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Electronics

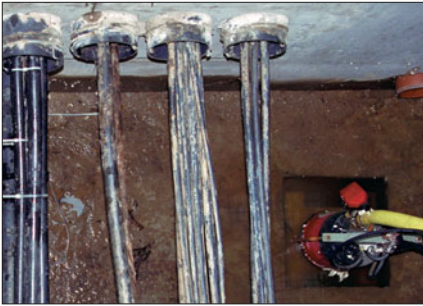
Energy Division

**RDSS
Rayplate Duct Sealing System
for power cables**



Raychem

Rayflate Duct Sealing System for power cables



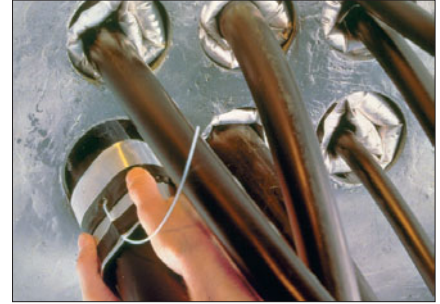
Eliminates the need to pump man-holes dry, avoids ingress of mud into ducts, and withstands severely polluted environments.

Unsealed cable pipes and ducts need not to cause dampness and flooding in substation basements, cable vaults and access manholes.

In these environments rust, corrosion and a humid environment inevitably result in damage to support structures, metal work and electrical equipment. The most common route for water to enter into such installations can be blocked simply and effectively by a field proven technique developed by Raychem.

The Rayflate Duct Sealing System (RDSS) has been designed for use on power cables to provide a watertight seal when used with plastic, concrete or steel ducting systems.

Once installed the Rayflate duct seals can provide operators with immediate access in clean and dry conditions, eliminating the routine of pumping manholes dry before work can begin.



Clean, fast, easy sealing method

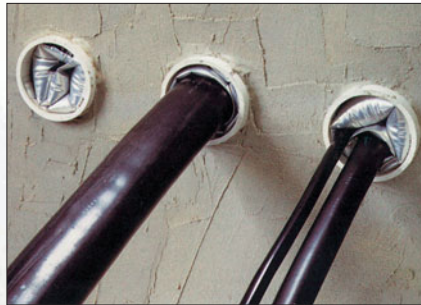
The Rayflate seal consists of an inflatable bladder of flexible metallic laminate, coated on both sides with a sealant strip. With the sealant strips lubricated, the product is simply wrapped around the cable and easily slides into the duct. The bladder is



then inflated with a gas pressure tool which presses the sealant coating against the duct wall and the cable. Upon removal of the filling tube, an automatic gel valve system reliably retains the gas pressure

in the Rayflate duct seal.

The entire installation is performed within a few minutes – even in congested enclosures – without any messy or installer-sensitive mixing and filling.



Seals vacant and multiple cable ducts

Depending on the duct diameter, most Rayflate bags seal vacant ducts and ducts which contain up to two cables. Sealing of three or more cables can be easily achieved by merely inserting a mastic sealant-clip between the cables. The RDSS-Clip is made from a high-temperature mastic mounted on an installation stick.

Versatility

As the Rayflate system adapts itself to most configurations, the system is independent of duct ovality. Each Rayflate seal covers a large range of cable and duct diameters.

Ideal for both new and existing cable installations

The versatility of the wraparound concept enables use not only for new cable installations, but also for existing applications. Unlike other methods that require dry ducts, the Rayflate seals can be installed when water is still flowing out of the duct – thus saving valuable installation time.





Removable

Rayflite seals are easier to be removed from a duct or a pipe than other systems. This allows cables to be replaced in an upgrade or repair. Since ducts are not damaged by the Rayflite system, they can easily be sealed again.

Environmentally friendly

Rayflite seals do not require any mixing of liquids, thus eliminating typical hazards involved in preparation of 2-component resin systems, and the need for costly disposal of harmful residues or messy containers.

Empty gas cylinders or the lubricant bottles will be recycled when disposed in metal scrap or PE/PP collection containers, respectively. Residuals of the lubricant are treated as normal waste water.

Performance Tested

Rayflite duct seals are a result of our long involvement in sealing and corrosion protection technologies.



Extensive testing at room temperature has shown water and air tightness at static pressures of more than 0.3 bar, even in conjunction with cable bending, vibration, torsion and axial pull. Resistance to common chemicals has been proven by immersion tests.

As the Rayflite system is specially designed for power cables, it was tested with cables load-cycled at conductor temperatures of 90°C, similar to specifications required for cable accessories. The sealing tests showed water and air tightness with internal duct pressures of 0.3 bar with single and multi-cable configurations. A detailed test report is available.

Lifetime calculations indicate that a typical Rayflite duct seal will withstand a 3 m waterhead for 30 years after installation. These results are based on typical utility cable loads at average ambient temperatures of 25°C and diffusion rate measurements at elevated temperatures and after ageing by load-cycling. The sealing performance was confirmed by sealing tests with reduced internal bladder pressures.

Tools for easy and quick inflation

Rayflite duct seals can be installed using a wide variety of inflation tools, which have the capability to inflate the bag to 3.0 ± 0.2 bar pressure.

We offer two inflation tools, using either a CO₂ cartridge or the customer's own source of compressed air. Both tools feature an easy-to-read gauge and a release valve to ensure proper inflation pressure:

RDSS-IT-16: Inflation tool complete with an ON/OFF switch and an automatic pressure monitoring system. The required CO₂ gas cylinders (E7512-0160) must be ordered separately. The standard package includes 1 tool per box plus operating manual and a 3-year warranty.



E7512-0160: 16 gr. CO₂ gas cylinders for RDSS-IT-16 tool. Each gas cylinder inflates approx. 5 pcs of RDSS-100 duct seals. Each box contains 10 gas cylinders.



RDSS-IG-SR-AS: Inflation tool using a pressure bottle, an air-compressor or a main air pressure line with pressure input between 4 bar and 10 bar. Features automatic shutoff, a VG8 valve connection and two alternative connections for plastic or rubber hoses.

The standard package includes 1 tool per box plus operating manual.



Each RDSS seals empty ducts (except for size 150) and ducts containing up to 2 cables. The table below shows the minimum and maximum diameter of the cable or of the sum of 2 cables depending on the duct size. Dimensions in mm.

| Product description | | | | | | |
|---------------------|--------------------|--------------------|--------------------|---------------------|---------------------|---------------------|
| Duct inside dia. | RDSS-45 cable dia. | RDSS-60 cable dia. | RDSS-75 cable dia. | RDSS-100 cable dia. | RDSS-125 cable dia. | RDSS-150 cable dia. |
| 32.5 | 0 - 14 | | | | | |
| 35 | 0 - 18 | | | | | |
| 40 | 0 - 27 | | | | | |
| 45 | 0 - 32 | 0 - 18 | | | | |
| 50 | | 0 - 30 | | | | |
| 55 | | 0 - 38 | 0 - 28 | | | |
| 60 | | 0 - 45 | 0 - 30 | | | |
| 65 | | | 0 - 40 | | | |
| 70 | | | 0 - 46 | | | |
| 75 | | | 0 - 56 | 0 - 45 | | |
| 80 | | | | 0 - 52 | | |
| 85 | | | | 0 - 60 | | |
| 90 | | | | 0 - 66 | | |
| 95 | | | | 0 - 74 | | |
| 100 | | | | 0 - 80 | 0 - 65 | |
| 105 | | | | 0 - 85 | 0 - 75 | |
| 110 | | | | 0 - 90 | 0 - 83 | |
| 115 | | | | 55 - 95* | 0 - 91 | |
| 120 | | | | 60 - 100* | 0 - 95 | |
| 125 | | | | | 0 - 103 | 60 - 100 |
| 130 | | | | | 70 - 110* | 60 - 107 |
| 135 | | | | | 75 - 115* | 60 - 112 |
| 140 | | | | | 80 - 120* | 60 - 118 |
| 145 | | | | | 85 - 125* | 60 - 123 |
| 150 | | | | | 90 - 130* | 60 - 129 |
| 155 | | | | | | 60 - 134* |
| 160 | | | | | | 60 - 139* |
| 165 | | | | | | 105 - 145* |
| 170 | | | | | | 110 - 150* |
| 175 | | | | | | 115 - 155* |
| 180 | | | | | | 120 - 160* |
| >180** | | | | | | |

| Clip Selection | RDSS-Clip-45 | RDSS-Clip-75 | RDSS-Clip-75 | RDSS-Clip-100 | RDSS-Clip-125 | RDSS-Clip-150 |
|----------------|--------------|--------------|--------------|---------------|---------------|---------------|
|----------------|--------------|--------------|--------------|---------------|---------------|---------------|

- Suitable also for empty ducts
- Only with cables
- *RDSS-Clips must also be used for 2-cable configurations

All RDSS sizes are packed in boxes of 10 pieces with 1 lubricant dispenser and an installation instruction. RDSS-Clips are packed in boxes of 5 pieces. RDSS-Clips must be ordered as a separate item.

** For more specific information on cable diameter ranges and for duct sizes > 180 mm contact your local sales representative.

All of the above information, including drawings, illustrations and graphic designs, reflects our present understanding and is to the best of our knowledge and belief correct and reliable. Users, however, should independently evaluate the suitability of each product for the desired application. Under no circumstances does this constitute an assurance of any particular quality or performance. Such an assurance is only provided in the context of our product specifications or explicit contractual arrangements. Our liability for these products is set forth in our standard terms and conditions of sale.

ALR, AMP, AXICOM, B&H, Bowthorpe EMP, Critchley, Crompton, Dorman Smith, Dulmison, Guro, Hellstern, La Prairie, Morlynn, Raychem, and SIMEL are trademarks.



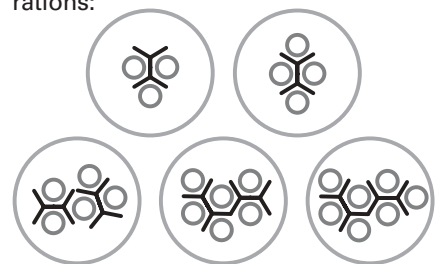
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When three or more cables have to be sealed, an RDSS sealing clip is used in combination with the RDSS inflatable duct seal.

One RDSS-Clip seals up to 4 cables. If more cables are to be sealed, use one extra clip per three additional cables as shown in the following examples for different multi-cable configurations:



For each clip used, subtract 5 mm from the maximum cable diameter shown in the table to determine the maximum cable bundle diameter.

Cable or cable bundle diameters:

