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Turbo-reactive solvent grade D, agent for hydrophobic filler removal from fiber optic cores (D-Gel)

Materials supplier: Mendeleev Ltd.
Material: Turbo-reactive solvent grade D (an analogue of D Gel, Д гель, D'gel, D-gel).
Date of operation: December, 2011.
Air temperature: from 20?C.
Relative air humidity: 85%.

Significant changes have taken place within the sector of information technology in recent years. Convenient ADSL modems got outdated and fiber-optic communication lines (FOCL) appeared to replace them. Major Internet providers of Saint Petersburg, Moscow, Far East, Yekaterinburg, Rostov-on-Don announced their adoption of fiber optic communication. This technology can provide up to 100 Mbit/s speed of data transfer. PON (Passive Optical Networks) Technology implies laying electric energy unconsuming fiber optic cable directly indoors. Optical fibers are light-transmitting elements of the optical cable. To provide uninterrupted signal transmission, it is necessary to splice the fibers of one cable with those of the other one by fusion. Fiber optic lines installation is a highly labor intensive and important step, requiring modern high-technology equipment.

Pic.1 – Fiber optic cable

In Pic.1 an interior fiber optic cable structure is shown. An optical cable may have armoring of various types and specific protective layers. Optical fibers do not oxidize or get wet due to a silicone filler, hydrophobin.

Pic.2 – Turbo-reactive solvent grade D (an analogue of D Gel, D'gel, D-gel) – a solvent for hydrophobic filler removal

For optical cables splicing it is necessary to cut the cable open and bare the optical fibers. For optical fibers protection a special agent – hydrophobic filler (hydrophobin, silicone gel) is used. The basic step before fiber fusion splicing is a process of degreasing and hydrophobic filler removal, executed with Turbo-reactive solvent grade D (an analogue of D Gel).

Formerly an imported agent D Gel was widely used, but its delivery price and long supply terms made its application unprofitable. That state of affairs impelled the research and technology division of Mendeleev Ltd. to design a new solvent, similar in its physical and chemical characteristics to the imported one. It is a transparent, colorless liquid, free of mechanical admixtures, with a specific citrus plants (orange, lemon) odor.

Pic.3 – An automatic optical fibers fusion splicer

Pic.4 – A toolkit for cutting and stripping of optical fiber: wire cutters, a multi-stripper, an optic stripper

Pic.5 – Optic cable stripping

Remove power protective insulation jacket.

Pic.6 – a stripped fiber optic cable

This type of cable with an additional steel wire is layed down along building walls. The steel wire protects optical fiber from fractures and strain.

Pic.7 – Cut off the power armor with steel wire cutters.

Chip off a part of the cable with steel wire cutters.

Pic.8 – Removing cable outer jacket.

Optical cable stripping usually includes outer insulation removal. Color cores in Pic.8 are optical fibers, enclosed in special modules. The protective gel (hydrophobin) makes the modules glossy.

Pic.9 – Turbo-reactive solvent grade D (an analogue of D Gel, D'gel, D-gel)

Turbo-reactive solvent grade D (an analogue of D Gel, D'gel, D-gel) – a solvent, used to remove the hydrophobic gel from optical fiber cable. The agent efficiently removes grease, resins, oils and wax from copper and fiber optic cables. The composition has a pleasant citrous odor.

Pic.10 – The process of optical fiber modules degreasing (hydrophobin removal) with Turbo-reactive solvent grade D (an analogue of D Gel, D'gel, D-gel)

Pic.11 – Protective silicone gel (hydrophobin)

In Pic.11 one can see that after the insulation jacket removal hydrophibin comes out. For optical fiber modules degreasing, soak a paper napkin in Turbo-reactive solvent grade D (an analogue of D Gel, D-Gel), then carefully and thoroughly wipe the cores, removing protective silicone gel.

Pic.12 – Optical fiber cores cleaned from hydrophobin (a hydrophobic filler).

The cores are enclosed in modules of various colors to avoid incorrect fusion splicing. In compliance with the technical task a specialist splices the cores in definite order. There's an unwritten rule among electricians: 'The red module comes first, then the blue one, then white'. The cable encloses 8 optical fibers as is shown in Pic.12.

Pic.13 – Protective color modules removed from optical fibers

Pic.14 – An optical cleaver

Optical cleaver is a device, designed to cleave optical fibers before splicing them. This device provides perfectly smooth cleaved surface.

Pic.15 – An optical fiber placed in the cleaver

Immediately after cleaving the fiber, it must be placed in the clamp of the fusion splicer.

Pic.16 – Optical fibers

Optical fibers used in telecommunication are, as a rule, very thin and brittle enough. They are 125±1 micron in diameter.

Pic.17 – Optical fibers fusion

During FOCL installation different pieces of optical cable are to be spliced. It is necessary for uninterrupted signal transmission along the whole FOCL length. Optical fiber fusion is a process of optical cable fibers splicing by thermal treatment, with a special fusing device. Onto the ends of preliminarily prepared (degreased and cleaved) optical fibers a special muff is put and then the cable is placed into the fusion splicer. Inside this muff thin optical fibers are spliced with one another. It should be noted that optical fiber fusion splicing is the most important step during the FOCL installation. Even minute inaccuracy or error may result in communication line performance degradation. Therefore FOCL fusion must be executed by qualified specialists using high quality equipment and materials.

- cable
- D gel
- DOCSIS
- Exfo
- fiber-optic-lines
- Fitel

- FTTx
- Fujikura
- PLC
- Sumitomo Electric
- Wi-Fi
- WiMax
- xDSL
- Yokogawa
- fotl
- focl
- leased fiber optic line
- optical cable hydrophobic filler
- hydrophobin
- d gel
- liquid for hydrophobic filler removal
- optical muffs mounting
- optical communication lines
- fiber optic cable laying
- fiber optic fusion
- fusion and installation equipment for focl
- construction of fiber optic communication lines