



Fifty years of experience has taught us something about manufacturing aircraft refuelling hoses.

We work closely with our production partner ContiTech. Our hoses are distinguished by their high operational safety and continuous quality - far exceeding the requirements of the standards.

For a comparison of Yellow Band hoses and competitor products let us take a closer look at the hose construction.

### The Lining

- has to withstand the media flowing through the hose
- should be NBR-rubber, seamless extrusion
- lapped constructions are not recommended

**Picture 1:** Shows seams in the lining of a cheaper production process. This is a potential weakness. Rubber swells in fuel and the seams can split open when the hose is bent too tightly. Further, the thickness of the lining may be uneven as it is produced with overlapping rubber plates.

**Picture 2:** A seamless lining should be the required standard for aircraft refuelling hoses. During the extrusion process the rubber thickness of Yellow Band hoses is controlled automatically by laser guidance. This ensures a concentric seamless tube. No seams - no risk of cracking.

Note: the aircraft refuelling hose ends must be capped during transport and storage to prevent ozone penetration.

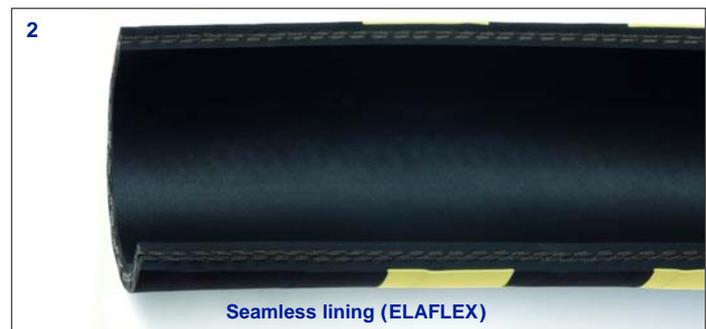
### The Reinforcement

- is the pressure bearing part of a hose
- should be braided with textile yarn
- spirally wound constructions are not recommended

**Picture 3:** Spirally wound textile layers are thicker than braiding and makes the hose stiffer. To achieve the required burst pressure four layers are used instead of two braids. The percentage of textiles in this hose is much higher compared to the braided construction.

**Picture 4:** The well proven design with braided reinforcements allows light weight and user friendly hoses with burst pressures consistently above 100 bar and ensures solid structure, small elongation and torsion under pressure. The small gaps in the braid ensure excellent adhesion bonding values between the rubber layers.

Comparable Technical Data		Requirements acc. to EN 1361	Test Results Conti / ELAFLEX
Tensile Strength	Tube Cover	min. 7,0 N / mm <sup>2</sup> min. 7,0 N / mm <sup>2</sup>	12,5 N / mm <sup>2</sup> 16,0 N / mm <sup>2</sup>
Swelling of Tube in "Liquid B" 48 h, 40° Celsius		max. 50 %	29 %
Extraction of Tube in "Liquid B" Method EN 1361		max. 4 %	3 %
Abrasion of Cover		max. 140 mm <sup>3</sup>	120 mm <sup>3</sup>
Adhesion	dry	min. 3,0 N / mm	4,5 N / mm
	swollen	min. 2,0 N / mm	3,5 N / mm
Burst Pressure		min. 80 bar	> 100 bar



## The Cover

- has to protect the reinforcement from outer influences
- should be extruded seamlessly with CR-rubber
- lapped constructions are not recommended

**Picture 5:** The hose on this picture was only in use for two years; the rubber compound was poor and could not withstand the effect of ozone and UV. This is often due to use of low cost rubber with a high content of filler material.



**Picture 6:** This hose is still in use after 20 years! Yellow Band aircraft refuelling hoses have a seamlessly extruded cover made of a high quality chloroprene (CR) compound, making them highly abrasion, ozone and flame resistant. Last for decades without showing any cracks in the cover.



## Further Quality Characteristics:

**Low Temperature flexibility.** Yellow Band hoses are renowned for their cold flexibility. Low Temperature versions (used in arctic zones such as Alaska, Scandinavia and Russia) may be used without cracking down to -50° Celsius.

**Continuous electrical conductivity relatively independent of length.** Aircraft refuelling hoses may not contain metallic parts, so this is a difficult task to achieve for many competitors. With Yellow Band hoses this is guaranteed.

**Resistance to kinking.** API 1529 C requires aircraft refuelling hoses type C to be resistant against damage from 1.000 kinking cycles. ELAFLEX hoses regularly withstand more than 10.000 cycles without damage due to the good adhesion between the layers.

**Durable marking.** Yellow -or Neon- bands every 4 metres. Continuous, durable embossing showing all met standards, pressure rate, electrical conductivity, manufacturer, batch number and production date. Certificates as per EN 10204-3.1 available on request.

**Suitable fittings.** It is recommended to buy hoses and couplings from a single source to ensure compatibility. For safe attachment pinned or bolted clamps are available. ELAFLEX couplings are in accordance with EN 14420 standard.

**Professional assembly.** ELAFLEX Hamburg has the largest stock of aircraft refuelling hoses and fittings in Europe (maybe worldwide), ensuring a fast delivery. Hose assembling is done by experienced and trained staff.

**Pressure test according EN 1361.** Most customers require aircraft refuelling hose assemblies to be supplied with a test certificate. We effect pressure tests at 40 bar and check for electrical continuity. Customers can rely on our long experience with these tests.

**Safety.** The safety aspects of refuelling aircraft are crucial. The reliability of hose assemblies is of special importance. To evaluate safety risks a clear understanding of the hose assembly is essential - talk to ELAFLEX for advice and assistance.

