



What is a Composite Hose: Benefits, Types & Applications

Composite hose is manufactured from multiple layers of thermoplastic fabrics & films that are spirally wrapped and supported by internal & external wire helices. The multiple material layers make the structure of the hose firm, thus making it pressure-resistant. The high-grade material used to make composite hoses also provides greater safety. The composite hose is excellent for transferring fluids and provides exceptional flexibility. This makes it an ideal choice for a range of applications and uses.

Below let's check out the different types of composite hoses and the general benefits of composite hoses.

A] Types of Composite Hoses

At [Aeroflex](#), we use fabric, films, and wires of varying materials to manufacture composite hoses, depending upon the application or special customer requirement. The three types of composite hose offered by us are:

1. Hydrocarbons (oil & petroleum): [GGE composite hoses](#) are designed specially to fulfill the purpose of transferring hydrocarbon products. In this type of composite hose, the internal & external wire spiral is made with galvanized steel, while the inner lining is made of polypropylene. The overall cover is made of PVC, and the maximum length of the coil stretches to 30 meters. Aeroflex's GGE composite hose works best between temperatures ranging from -30°C to +100°C and is ideal for delivery and/or suction of oils or lubricants in cistern trucks, fuels, rail-cars, or fixed deposits.

2. Chemicals: Composite hoses are highly chemical-resistant, making them well-suited for handling chemicals. Aeroflex offers three different types of composite hoses to transfer chemicals. These flexible hoses are suitable for in-plants & marine applications and loading & unloading of wagons and tank trucks.

- [Aeroflex EGE](#) is used for the delivery and/or aspiration of chemical products with good PP behavior. This includes alkalis, acids, and solvents found in the non-corrosive environment.
- [Aeroflex SST](#) is used for the delivery and/or aspiration of highly corrosive chemicals, compatible with PTFE and stainless steel. This includes nitric acid, phosphoric acid, and naphtha.

- [Aeroflex SGT](#) is used for the delivery and/or aspiration of chemical products that don't have good behavior with PP. This includes some types of solvents and acids, for instance, Toluene (found in non-corrosive environments).

3. Cryogenics (LPG & LNG): "Cryogenic" means 'producing or related to low temperatures.' All cryogenic liquids are extremely cold, and a range of low-temperature fluids such as liquefied gases can be transferred using this hose.

Both LPG hose and LNG hose offered by Aeroflex is made from multilayer polymers and spirals in 316L stainless steel.

- The [LPG hose](#) supports cryogenic products at temperatures up to -50°C with working pressure up to 25 bar. This hose is used for charge-discharge of liquefied petroleum or ammonia gas in wagons, trucks, and marine applications.
- The [LNG hose](#) supports cryogenic products at temperatures up to -196°C with working pressure up to 10.5 bar. This hose is used for liquefied natural gas discharge-loading in wagons, trucks, and marine applications.

B] Composite Hose Features and Benefits

The primary benefit of the composite hose is its made from multiple materials, unlike single-material [stainless steel hoses](#). Apart from this, the other key features and benefits of composite hose are:

- 1. Highly Flexible:** Since the composite hose is made from a blend of materials, when it is bent or moved, the layers slide over each other, thereby providing a small bend radius, indicating its flexibility.
- 2. Lightweight:** Composite hose is 40% lighter than a rubber hose and 30% lighter than a metal hose. This makes it easy to operate, requiring less labor work, which improves work efficiency.
- 3. Easy and Safe Handling:** The composite hose is resistant to high temperature, pressure, and chemicals. This makes it an ideal hose for handling all kinds of transfers while maintaining safety.
- 4. Long Shelf-Life:** Composite hoses have great tensile strength and offer good sealing performance. They are durable and resistant to corrosion and aging. All these factors, in turn, lead to a long shelf-life.
- 5. Cost-effective:** The multi-purpose benefit provided by the composite hose makes it cost-effective and efficient to use.
- 6. High Safety Factors:** Composite hoses provide "fail-safe" characteristics via their construction. They help prevent leaks, offer good resistance to pressure and excellent electrical conductivity.

- **Leaks:** The multi-layer construction in composite hose prevents leakage as any liquid has to pass through these layers to reach the outer cover. Also, the end fittings are designed to decrease the chances of a fitting blowing off due to leakage.
- **Pressure:** They offer good positive and negative resistance to pressure. Also, in cases where the fluid is over-pressured, it won't immediately burst.
- **Electrical Continuity:** This hose maintains a good electrical continuity, ensuring the static is fully discharged. Checking electrical continuity at regular intervals is recommended for safety purposes.

C] Composite Hose Application Areas

1. Suction and Delivery: A composite hose is highly flexible and can compensate for movement, vibration,

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or misalignment when transferring fluids. This makes it suitable for the suction & delivery of fuels, oils, chemicals, gas, and lubricants.

2. Ship-To-Shore transfer (Jetties, Dockside): Since the Ship-to-Shore operations consist of maritime environmental conditions and rough handling, it requires a robust hose like the composite hose for Ship-to-Shore transfer. The composite hose used for Ship-to-Shore transfer is crafted as per International terminal guidelines.

3. Ship-To-Ship Transfer: Ship-to-Ship operations require reliable hoses designed for offshore maritime environmental conditions. Here, the composite hose is well-suited for the safe transfer of fluids without any hassle.

4. Road and Rail Tanker Transfer: A composite hose is robust yet lightweight, making it easy for road and rail tanker transfer. These hoses are also chemical resistant, so they can seamlessly transfer various chemicals & petroleum products, acids & alkaline in road and rail tankers.

5. In-Plant: Composite hoses are ideal for in-plant transfers, such as transfer from storage tanks, process piping, or tank-to-process handling. Other typical uses of the hose are jumper connection, manifold connection, general transfer and drum filling.

Conclusion

The unique construction of composite hoses provides several key benefits such as durability, flexibility, safety, pressure control, ease of operations and handling, among others. This makes it one of the most customisable hoses widely used for varied industrial operations.