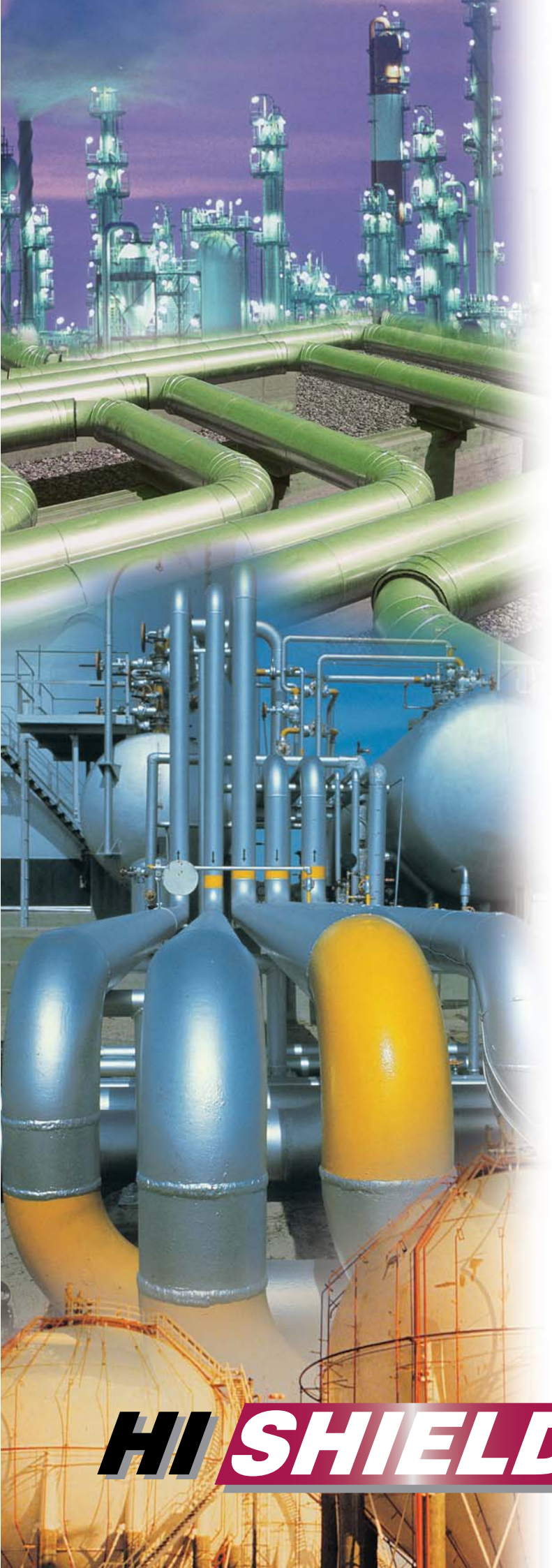
HI SHIELD®

The Hydrocarbon Resistant Cable

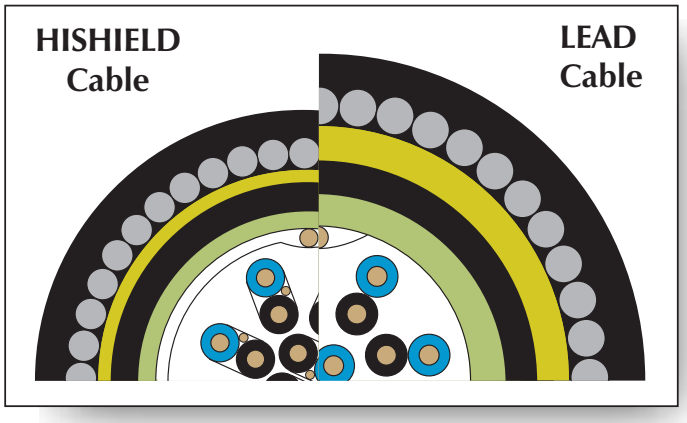
Draka



Hydrocarbon Resistant Cable

In applications where cables may be subjected to attack from oils, solvents, gases or other chemicals, designers and installers of critical cabling systems have historically relied upon using conventional lead-sheathed cable to provide maximum protection. However, the use of lead sheathed cable is often unsatisfactory due to its weight, large bending radius and cost.

For applications prone to hydrocarbon attack and moisture penetration, especially relevant to the on-shore oil, gas and petrochemical industries, Draka has developed a new generation of non-permeable cables, utilising a combination of modern materials allied to novel production techniques. This new Hishield® cabling system provides excellent resistance to hydrocarbons, its performance being similar to lead alloy, but with significant advantages.



Cable weight is reduced by up to 70%

Overall diameter is reduced by up to 20%

Bending radius is reduced by up to 25%

Termination time is reduced by up to 50%

Less hazardous to health

In addition to mechanical abuse and attack by aggressive hydrocarbons, cables carrying important data signals and communications may in industrial environments also be subject to Electro-Magnetic Interference (EMI). Draka has recognised this problem and has, therefore, also included an effective metallic screening layer in all Hishield® cables.

HI SHIELD®

Chemical Attack

The often unseen, yet persistent assault from aggressive liquid and air borne chemicals can be a major cause of cable failure.

Chemicals can effect the cable in a variety of ways:

(1) By attacking the sheathing and insulating materials leading to embrittlement and cracking, or causing swelling associated with a dramatic reduction in mechanical strength and physical properties. In both cases premature cable failure is the result.

(2) By disrupting the electrical performance of the cable leading to corruption of transmitted information and ultimate electrical breakdown.

Chemical attack is reduced by the introduction of the Hishield® protective system.

Moisture Penetration

The additional threat of moisture penetration to the cable core assembly may result in the corruption of transmitted information.

Moisture can cause corruption of the signal by:

(1) Increasing the capacitance and deterioration of other electrical properties.
(2) Increasing the mismatch of information due to the changing characteristic impedance.

Moisture penetration is reduced by the introduction of the Hishield® system.

Electro-Magnetic Interference (EMI)

This increasingly common form of electrical disturbance occurs when faulty equipment* switching or external interference causes spikes or electrical noise to appear in the power supply. This electrical distortion can effect vital transmission, leading to corrupted or even lost data. Although filters and suppression products are available to reduce the likelihood of EMI, additional protection is recommended to minimise its damaging effects and to help maintain signals free from electro-magnetic interference.

The Hishield® system reduces the effect of electro-magnetic interference on the cable.

* some correctly functioning equipment also gives rise to EMI.

Draka's Hishield® advanced cabling system can be applied to most types of (BS 5308) instrumentation and control cables, offering non-hazardous protection from chemicals, water, solvents and also effective screening against radio frequency interference (RFI) and EMI. The same protective sheath combination can be applied to most types of control and light power cables.

Technical Data for Cables Complying to BS 5308

	POLYETHYLENE Type 03 to BS 6234	PVC Type TI1 to BS 7655 part 3
Maximum conductor operating temp:	+65˚C	+65˚C
Minimum ambient temp:	-20˚C after installation and only when cable is in a fixed position	-20˚C after installation and only when cable is in a fixed position
*** Maximum working voltage:**	300/500V r.m.s.	300/500V r.m.s.
Test voltage:	1000V r.m.s. between conductors and between conductors and screen/armour	1000V r.m.s. between conductors and between conductors and screen/armour.
Maximum d.c. conductor resistance:	Conductor size Ω/km at 20C 0.5mm² Class 1 36.8 0.5mm² Class 5 39.7 1.0mm² Class 1 18.4 1.5mm² Class 2 12.3	Conductor size Ω/km at 20C Multicore Multipair 0.5mm² Class 5 39.0 39.7 0.75mm² Class 5 26.0 26.5 1.5mm² Class 2 12.1 12.3
Minimum insulation resistance:	Individual cores - 5000 MΩ/km at 20C Between individual screens-1MΩ/km at 20˚C	Individual cores-25 MΩ/km at 20C Between individual screens-1MΩ/km at 20˚C
Maximum mutual capacitance:	Cables without individual pair screens, 0.5mm² and 1.0mm² - 75pF/m,1.5mm² -85pF/m. All cables with individual pair screens and 1 or 2 pair cables collectively screened, 115 pF/m, except 7/0.53mm (1.5mm²), 120 pF/m.	Pair or adjacent cores - 250 pF/m at 1KHz
Maximum capacitance unbalance:	250 pF/250mm at 1KHz	
Maximum capacitance conductor To screen:		450 pF/m at 1KHz
Maximum L/R ratio:	Conductor size μH/Ω 0.5mm² 25 1.0mm² 25 1.5mm² 40	Conductor size μH/Ω 0.5mm² 25 1.75mm² 25 1.5mm² 40
Minimum bending radius:	8 x overall diameter	8 x overall diameter

*** Cables using this composite sheath should not be connected to a low impedance source i.e. the mains power voltage supply.**

Please refer to our BS 5308 catalogue for the core sizes and configurations. The new HISHIELD system is also suitable for applications requiring termite and rodent protection.

For further information on specific applications please contact your local sales office.

Draka

Typical Construction

Hishield® Cables

1 Plain annealed copper conductor.

2 PVC/Low Density Polyethylene/Cross-linked Polyethylene (XLPE) insulation.

3 Individual pair screen (optional).

4 Polyester tape.

5 Tinned soft copper drain wire.

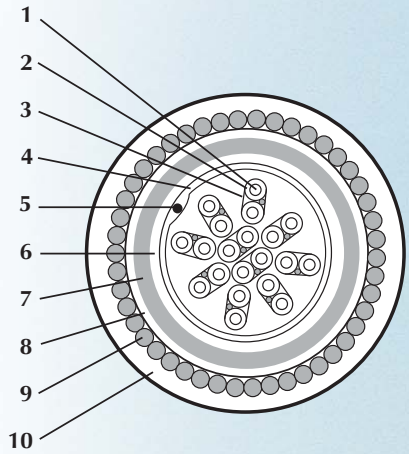
6 Aluminium/Polymer foil tape,
- Impermeable to moisture.
- Protection against EMI.

7 High Density Polyethylene (HDPE) bedding,
- Resistant to inorganic chemicals.

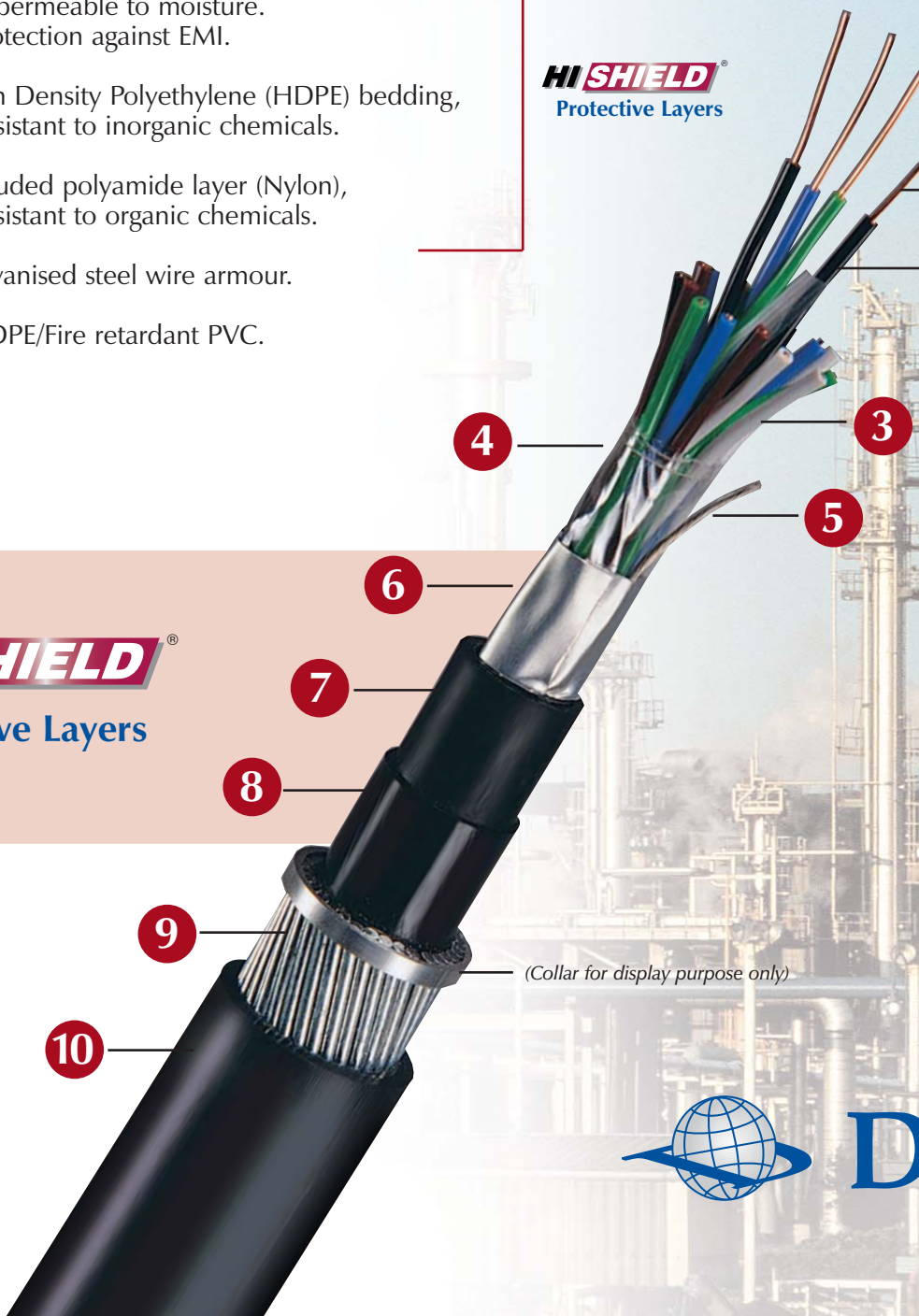
8 Extruded polyamide layer (Nylon),
- Resistant to organic chemicals.

9 Galvanised steel wire armour.

10 HDPE/Fire retardant PVC.



HI SHIELD®
Protective Layers



HI SHIELD®
Protective Layers

Draka

Draka Holding N.V.
have manufacturing operations
& representative offices
in the following countries:

- BELGIUM
- BRAZIL
- CHINA
- CZECH REPUBLIC
- DENMARK
- FRANCE
- GERMANY
- HONG KONG
- MALAYSIA
- NETHERLANDS
- OMAN
- PORTUGAL
- SINGAPORE
- SPAIN
- THAILAND
- UNITED ARAB EMIRATES
- UNITED KINGDOM
- U.S.A

The Hydrocarbon Resistant Cable

Draka UK Ltd
PO Box 6500
Alfreton Road
Derby
DE21 4ZH
+44 (0)1332 345431
+44 (0)1332 331237
email: cableuk@draka.com

DME Cables, formerly known as Draka Middle East is the exclusive representative and stocking distributor for Draka UK and Draka Marine Oil and Gas products in the Middle East and North Africa.

DME carry a comprehensive range of Draka wire and cable products, specialising in products for the marine oil and gas industry, elevator cables, high temperature flexibles, "Zero Halogen Low Smoke (0HLS)" power cable and building wires, Fibre optics and communication cables plus many more.

DME provides the end user a single point of contact and through our own engineers and support staff will manage all your technical and commercial requirements.

DME Cables FZCO
PO Box 17159, Jebel Ali
Dubai, UAE
+971 4 883 6749
+971 4 883 6238
email: info@dmecables.com

www.drakauk.com

All the information provided - including charts and diagrams - is believed to be correct at the time of going to press. However, Draka UK makes no warranties as to its accuracy, and accepts no liability regarding its use. Draka UK's Conditions of Sale for each product specify the company's obligations and are available on request. In the interests of continuous product improvement, Draka UK reserves the right to alter specifications or materials as appropriate. The suitability of individual products for specific applications should be determined by the user. Draka UK accepts no liability for any incidental, indirect or consequential damages arising from the sale, resale, use or misuse of the product.

Draka

The worlds most trusted cable brand

Printed in England 1700a 11-99 3K