comprises a polyether polyol residue.

15. The ribbon assembly of claim **12**, wherein said oligomer further comprises a polyether polyol residue.

16. The composition of claim **10**, further comprising gamma-mercaptopropyl trimethoxysilane.

17. The coated optical fiber of claim **11**, wherein said composition further comprises gamma-mercaptopropyl trimethoxysilane.