

ENGINEERING  
TOMORROW

*Danfoss*

Catalog

# High-Performance Railway Hoses

Meeting EN45545-2



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## Upgrade to a railway hose that meets your **inside and outside requirements**



**The challenge facing the rail industry is to make rail travel as reliable, efficient, safe, and comfortable as possible. Power is fundamental to keeping rail networks moving—whether managing power in a centralized depot, in the rolling stock, or in helping ensure sufficient power reaches remote stations.**

Driven by regulations and increased globalization, train builders and railway operators must find ways to reduce downtime, increase productivity, and enhance safety and security to drive profitability while making the industry more sustainable. Danfoss understands the need for power solutions that work.

Powering the rail industry means helping our customers build better and safer trains, while enabling railway operators to operate competitively with products designed for maximum reliability. Our focus on energy efficiency and safety means our customers can rest assured that they will be able to meet stringent regulations and drive the industry towards a sustainable future. With technical expertise and project management capabilities—plus a broad portfolio of electrical and hydraulic solutions—Danfoss can help minimize risk and secure rail projects.

EN 45545-2 is the unified standard that regulates the fire behavior of hose lines regarding toxicity, smoke density, and flammability for all EU countries and replaces country-specific standards.

Danfoss Railway hose series meets the requirements of EN45545-2 and covers a wide range of railway applications.

The railway hose series includes compact 1SC, 2SC and standard 1SN, 2SN hoses as well as textile and suction hoses that fulfill up to HL3 / R22 and HL3 / R23. Various standard hydraulic and air conditioning hoses have been tested according to EN45545-2 and achieve results up to HL3. An additional fire sleeve is required for some products.

Danfoss is offering leading **products that guarantee the highest levels of safety and performance** for all areas within the conveyance systems used.

**Tested conformance to EN45545-2**

The advent of a single standard for hose assembly fire behavior (EN 45545-2) has been adopted by and is replacing country by country standards. Danfoss supplies hoses that conform to every part of the standard. But Danfoss hoses elevate the product offering to HL3 compatible parts.

**Meets and exceeds hazard requirements**

Danfoss Railway hoses are certified to conform to the EN45545-2 standards.

| Requirement set used for                          | Test Method and Reference                      | Testing for (unit)                                | Minimum/Maximum | Thresholds HL1 HL2 HL3 | Danfoss Railway Hoses                            |
|---|--|---|-----------------|------------------------|--|
| Inside uses R22 (IN16; EL2; EL6A; EL7A; M2)       | T01<br>EN ISO 4589-2: OI                       | Oxygen Content (%)                                | Minimum         | 28 28 32               | Meets and/or exceeds HL3 up to minimum threshold |
|   | T10.03<br>EN ISO 5659-3<br>25kWm <sup>-2</sup> | Smoke Density (D <sub>s</sub> max. dimensionless) | Maximum         | 600 300 150            | Meets and/or exceeds HL3 up to minimum threshold |
|   | T12<br>NF X70-100-1 and -2,600 °C              | Smoke Toxicity (CIT <sub>NLP</sub> dimensionless) | Maximum         | 1.2 0.9 0.75           | Meets and/or exceeds HL3 up to minimum threshold |
| Outside uses R23 (EX12; EL2; EL5; EL6B; EL7B; M3) | T01<br>EN ISO 4589-2: OI                       | Oxygen Content (%)                                | Minimum         | 28 28 32               | Meets and/or exceeds HL3 minimum threshold       |
|   | T10.03<br>EN ISO 5659-3<br>25kWm <sup>-2</sup> | Smoke Density (D <sub>s</sub> max. dimensionless) | Maximum         | - 600 300              | Meets and/or exceeds HL3 minimum threshold       |
|   | T12<br>NF X70-100-1 and -2,600 °C              | Smoke Toxicity (CIT <sub>NLP</sub> dimensionless) | Maximum         | - 1.8 1.5              | Meets and/or exceeds HL3 minimum threshold       |

**Railway hose portfolio**

| Hose type        | Hose spec        | R22 (internal) | R23 (external) | Size             | Comment   |
|------------------|------------------|----------------|----------------|------------------|-----------|
| EC112 (1SC)      | EN857            | HL3            | HL3            | -4 to -16        | ISO 15540 |
| EC212 (2SC)      | EN857            | HL3            | HL3            | -4 to -32        | ISO 15540 |
| EC109 (1SN)      | EN853            | HL3            | HL3            | -4 to -16        | —         |
| EC209 (2SN)      | EN853            | HL2            | HL3            | -4 to -16        | —         |
| EC045 (2TE)      | EN854            | HL2            | HL3            | -3, -4, -12, -16 | —         |
| EC045 (2TE)      | EN854            | HL3            | HL3            | -5 to -10        | —         |
| EC060 (3TE)      | EN854            | HL2            | HL3            | -4 to -20        | —         |
| EC190 (Suction)  | SAE 100R4        | HL3            | HL3            | -12 to -48       | —         |
| EC155 (Airbrake) | UIC830-1/EN15807 | HL1            | HL2            | -08 to -22       | —         |

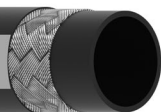
**Standard hose portfolio qualified according to EN45545-2**

| Hose type   | Hose spec  | R22 (internal) | R23 (external) | Size       | Comment                       |
|-------------|------------|----------------|----------------|------------|-------------------------------|
| GH506 (4SH) | EN856      | HL2            | HL3            | -12 to -32 | ISO 18752   ISO 3862 Type 4SH |
| GH466 (R15) | SAE 100R15 | HL2            | HL3            | -20 to -32 | ISO 3862 Type R15             |
| FC800 + 624 | J3062 A/C  | HL3            | HL3            | -12 to -24 | ISO 15540, Fire Sleeve 624    |
| FC510 (R2)  | EN857 1SC  | HL1            | HL2            | -4 to -20  | —                             |

# Danfoss Railway hose according to EN45545-2

## EC112

Danfoss Railway EN45545 EC112



Meets EN857 Type 1SC and EN45545-2

| Part #   | Hose I.D. |      |      | O.D. max. |      | Max. OP Proof |     | Burst | Bend Radius | Weight |
|----------|-----------|------|------|-----------|------|---------------|-----|-------|-------------|--------|
|          | DN        | mm   | in   | mm        | in   | bar           | bar | bar   | mm          | kg/m   |
| EC112-4  | 6         | 6.4  | 0.25 | 13.5      | 0.53 | 225           | 450 | 900   | 50          | 0.18   |
| EC112-5  | 8         | 7.9  | 0.31 | 14.5      | 0.57 | 215           | 430 | 860   | 55          | 0.21   |
| EC112-6  | 10        | 9.5  | 0.38 | 16.9      | 0.67 | 180           | 360 | 720   | 65          | 0.26   |
| EC112-8  | 12        | 12.7 | 0.50 | 20.4      | 0.80 | 160           | 320 | 640   | 90          | 0.35   |
| EC112-10 | 16        | 15.9 | 0.63 | 23.0      | 0.91 | 130           | 260 | 520   | 100         | 0.43   |
| EC112-12 | 19        | 19.0 | 0.75 | 26.7      | 1.05 | 105           | 210 | 420   | 120         | 0.50   |
| EC112-16 | 25        | 25.4 | 1.00 | 34.9      | 1.37 | 88            | 176 | 352   | 150         | 0.74   |

### Operating temperatures

-40 °C to +125 °C (-40 °F to +257 °F)  
 Air max: +75 °C max: +167 °F  
 Water max: +85 °C max: +185 °F

### Hazard level

R22/HL3  
 R23/HL3

### Fittings



1A Series

### Inner tube

Synthetic rubber tube

### Reinforcement

One steel braid

### Cover

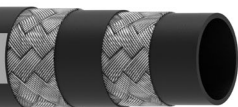
Black fire-retardant synthetic rubber cover

### Typical applications

Hydraulic railway systems with petroleum and water-glycol based fluids, for lubricating oils and water

## EC212

Danfoss Railway EN45545 EC212



Meets EN857 Type 2SC and EN45545-2

| Part #   | Hose I.D. |      |      | O.D. max. |      | Max. OP Proof |     | Burst | Bend Radius | Weight |
|----------|-----------|------|------|-----------|------|---------------|-----|-------|-------------|--------|
|          | DN        | mm   | in   | mm        | in   | bar           | bar | bar   | mm          | kg/m   |
| EC212-4  | 6         | 6.4  | 0.25 | 14.2      | 0.56 | 400           | 800 | 1600  | 50          | 0.29   |
| EC212-5  | 8         | 7.9  | 0.31 | 16.0      | 0.63 | 350           | 700 | 1400  | 55          | 0.33   |
| EC212-6  | 10        | 9.5  | 0.38 | 18.3      | 0.72 | 330           | 660 | 1320  | 65          | 0.41   |
| EC212-8  | 12        | 12.7 | 0.50 | 21.5      | 0.85 | 275           | 550 | 1100  | 90          | 0.58   |
| EC212-10 | 16        | 15.9 | 0.63 | 24.7      | 0.97 | 250           | 500 | 1000  | 100         | 0.69   |
| EC212-12 | 19        | 19.0 | 0.75 | 28.6      | 1.13 | 215           | 430 | 860   | 120         | 0.81   |
| EC212-16 | 25        | 25.4 | 1.00 | 36.6      | 1.44 | 165           | 330 | 660   | 150         | 1.17   |
| EC212-20 | 31        | 31.8 | 1.25 | 44.4      | 1.75 | 125           | 250 | 500   | 210         | 1.53   |
| EC212-24 | 38        | 38.1 | 1.50 | 51.5      | 2.03 | 100           | 200 | 400   | 250         | 1.89   |
| EC212-32 | 51        | 50.8 | 2.00 | 64.2      | 2.53 | 90            | 180 | 360   | 315         | 2.42   |

### Operating temperatures

-40 °C to +125 °C (-40 °F to +257 °F)  
 Air max: +75 °C max: +167 °F  
 Water max: +85 °C max: +185 °F

### Hazard level

R22/HL3  
 R23/HL3

### Fittings



1A Series

### Inner tube

Synthetic rubber tube

### Reinforcement

Two steel braid

### Cover

Black fire-retardant synthetic rubber cover

### Typical applications

Hydraulic railway systems with petroleum and water-glycol based fluids, for lubricating oils and water

# Danfoss Railway hose according to EN45545-2

## EC109



Meets EN853 Type 1SN and EN45545-2

| Part #   | Hose I.D. |      |      | O.D. max. |      | Max. OP Proof |     | Burst | Bend Radius | Weight |
|----------|-----------|------|------|-----------|------|---------------|-----|-------|-------------|--------|
|          | DN        | mm   | in   | mm        | in   | bar           | bar | bar   | mm          | kg/m   |
| EC109-04 | 6         | 6.4  | 0.25 | 14.1      | 0.55 | 225           | 450 | 900   | 100         | 0.22   |
| EC109-05 | 8         | 7.9  | 0.31 | 15.7      | 0.62 | 215           | 430 | 860   | 115         | 0.26   |
| EC109-06 | 10        | 9.5  | 0.38 | 18.1      | 0.71 | 180           | 360 | 720   | 130         | 0.33   |
| EC109-08 | 12        | 12.7 | 0.50 | 21.4      | 0.84 | 160           | 320 | 640   | 180         | 0.41   |
| EC109-10 | 16        | 15.9 | 0.63 | 24.5      | 0.96 | 130           | 260 | 520   | 200         | 0.47   |
| EC109-12 | 19        | 19.0 | 0.75 | 28.5      | 1.12 | 105           | 210 | 420   | 240         | 0.59   |
| EC109-16 | 25        | 25.4 | 1.00 | 36.6      | 1.44 | 88            | 176 | 352   | 300         | 0.87   |

### Operating temperatures

-40 °C to +125 °C (-40 °F to +257 °F)  
 Air max: +75 °C max: +167 °F  
 Water max: +85 °C max: +185 °F

### Hazard level

R22/HL3  
 R23/HL3

### Fittings



### Inner tube

Synthetic rubber tube

### Reinforcement

One steel braid

### Cover

Black fire-retardant synthetic rubber cover

### Typical applications

Hydraulic railway systems with petroleum and water-glycol based fluids, lubricating oils, and water

## EC209



Meets EN853 Type 2SN and EN45545-2

| Part #   | Hose I.D. |      |      | O.D. max. |      | Max. OP Proof |     | Burst | Bend Radius | Weight |
|----------|-----------|------|------|-----------|------|---------------|-----|-------|-------------|--------|
|          | DN        | mm   | in   | mm        | in   | bar           | bar | bar   | mm          | kg/m   |
| EC209-04 | 6         | 6.4  | 0.25 | 15.7      | 0.62 | 400           | 800 | 1600  | 100         | 0.38   |
| EC209-05 | 8         | 7.9  | 0.31 | 17.3      | 0.68 | 350           | 700 | 1400  | 115         | 0.43   |
| EC209-06 | 10        | 9.5  | 0.38 | 19.7      | 0.78 | 330           | 660 | 1320  | 130         | 0.54   |
| EC209-08 | 12        | 12.7 | 0.50 | 23.0      | 0.91 | 275           | 550 | 1100  | 180         | 0.64   |
| EC209-10 | 16        | 15.9 | 0.63 | 26.2      | 1.03 | 250           | 500 | 1000  | 200         | 0.75   |
| EC209-12 | 19        | 19.0 | 0.75 | 30.1      | 1.19 | 215           | 430 | 860   | 240         | 0.93   |
| EC209-16 | 25        | 25.4 | 1.00 | 38.9      | 1.53 | 165           | 330 | 660   | 300         | 1.29   |

### Operating temperatures

-40 °C to +125 °C (-40 °F to +257 °F)  
 Air max: +75 °C max: +167 °F  
 Water max: +85 °C max: +185 °F

### Hazard level

R22/HL2  
 R23/HL3

### Fittings



### Inner tube

Synthetic rubber tube

### Reinforcement

Two steel braid

### Cover

Black fire-retardant synthetic rubber cover

### Typical applications

Hydraulic railway systems with petroleum and water-glycol based fluids, lubricating oils, and water

# Danfoss Railway hose according to EN45545-2

## EC045



Meets EN854 Type 2TE and EN45545-2

| Part #   | Hose I.D. |      |      | O.D. max. |      | Max. OP Proof |     | Burst | Bend Radius | Weight |
|----------|-----------|------|------|-----------|------|---------------|-----|-------|-------------|--------|
|          | DN        | mm   | in   | mm        | in   | bar           | bar | bar   | mm          | kg/m   |
| EC045-3  | 5         | 4.8  | 0.19 | 12.6      | 0.50 | 80            | 160 | 320   | 35          | 0.12   |
| EC045-4  | 6         | 6.4  | 0.25 | 14.2      | 0.56 | 75            | 150 | 300   | 40          | 0.15   |
| EC045-5  | 8         | 7.9  | 0.31 | 15.7      | 0.62 | 68            | 136 | 270   | 50          | 0.17   |
| EC045-6  | 10        | 9.5  | 0.38 | 17.3      | 0.68 | 63            | 126 | 250   | 60          | 0.20   |
| EC045-8  | 12        | 12.7 | 0.50 | 20.7      | 0.81 | 58            | 116 | 230   | 70          | 0.24   |
| EC045-10 | 16        | 15.9 | 0.63 | 24.9      | 0.98 | 50            | 100 | 200   | 90          | 0.33   |
| EC045-12 | 19        | 19.0 | 0.75 | 28.0      | 1.10 | 45            | 90  | 180   | 110         | 0.38   |
| EC045-16 | 25        | 25.4 | 1.00 | 35.9      | 1.41 | 40            | 80  | 160   | 150         | 0.55   |

### Operating temperatures

-40 °C to +125 °C (-40 °F to +257 °F)  
 Air max: +75 °C max: +167 °F  
 Water max: +85 °C max: +185 °F

### Hazard level

R22/HL3 size -5 to -10  
 R22/HL2 size -3, -4, -12, -16  
 R23/HL3

### Fittings



### Inner tube

Synthetic rubber tube

### Reinforcement

Single textile braid

### Cover

Black fire-retardant synthetic rubber cover

### Typical applications

Hydraulic railway systems with petroleum and water-glycol based fluids, lubricating oils, and water

## EC060



Meets EN854 Type 3TE and EN45545-2

| Part #   | Hose I.D. |      |      | O.D. max. |      | Max. OP Proof |     | Burst | Bend Radius | Weight |
|----------|-----------|------|------|-----------|------|---------------|-----|-------|-------------|--------|
|          | DN        | mm   | in   | mm        | in   | bar           | bar | bar   | mm          | kg/m   |
| EC060-4  | 6         | 6.4  | 0.25 | 15.2      | 0.60 | 145           | 290 | 580   | 45          | 0.17   |
| EC060-5  | 8         | 7.9  | 0.31 | 17.7      | 0.70 | 130           | 260 | 520   | 55          | 0.24   |
| EC060-6  | 10        | 9.5  | 0.38 | 19.3      | 0.76 | 110           | 220 | 440   | 70          | 0.27   |
| EC060-8  | 12        | 12.7 | 0.50 | 22.7      | 0.89 | 93            | 186 | 372   | 85          | 0.34   |
| EC060-10 | 16        | 15.9 | 0.63 | 26.9      | 1.06 | 80            | 160 | 320   | 105         | 0.48   |
| EC060-12 | 19        | 19.0 | 0.75 | 30.0      | 1.18 | 70            | 140 | 280   | 130         | 0.49   |
| EC060-16 | 25        | 25.4 | 1.00 | 37.4      | 1.47 | 55            | 110 | 220   | 150         | 0.69   |
| EC060-20 | 31        | 31.8 | 1.25 | 43.8      | 1.72 | 45            | 90  | 180   | 190         | 0.85   |

### Operating temperatures

-40 °C to +125 °C (-40 °F to +257 °F)  
 Air max: +75 °C max: +167 °F  
 Water max: +85 °C max: +185 °F

### Hazard level

R22/HL2  
 R23/HL3

### Fittings



### Inner tube

Synthetic rubber tube

### Reinforcement

Two textile braid

### Cover

Black fire-retardant synthetic rubber cover

### Typical applications

Hydraulic railway systems with petroleum and water-glycol based fluids, lubricating oils, and water

# Danfoss Railway hose according to EN45545-2

## EC190



Meets SAE 100R4 and EN45545-2

| Part #    | Hose I.D. |      |      | Hose O.D. max. |      | Max. Operat. Pressure |     | Burst Pressure |      | Minimum Bend Radius |      | Vacuum | Weight |        |
|-----------|-----------|------|------|----------------|------|-----------------------|-----|----------------|------|---------------------|------|--------|--------|--------|
|           | DN        | mm   | in   | mm             | in   | bar                   | psi | bar            | psi  | mm                  | in   | bar    | kg/m   | lbs/ft |
| EC190-12  | 19        | 19.0 | 0.75 | 32.6           | 1.28 | 21                    | 305 | 84             | 1220 | 40                  | 1.57 | -0.80  | 0.83   | 0.56   |
| EC190-16  | 25        | 25.4 | 1.00 | 38.2           | 1.50 | 17                    | 245 | 68             | 980  | 45                  | 1.77 | -0.80  | 0.97   | 0.65   |
| EC190-20  | 32        | 32.0 | 1.26 | 46.0           | 1.81 | 14                    | 205 | 56             | 820  | 60                  | 2.36 | -0.80  | 1.29   | 0.87   |
| EC190-24  | 38        | 38.0 | 1.50 | 52.4           | 2.06 | 10                    | 145 | 40             | 580  | 65                  | 2.56 | -0.80  | 1.66   | 1.12   |
| EC190-32  | 51        | 50.8 | 2.00 | 66.0           | 2.60 | 7                     | 100 | 28             | 400  | 100                 | 3.94 | -0.80  | 2.37   | 1.59   |
| EC190-40* | 63        | 63.5 | 2.50 | 79.1           | 3.11 | 4                     | 60  | 16             | 240  | 140                 | 5.51 | -0.80  | 2.92   | 1.96   |
| EC190-48* | 80        | 76.2 | 3.00 | 95.0           | 3.74 | 4                     | 60  | 16             | 240  | 180                 | 7.09 | -0.80  | 4.18   | 2.81   |

### Operating temperatures

-40 °C to +125 °C (-40 °F to +257 °F)  
 Air max: +75 °C max: +167 °F  
 Water max: +85 °C max: +185 °F

### Hazard level

R22/HL3  
 R23/HL3

### Fittings



1G Series

### Inner tube

Synthetic rubber tube

### Reinforcement

High tensile synthetic textile, steel helix wire, and anti-static copper strand

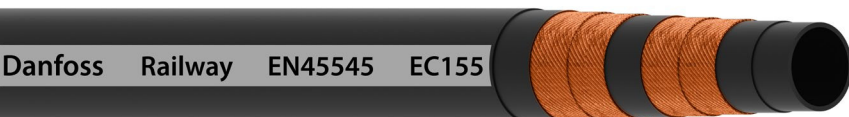
### Cover

Black fire-retardant synthetic rubber cover

### Typical applications

Railway suction applications for petroleum, lubricating oils, fuels, gasoline, air, water, and water glycol

## EC155



Meets UIC830-1, EN15807 and EN45545-2

| Part #    | Hose I.D. |    |      | Wall Thickness |      | O.D. max. |      | Max. OP Proof |     | Burst | Bend Radius | Weight |
|-----------|-----------|----|------|----------------|------|-----------|------|---------------|-----|-------|-------------|--------|
|           | DN        | mm | in   | mm             | in   | mm        | in   | bar           | bar | bar   | mm          | kg/m   |
| EC155-08  | 13        | 13 | 0.51 | 6.0            | 0.24 | 25        | 0.98 | 400           | 800 | 1600  | 100         | 0.49   |
| EC155-10  | 16        | 16 | 0.63 | 6.0            | 0.24 | 28        | 1.10 | 350           | 700 | 1400  | 115         | 0.58   |
| EC155-14  | 22        | 22 | 0.87 | 7.0            | 0.28 | 36        | 1.42 | 330           | 660 | 1320  | 130         | 0.85   |
| EC155-18A | 28        | 28 | 1.10 | 7.5            | 0.30 | 43        | 1.69 | 275           | 550 | 1100  | 180         | 1.14   |
| EC155-22  | 35        | 35 | 1.38 | 9.0            | 0.35 | 53        | 2.09 | 250           | 500 | 1000  | 200         | 0.75   |

### Operating temperatures

-40 °C to +70 °C (-40 °F to +158 °F)

### Hazard level

R22/HL1  
 R23/HL2

### Fittings

Designed for half couplings acc. EN15807

### Inner tube

Synthetic rubber tube

### Reinforcement

Four textile cord reinforcement

### Cover

Black fire-retardant synthetic rubber cover

### Typical applications

Railway air brake systems to connect carriages by means of half-couplings according to DIN15807



# Danfoss: your **single source supplier**

Not only is Danfoss the first manufacturer to carry an EN45545-2 conforming SAE 100R5 railway hose, but this hose also meets HL3 requirements for outside use. Beyond that, Danfoss also carries a full range of hoses, couplings, and PMC products.



## High performance spiral hydraulic hose

### Aeroquip GH466



Exceeds: SAE 100R15 | ISO 3862 Type R15, EN 856 R13

2 million flex impulse cycle performance according ISO6802

| Part #   | Hose I.D. |      |      | Hose O.D. (max.) |      | Max operating pressure |      | Burst pressure |       | Minimum Bend Radius |       | Weight |        |
|----------|-----------|------|------|------------------|------|------------------------|------|----------------|-------|---------------------|-------|--------|--------|
|          | DN        | mm   | in   | mm               | in   | bar                    | bar  | bar            | psi   | mm                  | in    | kg/m   | lbs/ft |
| GH466-20 | 31        | 31.8 | 1.25 | 51.3             | 2.02 | 420                    | 6100 | 1680           | 24400 | 420                 | 16.54 | 3.48   | 2.34   |
| GH466-24 | 38        | 38.1 | 1.50 | 58.8             | 2.31 | 420                    | 6100 | 1680           | 24400 | 500                 | 19.69 | 4.63   | 3.11   |
| GH466-32 | 51        | 50.8 | 2.00 | 72.7             | 2.86 | 420                    | 6100 | 1680           | 24400 | 630                 | 24.80 | 6.70   | 4.50   |

#### Operating temperatures

-40 °C to +120 °C (-40 °F to +248 °F)

#### Hazard level

R22/HL2  
R23/HL3

#### Fittings



6S (-20 to -24) 1W (-20 to -32)

#### Inner tube

Synthetic rubber tube

#### Reinforcement

6 high tensile spiral wire layers reinforcement

#### Cover

Dura-Tuff™  
high abrasion resistant

#### Typical applications

High pressure hydraulic systems with constant high working pressure for use with petroleum based fluids

#### Agency listings

MSHA  
DNV  
BV  
LR  
EN45545-2  
ABS

# High performance spiral hydraulic hose

## Aeroquip GH506



Exceeds: EN 856 Type 4SH | ISO 18752 | ISO 3862 Type 4SH

2 million flex impulse cycle performance according ISO6802\*\*

| Part #     | Hose I.D. |      |      | Hose O.D. (max.) |      | Max operating pressure |      | Burst pressure |       | Minimum Bend Radius |       | Weight |        |
|------------|-----------|------|------|------------------|------|------------------------|------|----------------|-------|---------------------|-------|--------|--------|
|            | DN        | mm   | in   | mm               | in   | bar                    | psi  | bar            | psi   | mm                  | in    | kg/m   | lbs/ft |
| GH506-12** | 19        | 19.0 | 0.75 | 33.0             | 1.30 | 420                    | 6100 | 1680           | 24400 | 280                 | 11.02 | 1.49   | 1.00   |
| GH506-16** | 25        | 25.4 | 1.00 | 39.9             | 1.57 | 420                    | 6100 | 1680           | 24400 | 340                 | 13.39 | 2.05   | 1.38   |
| GH506-20   | 31        | 31.8 | 1.25 | 47.1             | 1.85 | 350                    | 5100 | 1400           | 20300 | 460                 | 18.11 | 2.54   | 1.71   |
| GH506-24   | 38        | 38.1 | 1.05 | 55.1             | 2.17 | 300                    | 4350 | 1200           | 17400 | 560                 | 22.05 | 3.27   | 2.20   |
| GH506-32   | 51        | 50.8 | 2.00 | 69.7             | 2.74 | 250                    | 3650 | 1000           | 14500 | 700                 | 27.56 | 4.58   | 3.08   |

### Operating temperatures

-40 °C to +100 °C (-40 °F to +212 °F)

### Hazard level

R22/HL2  
R23/HL3

### Fittings



1W (-12 to -32)

\*\*2 million flex impulse cycle performance according ISO6802 for size 12' and 16'

### Inner tube

Synthetic rubber tube

### Reinforcement

4 high tensile spiral wire reinforcement

### Cover

Dura-Tuff™  
high abrasion resistant

### Typical applications

High pressure hydraulic systems with petroleum based fluids, challenging applications like construction equipment, agriculture machines, and stationary applications

### Agency listings

MSHA  
DNV  
ABS

# High performance specialty hoses

## Aeroquip FC510 high-temp one braided hose



Exceeds: EN 857 1SC

| Part #   | Hose I.D. |      |      | Hose O.D. (max.) |      | Max operating pressure |      | Burst pressure |       | Minimum Bend Radius |       | Weight |        |
|----------|-----------|------|------|------------------|------|------------------------|------|----------------|-------|---------------------|-------|--------|--------|
|          | DN        | mm   | in   | mm               | in   | bar                    | psi  | bar            | psi   | mm                  | in    | kg/m   | lbs/ft |
| FC510-4  | 6         | 6.4  | 0.25 | 14.9             | 0.59 | 345                    | 5000 | 1380           | 20000 | 76                  | 3.00  | 0.34   | 0.23   |
| FC510-6  | 10        | 9.5  | 0.37 | 18.2             | 0.72 | 275                    | 4000 | 1100           | 16000 | 89                  | 3.50  | 0.43   | 0.29   |
| FC510-8  | 12        | 12.7 | 0.50 | 20.7             | 0.81 | 240                    | 3500 | 960            | 14000 | 127                 | 5.00  | 0.50   | 0.34   |
| FC510-10 | 16        | 15.9 | 0.63 | 24.4             | 0.96 | 190                    | 2750 | 760            | 11000 | 152                 | 6.00  | 0.66   | 0.44   |
| FC510-12 | 19        | 19.0 | 0.75 | 28.2             | 1.11 | 155                    | 2250 | 620            | 9000  | 178                 | 7.00  | 0.77   | 0.52   |
| FC510-16 | 25        | 25.4 | 1.00 | 35.2             | 1.39 | 138                    | 2000 | 552            | 8000  | 229                 | 9.00  | 1.05   | 0.71   |
| FC510-20 | 31        | 31.8 | 1.25 | 43.7             | 1.72 | 112                    | 1625 | 448            | 6500  | 279                 | 11.00 | 1.61   | 1.08   |

### Operating temperatures

-40 °C to +150 °C (-40 °F to +302 °F)

### Hazard level

R22/HL1  
R23/HL2

### Fittings



### Inner tube

AQP Elastomer tube

### Reinforcement

Patented HI-PAC wire braid reinforcement

### Cover

Blue AQP elastomer cover

### Typical applications

Petroleum and fire-resistant hydraulic fluids, fuel and lubricating oils, gasoline, water, and other industrial fluids

### Agency listings

DNV  
EN45545-2  
MED  
MSHA  
USCG

## High performance large bore A/C hose

## FC800 A/C Hose + 624 Fire Protection Sleeve



Meets SAE J3062 and J2064

| Part #   | Hose I.D. |      |      | Hose O.D. (max.) |      | Max operating pressure |     | Burst pressure |      | Minimum Bend Radius |      | Weight |        |
|----------|-----------|------|------|------------------|------|------------------------|-----|----------------|------|---------------------|------|--------|--------|
|          | DN        | mm   | in   | mm               | in   | bar                    | psi | bar            | psi  | mm                  | in   | kg/m   | lbs/ft |
| FC800-12 | 16        | 16.4 | 0.65 | 27.2             | 1.07 | 35                     | 500 | 140            | 2000 | 70.0                | 2.76 | 0.67   | 0.45   |
| FC800-16 | 19        | 22.8 | 0.90 | 31.5             | 1.24 | 35                     | 500 | 140            | 2000 | 80.0                | 3.15 | 0.71   | 0.48   |
| FC800-20 | 25        | 29.3 | 1.15 | 38.6             | 1.52 | 35                     | 500 | 140            | 2000 | 100.0               | 3.94 | 0.92   | 0.62   |
| FC800-24 | 31        | 35.5 | 1.40 | 45.6             | 1.80 | 35                     | 500 | 140            | 2000 | 160.0               | 6.30 | 1.15   | 0.77   |

### Operating temperatures

-40 °C to +125 °C (-40 °F to +257 °F)

### Hazard level

R22/HL3  
R23/HL3

### Fittings



### Inner tube

CR Chloroprene inner tube and polyamide barrier foil

### Reinforcement

Wire braid reinforcement

### Cover

EPDM hose cover

### Typical applications

Air conditioning and refrigeration

## Certificate Examples

EN 45545-2

The EC112, EC212 and others have passed test requirements up to Hazard Level R22/HL3 and R23/HL3.



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### RAPPORTO DI PROVA / TEST REPORT NO. 1554-1555.1S0040/22

#### METODO DI PROVA:

Test method

UNI EN 45545-2: 2020

#### DENOMINAZIONE DELLA PROVA:

Description of the standard

Requisiti di comportamento al fuoco di materiali e componenti  
Requirements for fire behaviour of materials and components

#### RICHIEDENTE:

Sponsor

Danfoss Power Solutions II GmbH  
Dr. Reckeweg Straße 1  
D-76532 Baden-Baden (Germany)

#### DENOMINAZIONE DEL MATERIALE:

Denomination of the material

EC112

#### GAMMA DIAMETRI NOM. DEI CAMPIONI:

Nominal diameters range of the samples

Diameter from 6.4 mm to 25.4 mm  
06+25 (Size from -04 to -16)

#### DESCRIZIONE DEL MATERIALE:

Description of the material

Tubo flessibile con rivestimento esterno in gomma tipo NBR di colore nero, rinforzato con una treccia in fili d'acciaio, rivestimento interno in gomma tipo NBR. Hose with external blue cover in rubber of NBR type, reinforced with one steel wire braid, inner cover in rubber of NBR type.



Questo documento fa riferimento ai Rapporti di Prova no. 1554.050030/22, no. 1555.050030/22, no. 1554.150030/22, no. 1555.150030/22, no. 1554.150050/22 e no. 1555.150050/22 emessi da questo Laboratorio. Il Laboratorio non è stato coinvolto in nessuna procedura di campionamento della produzione. This certificate refers to the Test Reports no. 1554.050030/22, no. 1555.050030/22, no. 1554.150030/22, no. 1555.150030/22, no. 1554.150050/22 and no. 1555.150050/22 issued by this Laboratory. The Laboratory has not been involved in any procedure of sampling of the production.

| Prodotto / Product  | M2 (Tubazioni flessibili per interno / Hoses - Interior)<br>M3 (Tubazioni flessibile per esterno / Hoses - Exterior) |   |   |
|---|--|---|---|
| Requisiti / Requirements  | R22 - R23  |   |   |
| Prove richieste / Tests required  | EN ISO 4589-2  | EN ISO 5659-2                                       | EN 17084 Method 2                           |
| Parametro / Parameter   | LOI (%)  | (25 kW/m <sup>2</sup> - Flaming) D <sub>s</sub> max | CTI <sub>HL</sub>                           |
| Valori trovati / Values found<br>(Size -04 - DN 06 - Rif. Lab. no. 1554/22) | 38.8   | 138   | 0.15  |
| Valori trovati / Values found<br>(Size -16 - DN 25 - Rif. Lab. no. 1555/22) | 36.3   | 145   | 0.14  |
|   | Per / For  | Per / For   | Per / For                                   |
| Limiti di accettazione<br>Acceptance limits                                 | R22 - R23<br>HL1: ≥ 28%<br>HL2: ≥ 28%<br>HL3: ≥ 32%  | R22<br>HL1: ≤ 600<br>HL2: ≤ 300<br>HL3: ≤ 150       | R23<br>HL1: ---<br>HL2: ≤ 600<br>HL3: ≤ 300 |

Legenda ---: Nessun requisito / No requirement

#### VALUTAZIONE / JUDGEMENT

Sulla base dei risultati di prova sopra riportati il materiale in oggetto **È CONFORME** alle richieste di **UNI EN 45545-2: 2020** per livelli di rischio **HL1 - HL2 - HL3** set di requisiti **R22 e R23** per la gamma di diametri sopra riportati.

On the basis of the above results the sample in object **COMPLIES** with the requirements of **UNI EN 45545-2: 2020** for Hazard Levels **HL1 - HL2 - HL3** requirement set **R22 and R23** for the diameters range reported above.

Prato, 12/09/2022

Il Responsabile Certificazione  
The Certification Manager  
David Rosini

Il Direttore del Laboratorio  
The Director of the Laboratory  
Lea Ermini

Valid until: 11/09/2027 (\*)



Questo documento deve essere letto congiuntamente ai Rapporti di Prova sopra riportati, per la descrizione del prodotto e per ogni altra notizia di dettaglio. Questo documento non costituisce approvazione di tipo né certificazione di prodotto né tantomeno dichiarazione di conformità, che spetta esclusivamente al Produttore / Sponsor. Il riconoscimento Certifier si riferisce alle prove di EN 45545-2 riportate nella lista pubblicata. This document has to be read in conjunction with the Test Reports listed above, for the description of the product and for every other detail. This document does not represent type approval or certification of the product neither declaration of compliance, that is exclusively under the responsibility of the Manufacturer or Sponsor. The Certifier approval refers to the tests according to EN 45545-2 reported in the published list. (\*) Validità riferita alla prescrizione di / Validity referred to the prescription of Reg. (UE) 1302/2014 (12.12.2014) §4.2.10.2.1 (3)

Il presente Rapporto di Prova non può essere riprodotto in forma parziale senza l'autorizzazione scritta di questo Laboratorio

EN ISO 15540

The EC112, EC212 and others have passed the 30 min. fire flame test (800 °C) and follow 2 min. proof pressure without any additional fire sleeve.



### TYPE TEST REPORT Annex No. 1 to Report No. 137.OIS0110/22 of 18/02/2022

#### Test Certificate

Fire resistance of hose assemblies  
Testing subject to ISO 15540

#### Details on test specimen

Hose: Flexible Type: EC112-08 According to specification: Danfoss Power Solutions II GmbH  
Nominal diameter: 12 (1/2") Allowable working pressure: 160 [bar] Proof pressure: 320 [bar]  
Hose manufacturer: Polymer Kauçuk San.Paz.A.Ş - Name: According to specification Danfoss Power Solutions II GmbH  
Fittings type: 1A8BF8 Components: Nipple code: 1F40015-0808-S - Nut code: SH18306-08 - Socket code: 1A8 - Type of metal: carbon steel  
Allowable working pressure: 160 [bar] Proof pressure: 320 [bar]  
Fitting manufacturer: Danfoss Power Solutions II GmbH - Name: According to specification Danfoss Power Solutions II GmbH  
Hose assembly: Danfoss Power Solutions II GmbH - Designation: According to specif. Danfoss Power Solutions II GmbH  
Hose assembly manufacturer: Danfoss Power Solutions II GmbH - Name: According to specification Danfoss Power Solutions II GmbH  
Address: Dr. Reckeweg Straße 1 - D-76532 Baden-Baden (Germany)  
Flame protection: No

#### Test conditions

Working pressure during the test: 5 ± 0.2 [bar] Static test pressure following flame application: 320 [bar]  
Duration of flame application: 30 [min] Duration of static pressure load following flame application: 2 [min]  
Water flow velocity: 1.03 m/s Flow meter ± 1% Max scale value

#### Test results

Temperature: of test medium in front of test specimen: 80 ± 2 [°C] of test medium behind test specimen: 85 Max [°C]  
Flame temperature: below centre of test specimen: 800 ± 50 [°C] under fitting: 800 ± 50 [°C]  
Actual test duration: 30 min (if deviating from the duration of flame application as stipulated under test condition)  
Tight at test pressure (proof pressure p = 320 [bar]) after flame application.

Duration: 2 min

Results: **SATISFACTORY**

Measurement records and calibrations (see annex) No: see Test Report No. 137.OIS0110/22

LAPI S.p.A. Records dated: 18/02/2022

#### Description of failure

N/A

#### Remarks (e.g. on behaviour in fire)

None in particular

Assessment: Test passed: **YES**

The test was carried out on at: Prato (Italy)

Name Operator: Ing. Fabio Crescenti

Address: LAPI S.p.A. Laboratory

Inspector: None.

DIRECTIVE 2014/90/EU of 23<sup>rd</sup> July 2014 and  
REGULATION (EU) 2021/1158 of 22<sup>nd</sup> June 2021 - MCVS, L1

Date: 14/02/2022



Il presente Rapporto di Prova non può essere riprodotto in forma parziale senza l'autorizzazione scritta di questo Laboratorio

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