

Upgrade to a railway hose that meets internal and external requirements

EN 45545-2 is the single standard for hose assembly fire behaviour (toxicity, smoke density and oxygen-depletion), now adopted by all EU nations. Over the next few years EN45545-2 will replace the country-by-country standards formerly in place.

Our railway hose conforms to the EN45545-2 standard and is now available for use in a variety of railway

applications. In fact, the railway hose also meets up to R22/HL3 and R23/HL3 requirements for our 1SN,2SN,3TE. It is available with R22/HL2 and R23/HL3 in 1SC, 2SC and 2TE models. Available with R22/HL2 and R23/HL2 in R4 model.

Hydroscand 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 behaviour (EN 45545-2) has been adopted and is replacing country-by-country standards. Hydroscand supplies hose that conforms to every part of the standard and also elevates the product offering to HL3 compatible parts.

Table 1 EN45545-2 conformance tests by country

Country	Standard	Test Item
France	French standard NF F 16-101 Tests fire behavior, fire effluents and toxicity of the hose	Smallest, medium and largest width of a specific hose type: · Flame resistance class I3 · Smoke generation and toxicity class F3
Germany	German standard DIN 5510 part 2 (05/2009) Tests fire behavior, fire effluents and toxicity of the hose	Smallest and largest nominal width of a specific hose type: · Flammability class S3 · Droplet class ST2 · Smoke generation class SR2 · Toxicity FED (t zul.) < 1
Great Britain	British standard BS 6853 Tests fire behavior and fire effluents of the hose cover material	Rubber hose cover material Smoke behavior Release of toxins meets the limit value: category lb, ll
Italy	Italian standard UNI CEI 11170-3 Tests fire behavior and fire effluents of hose material	The smallest and largest nominal width of a specific hose type: · Smoke generation · Fire resistance · Toxicity · Overall class: LR4

Meets and exceeds hazard requirements

Most manufacturers have yet to meet the stringent requirement sets for R22 and R23. Our Railway hose is certified to conform to the EN45545-2 standards.

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

Hose type	Hose spec	R22 (internal)	R23 (external)	Size
Railway 1SC	EN 857	HL2	HL3	1/4" to 1"
Railway 2SC	EN 857	HL2	HL3	1/4" to 1"
Railway 2SC	EN 857	HL3	HL3	1 1/4" to 2"
Railway 2TE	EN 854	HL2	HL3	3/16" to 1"
Railway 3TE	EN 854	HL3	HL3	1/4" to 1"
Railway R4	SAE 100 R4	HL2	HL2	3/4" to 3"
Railway Airbrake (UIC830-1)	SAE 100 R4	HL1	HL2	1/2" to 1 3/8"

Available to order

Railway 1SC



EN857 type 1SC / EN45545-2

))				
DN	Hose I	l.D.	Hose C (ma:		Working Pressure	Min. Burst Pressure	Min. Bend Radius	Weight
	mm	in	mm	in	bar	bar	mm	kg/m
6	6.4	0.25	13.5	0.53	225	900	50	0.18
8	7.9	0.31	14.5	0.57	215	860	55	0.21
10	9.5	0.38	16.9	0.67	180	720	65	0.26
12	12.7	0.5	20.4	0.8	160	640	90	0.35
16	15.9	0.63	23	0.91	130	520	100	0.43
19	19	0.75	26.7	1.05	105	420	120	0.5
25	25.4	1	34.9	1.37	88	352	150	0.74

Temp. Range:

-40 °C to +125 °C

Air max +75°C

Water max +85°C

InnerTube:

Synthetic rubber tube

Reinforcement:

One steel braid

Cover:

Synthetic rubber cover

Typical Application:

Hydraulic system service with petroleum and water based fluids, for general industrial service.

Additional Certificates:

EN45545-2

ISO15540

Railway 2SC



EN857 type 2SC / EN45545-2

		Ď.						
DN	Hose I	I.D.	Hose C (ma:		Working Pressure	Min. Burst Pressure	Min. Bend Radius	Weight
	mm	in	mm	in	bar	bar	mm	kg/m
6	6.4	0.25	14.2	0.56	400	1600	50	0.29
8	7.9	0.31	16.0	0.63	350	1400	55	0.33
10	9.5	0.38	18.3	0.72	330	1320	65	0.41
12	12.7	0.5	21.5	0.85	275	1100	90	0.58
16	15.9	0.63	24.7	0.97	250	1000	100	0.69
19	19	0.75	28.6	1.13	215	860	120	0.81
25	25.4	1	36.6	1.44	165	660	150	1.17
31	31.8	1.25	44.4	1.75	125	500	210	1.53
38	38.1	1.5	51.5	2.03	100	400	250	1.89
51	50.8	2	64.2	2.53	90	360	315	2.42

Temp. Range:

-40 °C to +125 °C

Air max +75°C

Water max +85°C

InnerTube:

Synthetic rubber tube

Reinforcement:

Two steel braids

Cover:

Synthetic rubber cover

Typical Application:

Hydraulic system service with petroleum and water based fluids, for general industrial service.

Additional Certificates:

EN45545-2

ISO15540

Available on request

Railway 2TE



EN854 Type 2TE / EN45545-2

))				
DN	Hose I	.D.	Hose C (ma:		Working Pressure	Min. Burst Pressure	Min. Bend Radius	Weight
	mm	in	mm	in	bar	bar	mm	kg/m
5	4.8	0.19	12.6	0.5	80	320	35	0.12
6	6.4	0.25	14.2	0.56	75	300	40	0.15
8	7.9	0.31	15.7	0.62	68	270	50	0.17
10	9.5	0.38	17.3	0.68	63	250	60	0.20
12	12.7	0.5	20.7	0.81	58	230	70	0.24
16	15.9	0.63	24.9	0.98	50	200	90	0.33
19	19	0.75	28.0	1.10	45	180	110	0.38
25	25.4	1	35.9	1.41	40	160	150	0.55

Temp. Range:

-40 °C to +125 °C

Air max +75ºC

Water max +85°C

InnerTube:

Synthetic rubber tube

Reinforcement:

One textile braid

Cover:

Synthetic rubber cover

Typical Application:

Hydraulic system service with petroleum and water based fluids, for general industrial service.

Additional Certificates:

EN45545-2

Railway 3TE



EN854 Type 3TE / EN45545-2

))				
DN	Hose I	.D.	Hose C (ma:		Working Pressure	Min. Burst Pressure	Min. Bend Radius	Weight
	mm	in	mm	in	bar	bar	mm	kg/m
6	6.4	0.25	15.2	0.60	145	580	45	0.33
8	7.9	0.31	17.7	0.69	130	520	55	0.41
10	9.5	0.38	19.3	0.76	110	440	70	0.58
12	12.7	0.5	22.7	0.89	93	372	85	0.69
16	15.9	0.63	26.9	1.05	80	320	105	0.81
19	19	0.75	30.0	1.18	70	280	130	1.17
25	25.4	1	37.4	1.47	55	220	150	2.42

Temp. Range:

-40 °C to +125 °C

Air max +75°C

Water max +85°C

InnerTube:

Synthetic rubber tube

Reinforcement:

Two textile braids

Cover:

Synthetic rubber cover

Typical Application:

Hydraulic system service with petroleum and water based fluids, for general industrial service.

Additional Certificates:

EN45545-2

Available on request

Railway R4



SAE 100 R4/ EN45545-2

		Ď.)				∋E	
DN	Hose I	.D.	Hose C (ma:		Working Pressure	Min. Burst Pressure	Min. Bend Radius	Vacuum	Weight
	mm	in	mm	in	bar	bar	mm	bar	kg/m
19	19	0.75	32.6	1.28	21	84	40	-0.80	0.83
25	25.4	1	38.2	1.50	17	68	45	-0.80	0.97
31	32	1.26	46.0	1.81	14	56	60	-0.80	1.29
38	38	1.5	52.4	2.06	10	40	65	-0.80	1.65
51	50.8	2	66.0	2.60	7	28	100	-0.80	2.37
63	63.5	2.5	79.1	3.11	4	16	140	-0.80	2.92
80	76.2	3	95.0	3.74	4	16	180	-0.80	4.18

Temp. Range:

-40 °C to +125 °C

Air max +75ºC

Water max +85°C

InnerTube:

Synthetic rubber tube

Reinforcement:

One textile braid

Cover:

Synthetic rubber cover

Typical Application:

Hydraulic system service with petroleum and water based fluids, for general industrial service.

Additional Certificates:

EN45545-2

Railway Airbrake (UIC830-1)



)		\bigcirc				
DN	Hose	I.D.	Hose (ma		Working Pressure	Min. Burst Pressure	Min. Bend Radius	Weight
	mm	in	mm	in	bar	bar	bar	kg/m
13	13	0.51	25	0.98	10	70	70	0.487
16	16	0.63	28	1.10	10	70	90	0.525
22	22	0.87	36	1.42	10	70	120	0.868
28	28	1.10	43	1.69	10	70	150	1.139
35	35	1.38	53	2.09	10	70	170	1.548

Temp. Range:

-40°C to +70°C

InnerTube:

Synthetic rubber tube

Reinforcement:

4 textile cord

Cover:

Fire retardant synthetic rubber cover

Typical Application:

For use in railway air brake systems to connect carriages by means of half couplings according to DIN15807:2011

Additional Certificates:

EN45545-2

UIC830-1

EN15807:2011



LAPI LABORATORIO PREVENZIONE INCENDI S.p.A. Sede Primaria: 1-59100 PRATO - Via della Quercia, 11 Telefono +39 0574.575.320 - Telefax +39 0574.575.323 Sede Secondaria: 1-50041 CALENZANO (FI) - Via Petrarca, 48 e-mail: lapi@laboratoriolapi.it web site: www.laboratoriolapi.it





RAPPORTO DI PROVA / TEST REPORT NO. 628-631.1IS0040/15 Rev.1

METODO DI PROVA:

Test method

DENOMINAZIONE DELLA PROVA:

Description of the standard

RICHIEDENTE:

Sponsor

DENOMINAZIONE DEI MATERIALI:

Denomination of the materials

GAMMA DIAMETRI NOM. DEI CAMPIONI:

Nom. diameter range of the samples

DESCRIZIONE DEL MATERIALE:

Description of the material

UNI EN 45545-2: 2015

Requisiti di comportamento al fuoco di materiali e componenti

Requirements for fire behaviour of materials and components

Eaton Corporation Polimer Kauçuk San.Paz.A.Ş

Çerkezköy Organize Sanayi Bölgesi, Karaağaç Mah. 6.sok No:3

Kapakli / TEKIRDAG, TURKEY

RAILWAY EN857 2SC / EN45545

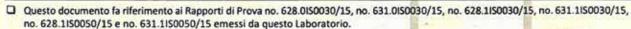
Diameter from 6.4 mm to 25.4 mm

6+25 mm (inc from 1/4" to 1")

(Thick, wall hose: from 4.4 mm to 4.8 mm)

Tubo in gomma di colore nero con rinforzo metallico.

Black rubber hose with a metallic reinforcement.



This certificate refers to the Test Reports no. 628.0IS0030/15, no. 631.0IS0030/15, no. 628.1IS0030/15, no. 631.1IS0030/15, no. 628.1/S0050/15 and no. 631.1/S0050/15 issued by this Laboratory.

Prodotto / Product	M2 (Tubazioni flessibili per interno / Hoses – Interior) M3 (Tubazioni flessibile per esterno / Hoses - Exterior)							
Requisito / Requirement		R22 - R23						
Prove richieste / Tests required	EN ISO 4589-2	EN ISO 4589-2 EN ISO 5659-2 NF X 7						
Parametro / Parameter	LOI (%)	CI	CITNLE					
Valori trovati / Values found (1/4" - Rif. Lab. 631/15)	38.2	181		0.14				
Valori trovati / Values found (1" - Rif. Lab. 628/15)	34.2	246		0.13				
The same same same	Per / For	Per /	For	Per	/ For			
Limiti di accettazione Acceptance limits	R22 - R23 HL1: ≥ 28% HL2: ≥ 28% HL3: ≥ 32%	R22 HL1: ≤ 600 HL2: ≤ 300 HL3: ≤ 150	R23 HL1: HL2: ≤ 600 HL3: ≤ 300	R22 HL1: ≤ 1.2 HL2: ≤ 0.9 HL3: ≤ 0.75	R23 HL1: HL2: ≤ 1.8 HL3: ≤ 1.5			

Note / Notes (1): 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: 2015 per livelli di rischio HL1 - HL2 set di requisiti R22 e HL1 - HL2 - HL3 set di requisiti R23 per la gamma di diametri sopra riportata (estremi inclusi).

On the basis of the above results the sample in object COMPLIES with the requirements of UNI EN 45545-2: 2015 for Hazard Levels HL1 - HL2 requirement set R22 and HL1 - HL2 - HL3 requirement set R23 for the diameters range reported above (including extreme).

Nota: la presente Rev.1 è stata emessa senza ripetizione di prova e differisce dal Rapporto di Prova no. 628-631/15 emesso in data 05/05/2015 esclusivamente per l'aggiornamento dell'anno della norma e per l'estensione della data di scadenza.

Note: this Rev.1 has been issued without test repetition; it differs from the Test Report no. 628-631/15 issued on 05/05/2015 exclusively for the year update of the standard and for the extension of the expiry date.

Prato, 03/05/2018

Valid until: 04/05/2020

Il Responsabile Certificazione

The Certification Manager
Dr Wassimo Borsini

Il Direttore Laboratorio Director of the Laboratory

uca Ermini



Questo documento deve essere letto congrintamente 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 Certifer si riferisce alle prove di EN 44545-2 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 Certifer approval refers to the tests according to EN 45545-2 reported in the published list.



LAPI LABORATORIO PREVENZIONE INCENDI S.p.A. Sede Primaria: 1-59100 PRATO - Via della Quercia, Telefono +39 0574.575.320 - Telefax +39 0574.575.323 Sede Secondaria: 1-50041 CALENZANO (FI) - Via Petrarca, 48 e-mail: lapi@laboratoriolapi.it www.laboratoriolapi.it





RAPPORTO DI PROVA / TEST REPORT NO. 669-670.1IS0040/15 Rev.1

METODO DI PROVA:

Test method

DENOMINAZIONE DELLA PROVA:

Description of the standard

RICHIEDENTE:

Sponsor

DENOMINAZIONE DEI MATERIALI:

Denomination of the materials

GAMMA DIAMETRI NOM. DEI CAMPIONI:

Nom. diameter range of the samples

DESCRIZIONE DEL MATERIALE:

Description of the material

UNI EN 45545-2: 2015

Requisiti di comportamento al fuoco di materiali e componenti

Requirements for fire behaviour of materials and components

Eaton Corporation Polimer Kauçuk San.Paz.A.Ş

Çerkezköy Organize Sanayi Bölgesi, Karaağaç Mah. 6.sok No:3

Kapakli / TEKIRDAG, TURKEY

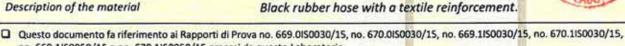
RAILWAY EN854 2TE / EN45545

Diameter from 4.8 mm to 25.4 mm

5÷25 mm (inc from 3/16" to 1")

(Thick, wall hose: from 3.5 mm to 4.6 mm)

Tubo in gomma di colore nero con rinforzo tessile.



no. 669.1IS0050/15 e no. 670.1IS0050/15 emessi da questo Laboratorio. This certificate refers to the Test Reports no. 669.0IS0030/15, no. 670.0IS0030/15, no. 669.1IS0030/15, no. 670.1IS0030/15, no. 669.1IS0050/15 and no. 670.1IS0050/15 issued by this Laboratory.

Prodotto / Product	M2 (Tubazioni flessibili per interno / Hoses – Interior) M3 (Tubazioni flessibile per esterno / Hoses - Exterior)						
Requisito / Requirement	R22 - R23						
Prove richieste / Tests required	EN ISO 4589-2	NF X 70-	NF X 70-100-1/-2				
Parametro / Parameter	LOI (%) (25 kW/m² - Flaming) Ds max			CI	CITNLP		
Valori trovati / Values found (3/16" - Rif. Lab. 669/15)	34.2	214		0.15			
Valori trovati / Values found (1" - Rif. Lab. 670/15)	32.4	32.4 162		0.14			
	Per / For	Per	/ For	Per	/ For		
Limiti di accettazione Acceptance limits	R22 - R23 HL1: ≥ 28% HL2: ≥ 28% HL3: ≥ 32%	R22 HL1: ≤ 600 HL2: ≤ 300 HL3: ≤ 150	R23 HL1: HL2: ≤ 600 HL3: ≤ 300	R22 HL1: ≤ 1.2 HL2: ≤ 0.9 HL3: ≤ 0.75	R23 HL1: HL2: ≤ 1.8 HL3: ≤ 1.5		

Note / Notes (1): 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: 2015 per livelli di rischio HL1 - HL2 set di requisiti R22 e HL1 - HL2 - HL3 set di requisiti R23 per la gamma di diametri sopra riportata (estremi inclusi).

On the basis of the above results the sample in object COMPLIES with the requirements of UNI EN 45545-2: 2015 for Hozard Levels HL1 - HL2 requirement set R22 and HL1 - HL2 - HL3 requirement set R23 for the diameters range reported above (including extreme).

Nota: la presente Rev.1 è stata emessa senza ripetizione di prova e differisce dal Rapporto di Prova no. 669-670/15 emesso in data 13/05/2015 esclusivamente per l'aggiornamento dell'anno della norma e per l'estensione della data di scadenza.

Note: this Rev.1 has been issued without test repetition; it differs from the Leet Report no. 669-670/15 issued on 13/05/2015 exclusively for the year update of the standard and for the extension of the expiry date.

Prato, 03/05/2018

Valid until: 12/05/2020

Il Responsabile Certificazione

The Certification Manager

or. Massimo Borsini

Il Direttore del Laboratorio of the Laboratory

Questo documento deve esser eterto congluntamente al 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 Certifer si riferisce alle prove di EN 44545-2 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 Certifer approval refers to the tests according to EN 45545-2 reported in the published list.



Hydroscand offers a wide range of hydraulic and industrial hose and fluid connectors.

Our 1SC and 2SC high-performance rail hose meets the highest European safety levels in compliance with EN4554 and R22/HL2 and R23/HL3.

With world-class products and services supported by a local branch network, BFPA-trained technicians and a 24/7 mobile hydraulic breakdown service - make us your first choice for rail hose.

0800 01 16 999

Just call

0800 0116 999

24/7

www.hydroscand.co.uk



Visit us at one of our branches

All of our branches are staffed by an experienced, knowledgeable and dedicated team of technicians who are there to give you advice and make sure you don't leave without a solution.

7a Carminow Rd. Ind. Est. Bodmin, Cornwall PL31 1EP

01208 78244

119-121 Town Street Sandiacre Nottingham NG10 5DS 0115 978 8800

Redruth

10 Druids Way Pool Ind. Est. Redruth, Cornwall TR15 3RH 01209 212 966

1 Lescren Way Avonmouth Trading Est. Bristol **BS11 8DG** 0117 982 7204

10 Manchester Street Springfield Ind. Est. Oldbury, West Midlands B69 4HH 0121 552 4286

Southampton

5 Southampton Trade Park 23-27 Violet Street Third Avenue Southampton SO15 0AD 023 8078 4446

Goodridge Ave. Ind. Est. Gloucester GL2 5EA

01452 500 073

1 East Way Lee Mill Ind. Est. **Plymouth** PL21 9GE 01752 892 045

Widnes WA87SB

0151 424 0880

Most branches are open 08:30 to 17:00 Monday to Friday. Please contact the branch for individual opening hours.



DEDICATED TO THE FLOW

119-121 Town Street Sandiacre Nottingham NG10 5DS

0115 978 9759 info@hydroscand.co.uk www.hydroscand.co.uk







