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ICON® Chem

ICON® Chem

... ensures the safety and functionality of your plant in aggressive environments

- Instrumentation cables designed for applications in extreme conditions with the possibility of contact with aggressive media, such as oils and chemicals.
- ICON®Chem quality products are available with the proven lead sheath as well as the ecologically sound multi layer sheath, consisting of aluminium tape, laminated to a polyethylene and polyamide sheath (LEONI code “ALNYC-Sheath”).
- ICON®Chem cables were designed according to the latest standard for instrumentation cables (EN 50288-7).

LEONI

ICON® Chem
Instrumentation Cables

As a result of the wide range of environmental conditions encountered within the different industrial applications, the demands made on cables vary. In the oil refining and chemical industries in particular, it is necessary to allow for environmental influences resulting from aggressive media in liquid or gaseous form. ICON®Chem instrumentation cables for applications involving aggressive media such as oil and chemicals reliably protect the functioning of a system, even (and in particular) under extreme conditions.

ICON®Chem quality products can be equipped with the tried and tested lead sheath and with the ecologically sound laminated ALNYC sheath consisting of aluminium tape in conjunction with a PE and polyamide sheath. (LEONI Kerpen designation: ALNYC sheath.) The sophisticated laminated ALNYC sheath offers protection against moisture, electromagnetic interference and organic and inorganic media. It permits a cable design in which the use of aluminium tape offers additional electromagnetic shielding to be dispensed with, a feature which saves weight as well as costs and material.

Reliable protection can thus also be ensured in fields in which weight and dimensions of the cable play a significant role. The low bending radius also provides for better installation properties which, in addition to ensuring high quality, ultimately allow costs for transport, accessories and installation to be reduced.

The durability of the laminated ALNYC sheath has been proved and certified on the basis of tests conducted with various media by an independent institute (see table below).

Medium	Formula	°C
Benzene	C_6H_6	60
IRM oil 2	–	60
IRM oil 3	–	60
Nitric acid, 32 %	HNO_3	RT
Trichloroethylene	$C_2H_3Cl_3$	40
Water	H_2O	70

As a matter of course, ICON®Chem cables are designed acc. to EN 50288-7, the latest standard for instrumentation cables.

Properties		Sheath			PVC
		Insulation			PVC
		RE–Y(St)Y–fl	RE–Y(St)Ÿö–fl	RE–Y(St)Yv–fl	RE–Y(St)YSWAY–fl
Electrical properties					
operating voltage	300 V	●	●	●	●
	500 V	●	●	●	●
insulation resistance	100 MΩ x km	●	●	●	●
	300 MΩ x km				
	5000 MΩ x km				
Temperature range – installation					
	–30 °C up to +50 °C				
	–5 °C up to +50 °C	●	●	●	●
Temperature range – operation					
	–60 °C up to +70 °C				
	–30 °C up to +70 °C	●	●	●	●
	–30 °C up to +80 °C				
	–30 °C up to +90 °C				
	–30 °C up to +105 °C				
Chemical and physical properties					
oil resistance		+	+++	+	+
zero halogen					
resistance to chemicals		+	+	+	+
Reaction to fire					
single cable burning test	IEC 60332-1-2	●	●	●	●
bunched cable test	IEC 60332-3-24 (Cat. C)	●	●	●	●
smoke density	IEC 61034, <40 %				
light transmittance	IEC 61034, >60 %				
fire resistance acc. to	IEC 60331-21				
	BS 6387 Cat. CWZ				
Installation & environmental properties					
suitable for direct burial				■	++
cable bending radius	7.5 x diameter	●	●	●	
	10 x diameter				●
	15 x diameter				
suitability for tensile loads		○	○	○	+++
suitability for pressure and impact loads					+++
resistance against rodents					++
protection against inducing currents					++

Ranking for marked criteria as			
excellent	+++	limited	○
improved	++	depending on national regulations	■
good	+		
complied	●	on request	✉

	PVC arctic grade				PVC													PE	LSZH									
	PVC		PE		PE								XLPE				PE			XLPE			XLPE + MICA		Silicone	
RE-Y(St)YMYSWAY-fl	RE-Yw(St)Yw-fl	RE-Yw(St)YwSWAYw-fl	RE-Y(St)Y-fl	RE-Y(St)YSWAY-fl	RE-2Y(St)Y-fl	RE-2Y(St)YSWAY-fl	RE-2Y(St)Y-fl	RE-2Y(St)Yö-fl	RE-2Y(St)Yv-fl	RE-2Y(St)YBY-fl	RE-2Y(St)YQY-fl	RE-2Y(St)YSWAY-fl	RE-2Y(St)YMYSWAY-fl	RE-2X(St)Y-fl	RE-2X(St)YSWAY-fl	RE-2X(St)YMYSWAY-fl	RE-2X(L)2Y4YSWAYfl	RE-2Y(St)H	RE-2Y(St)HSWAH	RE-2Y(St)HQH	RE-2X(St)H	RE-2X(St)HSWAH	RE-2X(L)2Y4YSWA2Y	RE-2X(St)H CI	RE-2X(St)HSWAH CI	RE-2G(St)H CI	RE-2G(St)HSWAH CI
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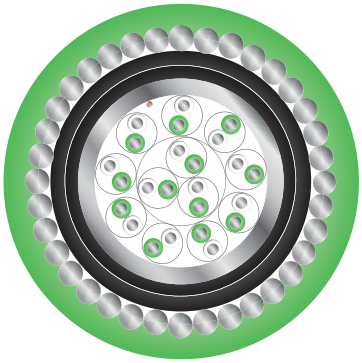
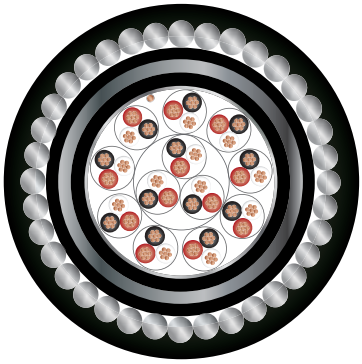
See two examples of our ICON® Chem cable designs for extreme environmental conditions:





Characteristics

Application	For thermovoltage transmisson of type of K thermocouples in and around process control. Mainly used for direct burial, chemical, rodent and termite resistant. Recommended for direct burial, especially in presence of oil and aggressive chemical substances. Recommended for direct burial, especially in presence of oil and aggressive chemical substances.	For transmission of analogue and digital signals in instrument and control systems; allowed for use in zone 1 and zone 2 group II classified areas (IEC 60079-14); not allowed for direct connection to low impedance source, e.g. the public mains electricity supply. Recommended for indoor and outdoor installation, on racks, trays, in conduits, in dry and wet locations; for direct burial, especially in presence of oil and aggressive chemical substances
Conductor	solid compensating wires type KCB acc. to IEC 60584 part 3, size of 0.5 mm^2	plain annealed copper wire, stranded, size: 0.5 mm2
Insulation	polyethylene PE	polyvinyl chloride PVC
Wrapping	at least 1 layer of lastic tape	at least 1 layer of lastic tape
Collective screen	one side plastic coated aluminium foil (min. thickness 0.15 mm	24 µm aluminium / PETP tape over tinned copper drain wire, 0.5 mm2
Inner sheath	one side plastic coated aluminium foil (min. thickness 0.15 mm, longitudinally applied over a tinned copper wire (0.5 mm^2)), tough bonded at the overlap and with high density polyethylene sheath, black and cover of heat stabilized polyamide, black	polyvinyl chloride PVC, black
Metal sheath		lead sheath
Inner sheath		polyvinyl chloride PVC, black
Armour	galvanised round steel wires	galvanised round steel wires
Outer sheath	high density polyethylene, green	polyvinyl chloride PVC, black
Cable type	RT-2Y(L)2Y4YSWA2Y	RE-Y(St)YMYSWAY-fl

PM Industrial/CHEM_e/Rev06/2012

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