



COMPOSITE HOSE

TECHNICAL  
SPECIFICATIONS

# INTRODUCTION

Dantec Ltd are recognised as world leaders in composite hose technology and innovation. At our purpose built factory we manufacture hose from the highest specification materials to the most stringent procedures, to produce the highest quality and most comprehensive range of composite hose.



Dantec have been manufacturing composite hose for over twenty years and in that time have amassed a wealth of knowledge which is always at the disposal of our customers.



Dantec meet all major international standards for their composite hose products and have IMO approvals for hazardous chemicals and liquefied gases. All marine hoses conform with the requirements of the United States Coastguard. Dantec were the first composite hose manufacturer to achieve ISO9002 status and have been registered with the British Standards Institute since 1988 (Reg. No. Q5773).



Our patented "Firesafe" hose used for refuelling Formula One racing cars has been independently tested by the United Kingdom Fire Research Station and the Swedish Fire Service.



Dantec composite hose provides unrivalled quality backed by excellent technical support. In today's safety conscious environment why settle for less **insist on Dantec.**



# COMPOSITE HOSE

## THE FLEXIBLE CONNECTION

Composite hose, like other hose, provides the vital flexible connection to compensate for vibration, movement or misalignment in a fluid transfer system.

Composite hose has a spiral internal metal supporting wire which can be galvanized steel, stainless steel, aluminum or polypropylene coated steel with a spiral external wire which is generally galvanized or stainless steel. In between the wires there are layers of thermoplastic fabrics and film.

The functions of the various components are basically as follows

**Internal wire spiral** supports the hose wall and provides resistance to vacuum for suction applications

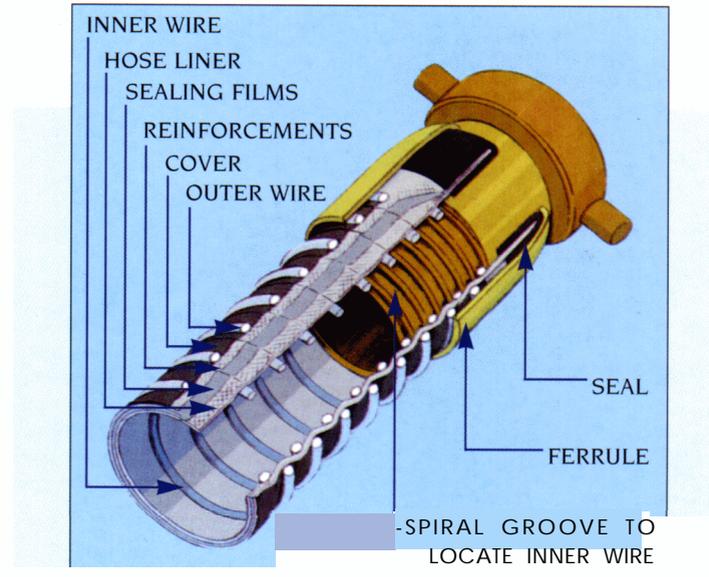
**External wire spiral** armours the hose against abrasion and impact damage and binds the layers of fabrics and films tightly together

**Fabric layers** act as strength members against internal pressure. It is also a common feature of many composite hoses to have as the external layer PVC coated fabric. This provides an easily cleanable color coded surface and gives additional abrasion resistance.

**Film layers** act as a sealing medium to ensure that no product escapes from the hose. Films and fabrics can be polypropylene, polyamide, PTFE, polyester polyaramid or glass. By combining these alternative components in various ways it is possible to produce hoses with a tremendous range of chemical resistance, working temperatures and pressures.

**End fittings,** As with all types of hose a composite hose assembly depends on the strength and reliability of its coupling system. Dantec have developed their own unique fitting configuration and swaging system which uses high quality rubber seals, steel or aluminum ferrules and couplings to ensure that when prototype tests are conducted, the hose will burst before the end fitting is expelled. This ensures the maximum strength of the hose is fully achieved. Dantec's swaging system gives superior results to wire whipping or clamping methods of attachment, and guarantees electrical continuity to ensure static is fully discharged.

The inner wire is permanently in contact with the coupling. The outer wire is normally in electrical contact but should either of the wires be broken Dantec use SURE-LEC electrically conductive seals to guarantee continuity. In order to provide the widest range of chemical resistance Dantec swage seals are available in nitrile, butyl or Viton® elastomers.



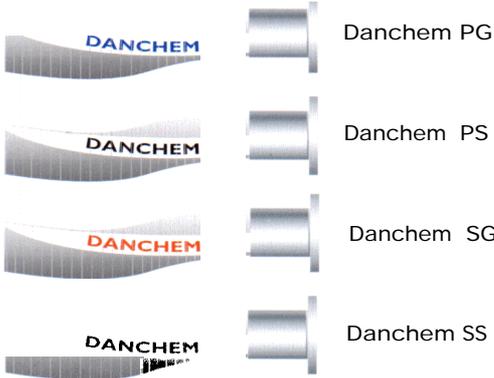
All the hoses in this brochure are available as complete assemblies with a wide variety of end fittings such as flanges, quick couplers, NPT nipples and dry break couplings. Common end fitting materials are carbon steel, stainless steel, bronze, aluminum and polypropylene, although many other materials are also available.

N.B. Unless otherwise specified all Dantec hose assemblies are swaged with carbon steel ferrules and nitrile rubber seals. Stainless steel ferrules and Viton® or butyl seals can be supplied if required.

**Temperature versus pressure.** Working pressures are calculated on a minimum safety factor of 4:1 burst pressure to working pressure as specified in BS5 173. This specifies testing at 72 F ± 4 F. Composite hose is manufactured from thermoplastics and accordingly its working pressure will be reduced at elevated temperatures (Consult your authorised distributor or Dantec for advice on use at high temperatures).

# DANCHEM CHEMICAL HOSE

Chemical suction discharge hose: BS5842: 1980

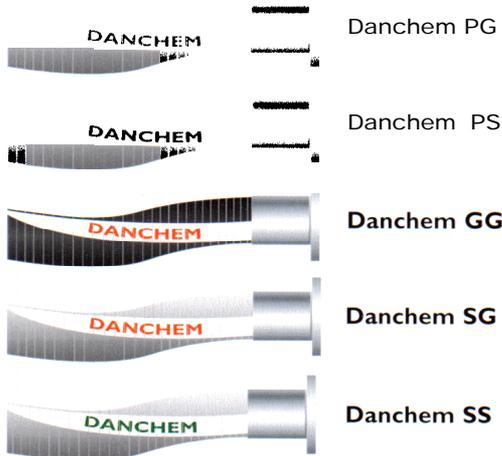


General purpose chemical hose suitable for suction discharge and vacuum applications for a wide variety of acids, alkalis, solvents and petroleum products from -20°C to +60°C. Commonly used for road and rail tankers and in plant, this group of hoses is the standard for many leading chemical manufacturers and hauliers. Safety Factor 4 : 1.

BORE DIAMETER		MAX WORKING PRESSURE		BEND RADIUS		WEIGHT	
INS	MM	BARS	PSI	INS	MM	KG/M	LB/FT
1	25	14	200	4.0	100	0.8	0.5
1.5	38	14	200	5.5	140	1.2	0.8
2	50	14	200	7.0	180	1.9	1.3
2.5	65	14	200	8.0	205	2.5	1.7
3	75	14	200	11.0	280	3.0	2.0
4	100	14	200	15.5	395	4.8	3.2

Maximum Length 20m (66ft)

Heavy duty chemical suction discharge hose: BS5842: 1980 & the requirements of the United States Coastguard & IMO Code



For marine and the most arduous plant duties, these substantially constructed hoses have greater mechanical strength than Danchem general purpose chemical hoses. Minimum of 4.1 safety factor on working pressure. Temperature range - 20°C to + 60°C.

BORE DIAMETER		MAX WORKING PRESSURE		BEND RADIUS		WEIGHT	
INS	MM	BARS	PSI	INS	MM	KG/M	LB/FT
4	100	14	200	160	405	64	4.3
6	150	14	200	200	510	107	7.2
8	200	14	200	300	760	190	100
10	250	10.5	150	360	915	205	13.7

1" to 8" Dia. Maximum Length 20m (66ft)  
10". Maximum Length 12m (40ft)

All Danchem Chemical Hoses have polypropylene fabrics and sealing films, the wires used to make the hoses are indicated by the suffix. P=polypropylene coated steel G=galvanised mild steel S=316 stainless steel. For example Danchem PG has polypropylene coated inner wire and a galvanised mild steel outer wire.

# Vapour Recovery Hose

Danoil VR is a composite hose purpose-built for vapour return of hydrocarbon products in marine, road and rail tanker operations. With Dantec SURE-LEC guaranteed electrical continuity.

Danchem VR is of similar construction to Danoil VR but is suitable for more aggressive chemical applications.

Dantec Vapour Recovery hoses are robust but light-weight, extremely flexible with the same specially formulated high strength cover as used on all Dantec composite hoses.

BORE DIAMETER		MAX WORKING PRESSURE		BEND RADIUS		WEIGHT	
INS	MM	BARS	PSI	INS	MM	KG/M	LB/FT
3	75	7	100	4.0	100	2.4	1.6
4	100	7	100	5.5	140	3.4	2.3
6	150	7	100	7.0	180	8.3	5.6
8	200	7	100	8.0	205	12.5	8.4
10	250	7	100	11.0	280	16.0	10.7

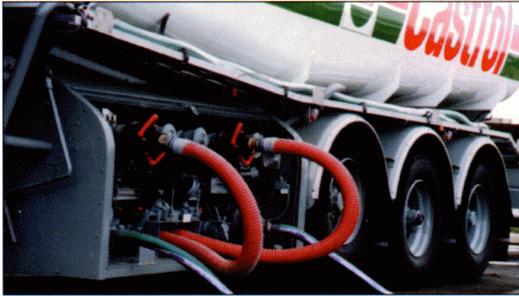
1" to 8" Dia. Maximum Length 20m (66ft)  
10". Maximum Length 12m (40ft)

# DANOIL PETROCARBON HOSE

Oil suction discharge hose: BS3492: 1987 BX



Danoil 3



**Danoil 3** is commonly used for road tanker and in-plant transfer of petrol, fuel oils and lubricating oils in the temperature range -20°C to +60°C. It is a well proven hose which is used by tanker fleets worldwide.

BORE DIAMETER		MAX WORKING PRESSURE		BEND RADIUS		WEIGHT	
INS	MM	BARS	PSI	INS	MM	KG/M	LB/FT
1	25	10.5	150	4.0	100	0.8	0.5
1.5	38	10.5	150	5.0	125	1.1	0.7
2	50	10.5	150	6.0	150	1.6	1.1
2.5	65	10.5	150	7.0	180	2.1	1.4
3	75	10.5	150	8.0	205	2.5	1.7
4	100	10.5	150	10.5	265	3.6	2.4

Maximum Length 20m (66ft)



Danoil 3 AL



**Danoil 3 AL** is of similar construction to Danoil 3, but having an aluminium inner wire is significantly lighter, making it particularly suitable for large bore sizes as are commonly used for petrol forecourt deliveries. Operating temperature -20°C to +60°C.

BORE DIAMETER		MAX WORKING PRESSURE		BEND RADIUS		WEIGHT	
INS	MM	BARS	PSI	INS	MM	KG/M	LB/FT
2.5	65	10.5	150	7.0	180	1.6	1.1
3	75	10.5	150	8.0	205	1.7	1.1
4	100	10.5	150	10.5	265	2.4	1.6
Rail Car 4"	100	10.5	150	11.5	290	3.5	2.3

Maximum Length 20m (66ft)

**Meets BS 3492: 1987 BX Class 1 for aviation fuels**



Danoil 7



Danoil 9



**Danoil 7** is designed for suction/discharge of all oil and petroleum products at temperatures from -20°C to +60°C. This is the most robust member of the Danoil family, making it particularly suitable for the most demanding applications.

**Danoil 9** has similar properties to Danoil 7, but has a polyamide lining, especially suitable for MTBE and unleaded petrol.

**Also Meet BS5842:1980**

BORE DIAMETER		MAX WORKING PRESSURE		BEND RADIUS		WEIGHT	
INS	MM	BARS	PSI	INS	MM	KG/M	LB/FT
1	25	14	200	4.0	100	0.8	0.5
1.5	38	14	200	5.5	140	1.2	0.8
2	50	14	200	7.0	180	1.9	1.3
2.5	65	14	200	8.0	205	2.5	1.7
3	75	14	200	11.0	280	3.0	2.0
4	100	14	200	15.5	395	5.2	3.5
4	100	14	200	16.0	405	6.4	4.3
6	150	14	200	20.0	510	10.7	7.2
8	200	14	200	30.0	760	15.0	10.0
10	250	10.5	150	36.0	915	20.5	13.7

<sup>1</sup> Meets BS5842:1980 & USCG & IMO Code  
1" to 8" Dia. Maximum Length 20m (66ft)  
10". Maximum Length 12m (40ft)

Danoil 3, 3AL and 7 all have polypropylene reinforcements. Danoil 9 has polyamide reinforcements. All wires are galvanised mild steel except Danoil 3 AL which has an aluminium inner wire.

# DANFLON PTFE HOSE

Heavy Duty PTFE Lined Hose: meets the requirements of the United States Coastguard, IMO Code



Danflon SG



Danflon SS



Danflon GG



Danflon SGA



Danflon SSA



Danflon GGA

This family of PTFE lined hoses is designed for suction and discharge of the most aggressive chemicals and searching solvents and is generally used where the chemical resistance of polypropylene is inadequate. Operating temperature up to +140° F.



BORE DIAMETER		MAX WORKING PRESSURE		BEND RADIUS		WEIGHT	
INS	MM	BARS	PSI	INS	MM	KGM	LB/FT
1	25	14	200	4.0	100	0.8	0.5
1.5	38	14	200	5.5	140	1.2	0.8
2	50	14	200	7.0	180	1.9	1.3
2.5	65	14	200	8.0	205	2.5	1.7
3	75	14	200	11.0	280	3.0	2.0
4	100	14	200	15.5	395	5.2	3.5
4'	100	14	200	16.0	405	6.4	4.3
6'	150	14	200	20.0	510	10.7	7.2
8'	200	14	200	30.0	760	15.0	10.0
10'	250	14	200	36.0	915	20.5	13.7

USCG, IMO Code & BS5842 1980

1" to 8" Dia. Maximum Length 66ft (20m)  
10" Maximum Length 40ft (12m)

For elevated temperatures Danflon SSA, SGA and CGA combine the excellent chemical properties of PTFE with considerable resistance to heat. Common applications are for molten sulphur and bitumen. However, they can also be used for many applications where heat renders standard Danflon or Danchem hoses unsuitable. Upper limit depends on conveyant and pressure. Please consult your distributor or Dantec's Technical Dept.

All Danflon Chemical Hoses have PTFE linings. The wires used in construction are indicated by the suffix G= galvanized steel wire S= 316 stainless steel wire. For example Danflon SC has a 316 stainless steel inner wire and a galvanized steel outer wire. The letter A at the end of the suffix indicates a high temperature hose.

# DANCHEM CRYOGENIC HOSE

Heavy Duty Cryogenic Hose: IMO Gas Carrier Code & BS4089: 1989



Danchem PA

Danchem PA is constructed from multiple layers of low temperature thermoplastic fabrics and films supported internally and externally with high tensile 316 stainless steel armouring wires. Galvanized steel may be substituted for certain applications. All hoses are welded using Dantec's SURE-LEC system which guarantees electrical continuity throughout the life of the hose. Hoses assemblies are tested to a minimum of 15 times their maximum working pressure before despatch and issued with test certificates (All hoses have a safety factor of 5.1 on working pressure). Danchem PA heavy duty for marine applications has been independently tested by Lloyds as conforming to BS 4089: 1989 and to IMO Gas Carrier Code Requirements.

BORE DIAMETER		MAX WORKING PRESSURE		BEND RADIUS		WEIGHT	
INS	MM	BARS	PSI	INS	MM	KGM	LB/FT
1	25	25	370	4.0	100	1.0	0.7
1.5	38	25	370	5.5	140	1.5	1.0
2	50	25	370	7.0	180	2.5	1.7
2.5	65	25	370	8.0	205	3.3	2.2
3	75	25	370	11.0	280	4.5	3.0
4	100	21	300	15.5	390	7.5	5.0
6	150	21	300	20.0	510	13.5	9.0
8	200	15	225	30.0	760	18.5	12.4

1" to 8" Dia Maximum Length 60ft (20m)

Please note it is important to advise Dantec of the product being conveyed when ordering Danchem PA cryogenic hoses. Temperature range -60°F to +140°F. For lower temperatures consult our technical department.

N.B. Hoses for ammonia service are identified with a yellow stripe.



Whilst every effort has been made to ensure that all details are correct the information contained in this brochure is for guidance only. We reserve the right to alter or amend specifications as deemed necessary.

# HANDLING TESTING INSPECTION

## Selection

When selecting a hose for extreme conditions, it is not advisable to select a hose which would, at any time during use, be subjected simultaneously to pressure, temperature and bending radius at the upper limits of its specification. Our Technical Department will be pleased to give advice on such applications

## Installation & Usage

Incorrect installation can unduly stress hose assemblies leading to a shortened working life or premature failure.

- 1 Flanged hose assemblies should ideally have one end secured with a floating flange.
- 2 Hose assemblies must not be twisted either on installation or in use.
- 3 Hose assemblies subject to movement whilst operating should be installed in such a way that flexing occurs in the same plane.
- 4 When installing hose assemblies note must be taken of minimum bend radius specification.

## Cleaning

Hoses should be cleaned after use and before testing. The method used will depend upon service location and hose type. Flushing out is adequate in most situations using a variety of fluids, e.g. clean water, hot water, sea water, detergents and solvents at ambient temperature.



If seawater is used, the hose must be well drained after cleaning, to minimise corrosion. Care must be taken that the maximum working temperature of the hose is not exceeded. Steam lances should not be used. Compressed air may be used on open ended polypropylene lined hose but is not recommended for PTFE lined hoses. Mechanical methods of cleaning must not be used, e.g. pigging. It is important that the hose is electrically earthed during cleaning operations.

## Storage

After service, hoses should be flushed out and drained. Ideally, stored hoses should be kept off the ground in a straight line in a cool, shaded area.

## Testing

At periods not exceeding six months most composite hoses should be tested for electrical continuity using the following procedure:

1. Lay the hose flat on the ground.
2. Check that the hose is electrically continuous from end to end. This can be done using a battery and bell test, but ideally with an ohm meter. The electrical resistance should not exceed 10 ohms from end to end. Hoses which are not electrically continuous from end to end should be retired from service pending inspection.

We recommend the following test procedure should be applied to chemical and general purpose hose every six months, and to oil and spirit hose every twelve months.

1. Drain and thoroughly clean the hose.
2. Visually inspect the hose. Hoses showing any significant damage should not be tested.
3. Lay the hose out straight, allowing space for elongation under pressure.
4. Blank off one end and fill with water, taking particular care to release all the air from the hose.
5. For the test duration appropriately pressurise the hose. While this pressure is being maintained, examine the hose for any leaks and test for electrical continuity between the end connections.
6. Release pressure and drain. Indelibly mark the hose with test details.

N.B. A feature of composite hose is elongation under pressure which is relatively high compared with rubber hose. This characteristic of thermoplastic composite hose cannot be used as an assessment of the condition of the hose or an indication of failure.

## Inspection

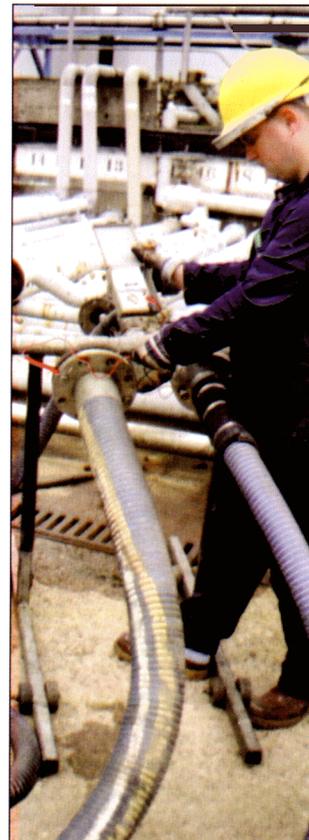
Before each operation hoses should be visually examined, paying attention to the following points

- 1 Displacement of reinforcing wires from their normal pitch.
- 2 Abrasion or corrosion of the hose outer wire
- 3 Abrasion of the reinforcing fabrics below the outer cover
- 4 Dents or kinks
- 5 Damage or displacement of end fittings
- 6 Evidence of leakage from end fittings

Hoses with any of the above significant defects or any other abnormal feature should be withdrawn from service immediately.

## Repairs

It may be possible to repair hoses which have been damaged in service. This, however, should only be undertaken by Dantec authorised distributors who have specialist knowledge of composite hose.



# FIRESAFE HOSE

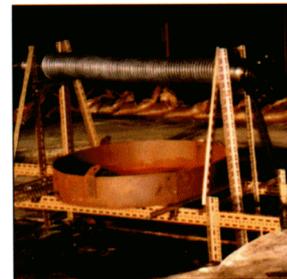
Fire... its discovery ensured our survival yet we constantly strive to control its power. If you handle flammable or hazardous cargo, you are no doubt already operating stringent safety procedures and practices. In most cases these are enough to contain a minor incident and prevent it from becoming a major one. Unfortunately, any process or piece of equipment is only as strong as its weakest link. Flexible hoses form an integral part of the petrochemical industry, yet in all but the most critical of applications the fire retardant ability of a flexible hose is never questioned. Standard composite hose has great advantages by way of flexibility, weight, chemical resistance and price over other forms of flexible hose, but just like other hose it has the problem of safety in a fire situation.

FIRESAFE composite hose utilises a series of non-asbestos barriers to conductive and radiant heat to achieve outstanding fire retardant ability. With FIRESAFE hose, after thirty minutes of severe fire attack, the hose carcass is still intact and capable of holding product. From a fire-fighting and personnel point of view, this is a critical factor.

A severe situation is where hot, vaporising fuel is violently deposited onto a running or spillage fire, a situation made worse when water is involved, often resulting in catastrophic effects. Even after loss of integrity, FIRESAFE hose will not fail catastrophically. Instead, it will gradually burn off the product as it presents itself to atmosphere.

In addition to testing by Dantec at our U K factory, the FIRESAFE hose has been independently tested by the British Government Department of the Environment, Fire Research Station and the Swedish Fire Service.

All Dantec hoses are available with FIRESAFE protection.



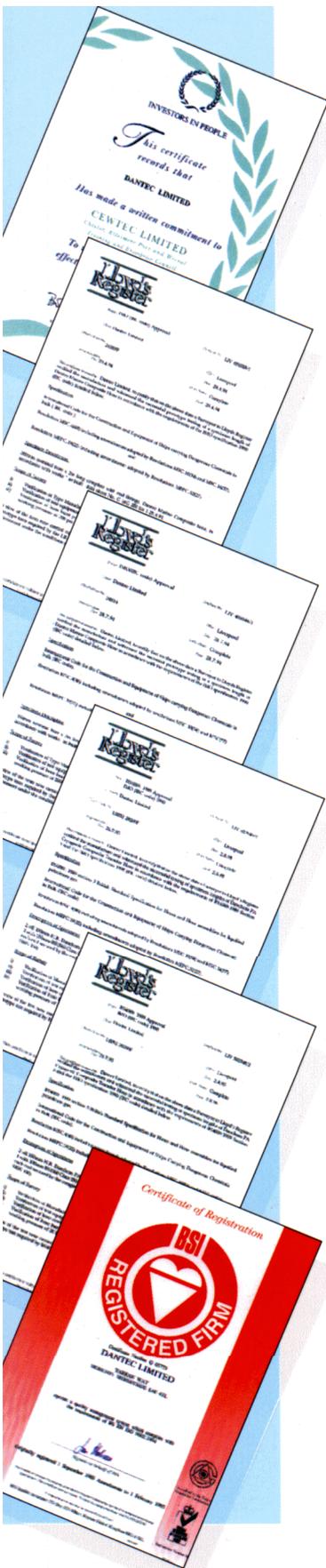
Before testing.



Under test for 30 minutes at 1450 F.



After test still intact.



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