



mandals

since 1775

A Michelin Group Company

**One of the most important
tools for a firefighter**

Fire Fighting

Catalogue



Content

1	About us	2
2	Why Mandals?	2
3	Our firehoses	3
	● Rubber firehoses	
	● TPU firehoses	
3	Our fire hoses	4
	● Light firehoses	
	● Heavy duty firehoses	
4	Advantages of Mandals firehoses	4, 5
5	Quality control	5
6	Looms & Spares	6
7	Guardman	7, 8
8	Mertex	9, 10
9	Mertex Arctic	11, 12
10	Ultraman HVT	13, 14
11	Superman HVT	15, 16

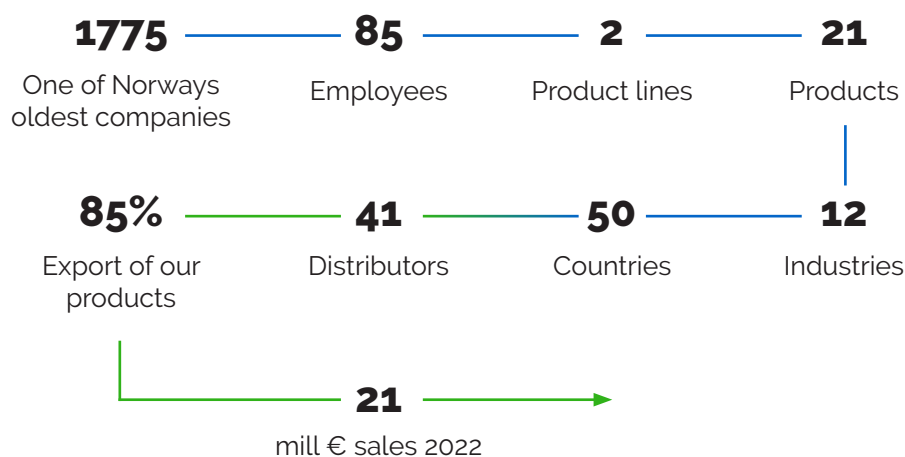


Abbreviations

HVT	High Volume Transfer
NBR	Nitrile Rubber
TPU	Thermoplastic polyurethane

About us

Mandals specialize in the manufacturing of high quality lay-flat hoses and circular shuttle looms. We are based in Mandal, on the southern coast of Norway and have been in business in the same location for nearly 250 years. We have come a long way since our establishment in 1775, and today we are one of the worlds most recognized manufacturers of lay-flat hoses and looms. 85% of our production is exported and Mandals products are found across the globe thanks to our long-standing partners and distributors.



01

Why Mandals

We strive to grow long-term, loyal partnerships. Our core values are People, Planet and Profit and we will always focus on people first. As a partner with Mandals that means that we will do our best to put you first, aiming to offer you the best service in all aspects of the partnership. We expect active partners that will challenge, inspire and help us grow and build business together.



We define ourselves as a trustworthy supplier with high focus on quality in the production process and products. All lay-flat hoses and looms are produced in-house, meaning that you can be assured that we produce quality without compromise.

Our firehoses

Mandals first extruded firehose, the Armtex, was launched in the 1960's. The hose was the first in the world to be manufactured with "extrusion through the weave" technology. Since then, we have continued to develop and innovate hoses for firefighting and many other industries. Today Mandals offers a range of rubber, textile and TPU hoses.

Rubber hoses

Mandals rubber hoses are made from a blend of nitrile rubber and PVC, with an added UV barrier. The rubber is fully extruded through the circular woven polyester fabric, ensuring excellent bonding between cover and lining to prevent delamination. Thanks to the interlocking between the warp yarns and the weft of the circular weave, the hose has a high lengthwise stability and a full diameter recovery after use. The abrasion and puncture resistance of Mandals rubber hose is by far superior to any regular uncovered textile hose.



Rubber hoses

Thermoplastic polyether-based polyurethane (TPU) hoses.

TPU hoses

Our TPU hoses are among the most innovative lay-flat hoses in the world, which are made from extruded thermoplastic polyurethane (TPU) with excellent wear and tear properties. The TPU is extruded through the weave, which is made of high tenacity filament polyester yarns. This method gives a very strong bonding between cover and lining as well as firmly encapsulating the woven polyester yarn. The abrasion resistance of the Mandals TPU hoses is among the highest available, and our TPU hoses also have excellent resistance against the most commonly used chemicals, UV radiation, hydrolysis and fungus degradation.



Light firehoses

Light firehoses are used for fire brigades, airport fire protection services, military operations and other industries where a flexible and lightweight solution is needed.



Heavy duty firehoses

Heavy duty hoses are used in large mobile stand-by emergency firefighting systems, where high water capacity is needed. These hoses are also used in case of flooding, for quick and safe de-watering.



Guardman

Lightweight nitrile rubber hose



Superman HVT

TPU hose for high volume transfers of liquids



Mertex

Lightweight textile hose with TPU lining



Ultraman HVT

A multipurpose TPU transfer hose



Advantages of Mandals firehoses

Quick deployment and retrieval, combined with **excellent flow rates** and long life time, **reduces operation cost.**

High abrasion resistance and tensile strength.

Excellent mechanical adhesion between the layers provides the best quality hose with a long life time

Highly flexible hoses kink resistant and minimal pressure loss



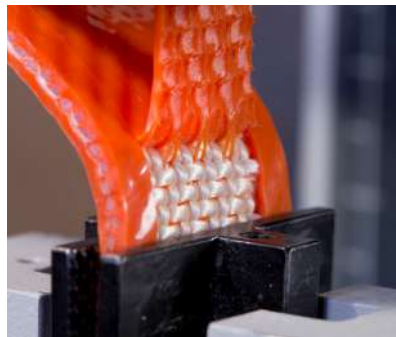
Continuous development & quality control

One of the values we live by is **innovation through legacy**, meaning that we will always work to further develop our products, our production processes and the way we do business with our partners. We are following the trends in the market and continuously working on developing new products and solutions for your unique challenges.

Raw materials, and finished products are tested and documented according and compliant to international standards

Examples:

ISO 4671 - methods of measurement
ISO 1402 - hydrostatic testing
ISO 8033 - adhesion
BS 6391 - abrasion
NS 4016 - heat resistance



Durability and wear resistance

• provide for long lasting hoses for demanding use



Resistant to most industrial chemicals, ozone and UV-rays.

Durable even in the **roughest environments**

Small logistical footprint required for transport and storage

Unique weave design that is specially developed for each hose

• **Easy to handle** - less heavy lifting

Looms & Spares

We pioneered the lay-flat hose a century ago and developed our first circular loom in 1935. Today you can find our machines in over 30 countries, some of which have been in service for over 50 years. Our machines continue to define the standard for quality and reliability in circular looms.



Scan the QR code If you would like to know more about our looms







World Class Lay-Flat Hoses

A photograph of two firefighters in blue protective gear and orange helmets, seen from behind, spraying a powerful stream of water from a hose onto an industrial structure. The scene is filled with mist and water spray, creating a dynamic and intense atmosphere. The firefighters are positioned on a metal walkway or platform.

Guardman

07

Mandals Guardman

Mandals Guardman is our number one firehose, and has set the standard globally for fire hoses since its origin in the 1960's. It was originally known as Armtex, and it's categorized as a type 3 firehose according to the British Standard, which means it has an external elastomeric coating.

The unique hose construction by the circular weave, covered and lined with the nitrile / PVC rubber gives at least 5 times longer lifetime compared to traditional textile hoses. Guardman was developed to meet the need for a fire hose that could withstand damages caused by abrasion, wear and tear, while also delivering a flexible and high-quality solution in demanding situations.



High degree of nitrile rubber.



Only delivered with well-know couplings



High degree off quality control and leakage tested



Long lifetime with proper usage and storage



High burst pressure



Key Features

- Polar hose manufactured to withstand cold climate
- Operation temperature between 30 °C to + 75 °C
- Excellent adhesion between weave and rubber
- Minimal twisting of hose when pressurized
- Great kink resistance

Complies with:

- NS 4016/18
- BS6391
- DIN14811
- NEN2242

Applications

- Construction
- Fire brigade
- Industrial safety
- Oil and Gas
- Refineries
- Airport fire protection
- Military

Internal Diameter		Wall Thickness		Weight		Burst Pressure		Tensile Strength	
Inch	mm	Inch	mm	Lbs / ft	Kg / m	Psi	Bar	X1000 lbs	Tons
1 1/2	38.0 + 1.6	0.09	2.2	0.23	0.34	940	65	6.9	3.1
1 2/3	42.0 + 1.6	0.09	2.2	0.23	0.32	940	65	6.9	3.1
1 3/4	45.0 + 1.6	0.09	2.2	0.23	0.35	725	50	7.6	3.4
2	51.0 + 2.0	0.09	2.2	0.29	0.44	700	48	8.7	3.9
2 1/2	65.0 + 2.0	0.09	2.2	0.38	0.57	700	48	11.1	5.0
3	76.0 + 2.0	0.09	2.4	0.49	0.73	680	47	15.6	7.0
3 1/2	90.0 + 2.0	0.11	2.7	0.67	1.00	640	44	21.3	9.6
4	102.0 + 2.5	0.11	2.8	0.77	1.15	610	42	20.4	9.2
6	150.0 + 3.0	0.13	3.3	1.27	1.90	610	42	35.8	16.1

NOTE: Safety factor (BP/WP) is 3:1, meaning actual Working pressure should not exceed 1/3 of the listed Burst pressure

ISSUE 3.0 - 13.08.2021



Mertex

08

Mandals Mertex

Mertex is an uncovered textile fire hose. What makes Mertex different from other textile hoses is that it has an extruded inner lining of thermoplastic polyurethane (TPU). This gives a higher quality hose with excellent water flow compared to rubber lined textile hoses, as well as excellent adhesion level of the TPU lining to the weave. No hot melt adhesives which are vulnerable to delamination. This lightweight and flexible fire hose has been developed after high quality Norwegian standards and is manufactured according to BS 6391 – type 1. The Mertex hose carries the MED certificate and Wheel Mark for marine services.

The light weight and good mechanical properties make Mertex the preferred solution for small spaced firefighting, such as in factories, maritime industries and refineries where quick deployment and response time is crucial to reduce the dramatic consequences of a fire.



TPU lining for greater performance



Easy to deploy and store



Flexible and light weight



Excellent water flow



Wheel marked & MED Certified



Key Features

- Performs excellent under all climatic conditions from -50°C to +75°C
- Intermittent use up to +80°C
- The hose can be delivered in continuous lengths
- Flexible, easy storage and lightweight

Complies with:

- MED certified
- Wheel marked
- Manufactured in accordance to BS 6391

Applications

- Refineries
- Maritime industries

Internal Diameter		Wall Thickness		Weight		Burst Pressure		Tensile Strength	
Inch	mm	Inch	mm	Lbs / ft	Kg / m	Psi	Bar	X1000 lbs	Tons
⊙ 1 1/2	38.1 + 1.6	0.06	1.6	0.13	0.20	870	60	12.7	5.7
⊙ 2	51.5 + 2.0	0.07	1.8	0.19	0.28	800	55	16.0	7.2
2 1/2	64.5 + 2.0	0.07	1.8	0.24	0.36	725	50	19.3	8.7

Note: Minimum safety factor bp/wp is 2:1 (50%) for all non-hazard and/or non-flammable liquids.

ISSUE 3.0 - 15.08.2021

A full-page photograph of firefighters in winter gear spraying water on a brick building in the snow. The scene is captured in a cinematic style with a heavy snowfall. The firefighters are in the lower-left foreground, wearing dark helmets with yellow accents and orange and black jackets. They are holding a hose that extends diagonally across the frame, spraying a powerful jet of water upwards towards the roof of a brick building. The building is partially obscured by the snow and the water spray. A window with a white frame is visible on the right side of the building. The overall atmosphere is cold and intense.

Mertex Arctic

Mandals Mertex Arctic

Mandals Mertex Arctic is an uncovered fire hose that carries the "Wheel-Mark" and the MED certificate. The hose is specifically developed for extremely cold climates and have been tested down to -62 degrees Celsius without any weakening of the hose.



TPU lining for greater performance



Easy to deploy and store



Flexible and light weight



Excellent water flow



Wheel marked & MED Certified



Dry ice -62 °C tested



Key Features

- The hose can operate from -62°C to +75°C (-108°F to +167°F)
- Intermittent use up to +80°C
- The hose can be delivered in continuous lengths
- Flexible, easy storage and lightweight

Complies with:

- MED certified
- Wheel marked
- Manufactured in accordance to BS 6391
- DNV witnessed freeze test.

Applications

- Factories
- Refineries
- Maritime industries

Internal Diameter		Wall Thickness		Weight		Burst Pressure		Tensile Strength	
Inch	mm	Inch	mm	Lbs / ft	Kg / m	Psi	Bar	X1000 lbs	Tons
⊙ 1 1/2	38.1 ± 1.6	0.06	1.6	0.13	0.20	870	60	12.7	5.7
⊙ 2	51.5 ± 2.0	0.07	1.8	0.19	0.28	800	55	16.0	7.2

Note: Minimum safety factor bp/wp is 2:1 (50%) for all non-hazard and/or non-flammable liquids.

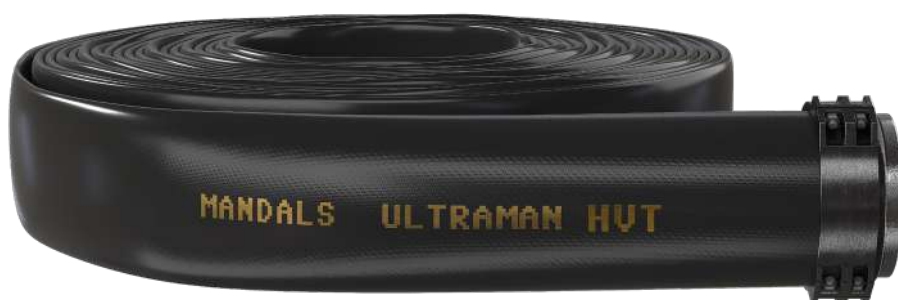
ISSUE 3.0 - 15.08.2021

Ultraman HVT

Mandals Ultraman HVT

Ultraman High Volume Transfer is a lightweight multipurpose water transfer hose, extruded "through the weave" by a polyether based TPU. Its high operational pressure combined with a light weight and compact storage makes it ideal for use within heavy duty firefighting and other emergency sectors where time to water delivery is crucial.

The Ultraman HVT has a very good abrasion resistance, without compromising the light weight, as well as outstanding bonding between the TPU polymer and the weave. The hose has a full diameter recovery after pressure release, and it is the best in class in terms of weight.



Multipurpose hose



High abrasion and kink resistance



As light as a NRB rubber hose - best in class



Best grade TPU



High diameter and expansion stability



Key Features

- Special weave design – no kinking at low pressure pumping
- Light PU Hose
- Five times as abrasive than NBR
- Temperature range -50 to 75 °C (pure water)
- Excellent adhesion between cover and weave
- Resistant to a wide range of chemicals
- Long lengths available, 200m

Applications

- Wildfires
- Refineries
- Civilian Military
- Emergency water transfer

Internal Diameter		Wall Thickness		Weight		Burst Pressure		Tensile Strength	
Inch	mm	Inch	mm	Lbs / ft	Kg / m	Psi	Bar	X1000 lbs	Tons
8"	203 ± 3.0	0.16	3.9	1.82	2.7	610	42	81.5	37.0
10"	254 ± 5.0	0.16	4.0	2.35	3.5	520	36	101.0	46.0
12"	305 ± 5.0	0.17	4.2	2.83	4.2	435	30	120.0	54.5

Note: Minimum safety factor bp/wp is 2:1 (50%) for all non-hazard and/or non-flammable liquids.

ISSUE 3.0 - 15.08.2021

Superman HVT



Mandals Superman HVT

For heavy duty firefighting with large systems for high pressure water transfer, such as fire monitors (canons) – we recommend our marked leading TPU hose, Superman HVT. Not only is Superman designed for higher working pressures when transporting fluids, the hose is also heavily reinforced with exceptional resistance to abrasion and cutting. This is a hose you can rely on for a lifetime.

Superman HVT is easy to deploy and maintenance free, providing you with an ideal solution for any water transfer system, either permanently or temporary set up.



Easy to deploy and store



High abrasion and kink resistance



Long lifetime and maintenance free



Minimum snaking of pressurized hose



Designed to operate in the harshest environments



Key Features

- Can operate in temperatures ranging from -50 C° to +75 C° degrees (pure water)
- High diameter and extension stability.
- Full diameter recovery after pressure release.
- Resistant to a wide range of chemicals.
- Excellent hydrolysis and fungus resistance.

Applications

- Supply hose for fire monitors.
- Emergency Water removal during floods.
- Industrial Plants.
- Refineries.
- Tank farms.
- Tank to ship vessels and vice versa.
- Ideal for long distance large water transfers.

Internal Diameter		Wall Thickness		Weight		Burst Pressure		Tensile Strength	
Inch	mm	Inch	mm	Lbs / ft	Kg / m	Psi	Bar	X1000 lbs	Tons
5	127 + 2.5	0.14	3.5	1.07	1.60	650	45	34.8	15.8
6	152 + 3.0	0.15	3.7	1.34	2.00	650	45	44.0	21.0
7	178 + 3.0	0.16	4.0	1.61	2.40	650	45	70.0	31.8
8	203 + 3.0	0.17	4.2	2.15	3.20	610	42	81.5	37.0
10	254 + 5.0	0.17	4.3	2.73	4.10	520	36	101.2	46.0
12	305 + 5.0	0.18	4.5	3.38	5.05	435	30	120.0	54.5

Note: Minimum safety factor bp/wp is 2:1 (50%) for all non-hazard and/or non-flammable liquids.

ISSUE 3.0 - 15.08.2021

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