FIELD BULLETIN 185

M4KH, G2XH and G1H

NOW MEET THE EN 45545-2 STANDARD FOR THE RAILWAY INDUSTRY

The Gates M4KH, G2XH and G1H hose product ranges have recently been certified for the Railway industry by the renowned LAPI (Laboratorio Prevenzione Incendi).

EN 45545-2:2015 R22-R23 STANDARD

The EN 45545-2:2015 R22-R23 standard covers the fire protection of railway vehicles and applies to all materials and components to ensure the highest level of safety possible in the event of a fire, both in terms of limiting fire development and producing low levels of smoke and toxic fumes.

The standard affects high-speed trains, regional trains and trains used for industrial transportation, both overground and underground.

Railway vehicles are classified in accordance with the fire hazard level associated with their design and operation. It depends e.g. on the number of kilometers a train will go thru tunnels. HL1 is the lowest requirement, HL3 the highest.

The below table gives an overview of the exact requirements of the EN 45545-2 standard for inside use (R22) and outside use (R23) use, the applicable test methods as well as the values for each classification.

Requirement for	Test Measurement (units)	Required	Thresholds		
			HL1	HL2	HL3
Inside use (R22)	Oxygen content – (%)	Min.	28	28	32
	Smoke density – (DS max. dimensionless)	Max.	600	300	150
	Smoke toxicity – (CITnlp dimensionless)	Max.	1,2	0,9	0,75
Outside use (R23)	Oxygen content – (%)	Min.	28	28	32
	Smoke density – (DS max. dimensionless)	Max.	-	600	300
	Smoke toxicity – (CITnlp dimensionless)	Max.	-	1,8	1,5

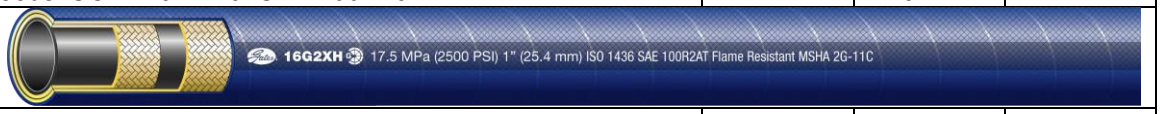
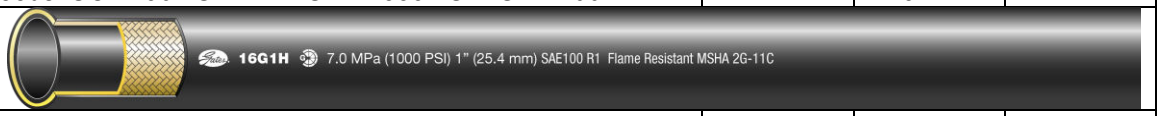
The oxygen index is determined by means of a fire-retardancy test, the smoke density thru the burning behavior test and the smoke toxicity by means of smoke gas analysis.

M4KH, G2XH AND G1H VERSUS THE STANDARD

Gates has validated a selected range of high-temp wire braid solutions for railway applications and rail standard compliance: M4KH, G2XH & G1H. Through compound engineering excellence we have identified that our high-temperature compounds - which are used in these three hose constructions – guarantee optimal performance to all stringent requirements, ensuring a high level of safety in railway applications.

The EN 45545 compliance testing is conducted across the hose range on the smallest and the largest diameter and one in the middle of the range. The certificate will list the highest HL number for both internal and external use but the lowest HL rating determines the overall rating of the hose.

The next table shows how the M4KH, G2XH and G1H perform to the standard.

Gates hose		Sizes tested	Internal /external use	Hazard level
M4KH				
	High-temp constant pressure 2-wire braid hose Temperature range: -40°C to +121°C	-04 to -12	R22	HL1
	Exceeds ISO 11237 R19. SAE 100R19.		R23	HL2
G2XH				
	Extremely high-temp 2-wire braid hose Temperature range: -40°C to +150°C	-04 to -16	R22	HL1
	Exceeds ISO 1436 2SN R2ATS. EN 853 2SN. SAE 100R2AT.		R23	HL2
G1H				
	High-temp 1-wire braid hose Temperature range: -40°C to +135°C constant and +150°C intermittent	-04 to -16	R22	HL2
	SAE 100R1		R23	HL2

Please refer to the individual catalogue pages of the three relevant hose constructions for more details on construction, dimension and performance.

WHAT'S NEXT ?

The M4KH, G2XH and G1H constructions are part of the standard hose range. Product numbers are available on the system and so are list prices and discounts. Crimp data can be obtained thru e-Crimp.

A sell sheet on rail hose solutions can be downloaded together with this field bulletin.

FOR MORE INFORMATION PLEASE CONTACT YOUR LOCAL SALES REPRESENTATIVE