

# Plascoat PPA 571

## Performance in Fire Situations

### **Low Smoke density and toxicity properties of Plascoat PPA 571 in the event of fire**

Plascoat PPA 571 and 571ES is composed almost entirely of compounds containing only carbon, hydrogen and oxygen. Unlike many paints, it contains:

- no reactive ingredients
- no phthalates
- no halogens
- no isocyanates
- no heavy metals

On burning, therefore, the fumes are principally made up of carbon dioxide and water. As a result the toxicity of the fumes in a fire situation is extremely low. For instance:

- The index of toxicity of the smoke generated is **1.78** according to test method NES 713. This is **well below** the Royal (British) Navy requirements of 5.
- The index of toxicity of the smoke according to the test method BS 6853:1999 used for projects in the London Underground is **0.21**. This is **well below** even the most stringent requirement of an index of 1.

Furthermore, the rate of generation of smoke and the density of the smoke are relatively low:

- The US Railroad requires that the smoke generated should be less than an index of 100 at 1.5 minutes, 200 at 4 minutes etc. The smoke index generated from PPA 571 when burning is only 110 after **20** minutes.
- The smoke density index according to the test method BS 6853:1999 used for projects in the London Underground is **1.13** ( $A_0$  (ON)) compared to a requirement of 2.6.

Under BS 476, Plascoat PPA 571 can be considered to be **Class 0** and, though not specifically flame retardant, more than meets the requirements for coatings in tunnels, enclosed buildings and on passenger trains.

**Low Smoke, Low Toxicity**

# Plascoat PPA 571 Fire Tests and Fire Fume Certificates



The following certificates are available for Plascoat PPA 571 or PPA 571ES. Please contact Plascoat for copies:

Country	Specification	Description	Result	Comment
UK	BS 476 Pt.5	Test for <b>Ignitability</b>	Class P	} Overall - Class 0
	BS 476 Pt.6	Fire <b>Propagation</b>	I = 0.2	
	BS 476 Pt.7	<b>Spread</b> of Flame	Class 1	
UK	NES 713 [Royal Navy Specifications]	<b>Toxicity</b> of Fume Index -	1.76	Less than "pass" requirement of 5
UK	BS 6853:1999 Clause D.8.4	<b>Smoke density:</b> Code of practice for fire precautions in the design and construction of passenger carrying trains.	A <sub>0</sub> (ON) = 1.13 A <sub>0</sub> (OFF) = 1.37	Less than "pass" requirement of A <sub>0</sub> (ON) = 2.6 and A <sub>0</sub> (OFF) = 3.9.
UK	BS 6853:1999	<b>Smoke Toxicity:</b> Code of practice for fire precautions in the design and construction of passenger carrying trains.	CO <sub>2</sub> (99.5%), CO (0.5%) R = 0.21	Less than lowest specification of 1
USA	NFPA 258 (ASTM E662-93) [cf. US Federal Railroad Administration]	Smoke <b>Generation</b> - 20 minutes, Flaming mode	110	Less than "pass" requirement of 450
		" - 4 minutes	2.7	Less than "pass" requirement of 200
		" - 1.5 minutes	0.2	Less than "pass" requirement of 100
		- Non Flaming mode	27.84	
USA	ASTM E84	<b>Surface burning</b> characteristics of Building Materials	Class 1 or "A" rating	
			Smoke developed = 10	Less than "pass" requirement of 450
			Flame spread index = 10	Less than "pass" requirement of 25 for Class 1 or "A" rating
France	NF P 92-501	Fire Performance of Rigid Materials	Class M1	
France	NF C20-453	<b>Corrosiveness</b> of Smoke	pH = 4.46	
France	NF C20-454	Gases evolved during Pyrolysis:-		
		- Detected	CO <sub>2</sub> (34%), CO (7.5%), Water and non-volatiles (58%) - <b>Total 99.5%</b>	
		- <u>Not Detected</u>	HCl, HBr, HCN, HF, SO <sub>2</sub>	
International	IEC 332 Pt.1	Tests on electrical cables. Test on a single vertical wire or cable	Meets the requirements	<425 mm