

## Fuel sensing cable for underground leak detection

### PRODUCT OVERVIEW



Raychem TraceTek TT5000-HS sensing cable detects the presence of liquid hydrocarbon fuels at any point along its length, yet it does not react to the presence of water. Installed with an Raychem TraceTek Sensor Interface Module and Alarm Panel, the cable senses hydrocarbon liquid, triggers an alarm and pinpoints the location of a leak within one meter.

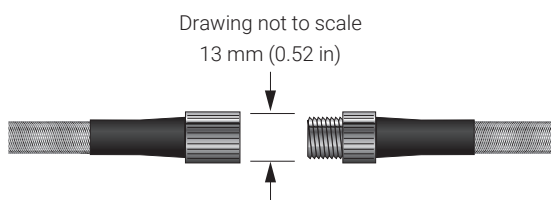
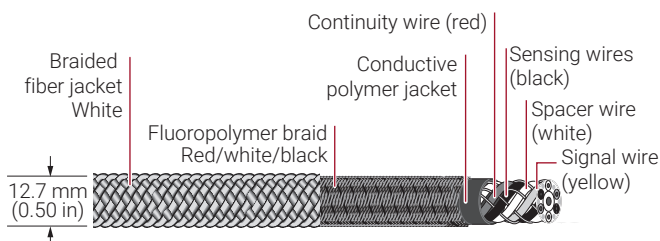
#### Designed for underground leak detection

TT5000-HS sensing cable is designed for use within slotted PVC conduit and is constructed with an outer layer of polyethylene fibers to provide extra pulling strength and low friction during the installation process. The sensor cable core is standard Raychem TraceTek TT5000 with well documented response times, numerous third party qualifications and years of successful applications. The cable can be purchased in bulk form, cut to length in the field and joined using connector kits, or it can be obtained in standard or custom cut lengths with connectors attached in the factory. The cable is designed to pull through 42 mm or 1-½ in slotted schedule 80 PVC conduit with up to 240 m (800 ft) between pull boxes.

#### Distinctive appearance and ready for pipeline projects

TT5000-HS sensing cable has a glossy white outer layer of rope fibers. The polyethylene rope outer layer is fabricated with a number of individual filaments that collectively increase the pulling force limit to greater than 100 kg (220 lb). At the same time, the outer rope layer dramatically reduces frictional drag between the cable and the PVC conduit, thereby facilitating long distances between pull boxes. In many cases four lengths of TT5000-HS will be joined to form a single circuit of 1000 meters.

Multiple circuits can be monitored from a single location, thus permitting pipeline applications from a few hundred meters to many kilometers.

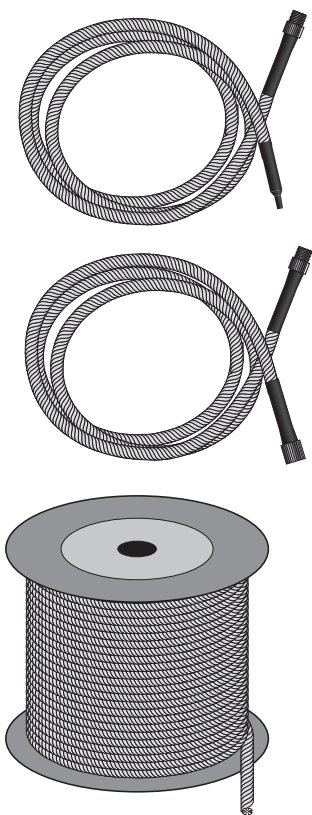


Cable construction

#### Advanced technology

Raychem radiation cross-linking and conductive-polymer technology is used to make TT5000-HS cables. The combination of water and chemically resistant inner wall coupled with the enhanced strength of the polyethylene outer rope layer yield a product well suited for underground leak detection. The cable is able to withstand both the rigors of installation and long years of service underground with exposure to ground water and various soil conditions. Mildly acidic or alkaline conditions, exposure to detergents and similar tough conditions are well tolerated. The cable can even be installed in many 'brown field' conditions where older spills have been remediated but traces of hydrocarbon remain present in the soil and ground water.

## ORDERING INFORMATION



### TT5000-HS modular sensing cable with factory-installed connectors

Catalog number	Part number	Description
TT5000-HS-MC	P000000581	Sensing cable with connectors—custom order by meter

### TT5000-HS bulk sensing cable (connector kits required)

Catalog number	Part number	Description
TT5000-HS	P000000094	Bulk sensing cable on reel Minimum length: 30 m (100 ft) Maximum length: 240 m (800 ft)
TT5000-HS-HYB-XXX/YYY/ ZZZ-HSE	N/A	Custom order of TT5000-HS/ JC-BLACK jumper cable/pull rope spooled together. Length (ft) of TT5000-HS sensing cable represented by XXX. Length (ft) of TT-JC-BLACK jumper cable represented by YYY. Length (ft) of TT-PR pull rope represented by ZZZ.

### Connector kits (not shown)

Catalog number	Part number	Description
TT5000-HUV-CK-MC-M/F (Includes test tools)	P000001207	Components for five mated pairs of connectors

## PRODUCT CHARACTERISTICS

Cable diameter	7 mm (0.28 in) nominal
Cable diameter with connector	13 mm (0.52 in) nominal
Cable diameter with braid	12.7 mm (0.50 in) nominal
Fluoropolymer braid	Color—red, white and black
Braided fiber jacket	Color—white
Cable weight	10.2 kg/100 m nominal (6.8 lb/100 ft nominal)
Operating temperature range	-20°C to 60°C (-4°F to 140°F)
Pull force limit	Not to exceed 100 kg (220 lb)
Bend radius	50 mm (2 in) minimum
Pressure	Loads greater than 9 kg (20 lb) per linear inch at 20°C (68°F) may immediately trigger an alarm
Nonresettable	Must be replaced after exposure to most hydrocarbon liquids

## CHEMICAL RESISTANCE

Cable functions normally after exposure in accordance with ASTM D 543 at 23°C (73°F) for seven days	Sulfuric acid	(10%)
	Hydrochloric acid	(10%)
	Nitric acid	(10%)
	Sodium hydroxide	(10%)

## WATER RESISTANCE

Sensing cable	Less than 10 µA leakage when immersed in salt water for 90 days
Connector system	Less than 10 µA leakage when immersed in water at 10 psig for 24 hours

## RESPONSE TIME

Represented materials detected	Typical response time at 20°C (68°F)
Gasoline	12 minutes
#1 diesel fuel	60 minutes
#2 diesel fuel	120 minutes
JP5 jet fuel	70 minutes
JP8 jet fuel	50 minutes
Jet-A jet fuel	50 minutes
MTBE (Methyl Tert-Butyl Ether)	45 minutes
Xylene	20 minutes

### Notes:

- Response Time Test Method: "Test Procedures for Third Party Evaluation of Leak Detection Methods; Cable Sensor Liquid Contact Leak Detection Systems."
- Response times are affected by operating temperature. Consult factory for specific response times at other temperatures and in other liquids.

## APPROVALS AND CERTIFICATIONS

TT5000-HS sensing cables are approved for installation in ordinary and hazardous areas when used in conjunction with approved Raychem TraceTek monitoring equipment and zener safety barriers when appropriate.

All Raychem TraceTek sensing cables are designated as "simple apparatus" and included in the approval certification for Raychem TraceTek monitoring instruments.

Consult the specific data sheets and approval certificates for Raychem TraceTek monitoring instruments for application limitations and specific area approvals and certifications



The TT5000-HS sensing cable is FM approved in the TraceTek Leak Detection System that detects the presence of liquid hydrogen fuels when installed with a TraceTek Alarm and Locator Module.

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